

TEXAS A&M HEALTH SCIENCE CENTER
RURAL HEALTHY PEOPLE 2020
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VOLUME ONE



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RURAL HEALTHY PEOPLE 2020

A Companion Document to Healthy People 2020

VOLUME ONE

“Living and working in rural America should not have dire or significant implications for health status. The reality, however, is that rural health disparities exist and many organizations are dedicated to ensuring that rural residents are afforded the best possible health care irrespective of their location. We now know more about the degree to which rural health disparities exist than we did ten to fifteen years ago. That notwithstanding, what is known today indicates that rural residents still lag in health status, in some cases alarmingly so, in comparison to their urban counterparts. This knowledge lends itself to a great urgency for addressing rural health disparities, above all, to improve the quality of life for those who choose to call rural America home.”

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Printed in the United States of America

Newman Printing Company, Inc., Bryan, Texas



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THE FLORIDA STATE UNIVERSITY
COLLEGE OF MEDICINE

This publication was supported through a grant from the Public Health Policy Program at the Texas A&M Health Science Center School of Public Health.

Suggested Citation: Bolin JN, Bellamy G, Ferdinand AO, Kash BA, Helduser JW, eds. (2015). *Rural Healthy People 2020*. Vol. 1. College Station, Texas: Texas A&M Health Science Center School of Public Health, Southwest Rural Health Research Center.

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ISBN 978-1-4951-5242-9

Library of Congress Control Number: 2015938498

FOREWORD

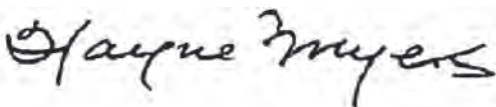
Rural Healthy People 2020 is the second in a series conceived late in the last century. In 2000, the federal Office of Rural Health Policy asked Texas A&M University, the nation's only school of *rural* public health, to develop a special toolkit based on the generic Healthy People 2010, but adjusted for the special needs, circumstances, and experiences of rural people. That successful and widely used product is now updated for the current decade and it couldn't come at a better time.

The experience over the intervening fifteen years indicates that rural America needs this toolbox. People in many of America's rural counties are dying younger now than at the close of the last century when this effort was conceived. This report, *Rural Healthy People 2020*, recommends expanded access to medical care. Several of the states with the most marked deterioration of rural life expectancy have not yet elected to expand access to Medicaid financing to medical care through the Affordable Care Act.

Medical care is a bit like vitamins when it comes to health... essential, but not adequate alone for good health. You need the whole package... smoking cessation, exercise, weight control, substance abuse prevention and treatment, safe water, housing and so on—the things doctors don't handle well in fifteen-minute clinic visits.

Our nation lacks strong infrastructure in rural population health. Organizations and agencies that are strong in public or population health have little acquaintance with rural issues and communities. Low population density and resulting measurement challenges can become an excuse to not do anything. We're not likely to turn around the deterioration in the health of rural communities until we get better rural data collection, problem identification, and program evaluation than we're getting today. This report puts those needs and possible solutions into focus.

Finally, the changes in rural demography seem as complex and locale-specific as fingerprints. The rural stereotypes are just a starting point to list exceptions. Lumping rural populations with the nearest urban hub is absurd. This report will help those putting together new programs find rural models with records of documented success. *Rural Healthy People 2020* will, we hope, focus attention on the need for more meaningful data on rural people, what kills them, and what strategies help them live longer, healthier lives.



WAYNE MYERS, MD

Director (retired), Health Resources and Services Administration, Office of Rural Health Policy

RURAL HEALTHY PEOPLE 2020: NEW DECADE, SAME CHALLENGES

Dear Friends of a Healthy Rural America,

Achieving success in addressing the vast public health infrastructure needs across rural America goes beyond individual community programs or the occasional rural health grant. Rurality, like other health disparities, requires collaboration. If we are to stem the closings of rural hospitals, clinics, and county health offices, and halt the exodus of healthcare workers across America's rural landscape, a strong partnership that engages a focused national leadership, as well as federal support with state and local resources and stakeholders, is critical to our success.

The goal of *Rural Healthy People 2020*, as it was with *Rural Healthy People 2010*, is to serve as a guide and benchmark for updating and translating the current state of rural health priorities and disparities, and serve as a roadmap for updating federal and state leaders on rural health priorities identified through the national Rural Healthy People 2020 survey. Under the leadership of **Dr. Jane Bolin, Texas A&M University**, and **Dr. Gail Bellamy, Florida State University**, and in collaboration with their team of researchers, the planning, development, and updating of rural health priorities has resulted in a completely rewritten and updated Rural Healthy People for this decade. In these volumes, the most critical rural health priorities are identified with accompanying rural-focused literature reviews. Helpful **Models for Practice** are also discussed. Our goal is to provide essential information for decision-making to impact the health of rural America.

The **Texas A&M School of Public Health** is dedicated to promoting health with a special emphasis on rural, underserved, and minority populations. Our multiple campuses and community outreach locations across the state provide truly exceptional opportunities for outreach, evaluation, and research throughout the State of Texas, the southern United States, and the U.S.-Mexico border region. Faculty at the **Texas A&M School of Public Health** conduct studies and demonstration projects in communities and at research sites using advanced methodologies and community-based participatory research approaches to solve critical public health problems.

Through innovative programs and research, our goal is to serve and inform policymakers and contribute in important ways to state and national healthcare policies that impact public health infrastructure such as access to healthcare, workforce shortages, chronic disease prevention, mental health, and rural disparities. Building on the Texas A&M tradition of service through outreach and extension, we apply our research to address real-world problems not only in Texas, but across the country and around the world.

It is our hope that *Rural Healthy People 2020* will support the efforts of federal, state, and local health policy leaders in addressing the significant needs of rural America, as well as strengthen the capacity of individuals and organizations seeking essential support for their programs.



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ADDITIONAL ACKNOWLEDGEMENTS:

The authors wish to gratefully acknowledge the superb editorial skills of Deborah Kellstedt, MPH. Assistance in the development of this volume was also provided by Vanessa O'Neal, Lauren Jones, and Dylan Dacy. Many thanks go to Mr. Carroll Hedrick for the page design and layout.

EDITORS' INTRODUCTION TO RURAL HEALTHY PEOPLE 2020

Rural Healthy People 2020 (RHP2020) is a result of the work of several researchers, graduate assistants, dedicated project staff, and the guidance of our national RHP2020 Expert Advisory Board. Over a decade ago, the Health Resources and Services Administration's Office of Rural Health funded the two-volume *Rural Healthy People 2010* – the result of a rural-focused survey of Healthy People 2010 priorities and objectives.^{1,2} This served as a foundational starting point for identifying rural health priorities and objectives for the decade.

Rural Healthy People 2020 builds upon the earlier work and expands the national Healthy People 2020 initiative by giving a rural focus to the Healthy People 2020 priorities.^{3,4} Nationally, Healthy People 2020 has served the country by providing a comprehensive, nationwide health promotion and disease prevention roadmap for improving the health of all people in the United States during the second decade of the 21st century. The 1,200 priorities and objectives in Healthy People 2020 are intended to serve as a guide for action by national, state, and local healthcare officials to improve the health of communities over the course of the current decade.⁵

“Rurality” is just one of the 14 health disparities recognized by Healthy People 2020.^{6,7} Thus, what makes RHP2020 important to rural stakeholders is that rural challenges are the central focus of the project, not just one of 14 health disparities. As important as all disparities are to the health of our nation's population, RHP2020 is specifically intended to support rural stakeholder-focused priority setting and the comprehensive reporting of national rural health priorities for rural stakeholders and policy planners.

“A health disparity is a particular type of health difference that is closely linked with social or economic disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater social or economic obstacles to health based on their racial or ethnic group, ...geographic location [rurality], or other characteristics historically linked to discrimination or exclusion.”^{7,8}

DESIGN AND METHODS

A survey questionnaire similar to that employed by *Rural Healthy People 2010* a decade earlier was updated and formatted for electronic distribution. The RHP2020 survey can be viewed at <http://www.chotnsf.org/survey/rhp2020/ruralhealthypeople2020.htm>.⁹ The survey listed the 38 Healthy People 2020 leading health indicators that had been circulated for public comment in 2009 and 2010.¹⁰ Four topic areas were added by Healthy People 2020 at a later date: 1) dementias; 2) lesbian, gay, bisexual and transgender health; 3) preparedness; and 4) sleep health, bringing the total number of Healthy People 2020 topics to 42.

The Healthy People 2020 objectives that received top 20 votes from rural stakeholders in the RHP2020 survey are shown in **Table 1**. A total of 926 rural stakeholder respondents identified “Access” as one of their top ten most important priorities for rural America, making it the most highly ranked rural health priority. Respondents were also invited to identify more specific objectives within each identified rural health priority (Question 2), and to identify the single highest-ranking rural health priority (Question 3). The survey also asked for respondents' state of residence, stakeholder organization, and profession. The remaining questions solicited information not reported herein.¹¹

The survey was launched electronically, via web and email in all states, regions, and possessions of the U.S. in December 2010 with web-link dissemination assistance from the National Rural Health Association (NRHA), the National Organization of the State Offices of Rural Health (NOSORH), the National AHEC Organization (NAO), and the National Rural Assembly (NRA). The survey link was open until January 11, 2011. A total of 679 survey responses were received during this time period. Due to low participation rates in the southeastern United States, the survey was re-launched in August 2012 in order to better target low-response states. The RHP2020 survey re-launch was preceded by a webinar sponsored by NOSORH for its members and others to learn more about RHP2020. Letters were also sent to select Commissioners of Health in the southern states to increase the probability of southern stakeholder involvement. Electronic notice about the second

Table 1. Healthy People 2020 objectives recognized as a top ten rural health priority by rural stakeholders (n=1214).

Healthy People 2020 National Objectives	# of votes	% of voters ranking item in top ten	Priority rank based on votes
Access to quality health services	926	76.3	1
Nutrition and weight status	661	54.5	2
Diabetes	660	54.4	3
Mental health and mental disorders	651	53.6	4
Substance abuse	551	45.4	5
Heart disease and stroke	550	45.3	6
Physical activity and health	542	44.7	7
Older adults	482	39.7	8
Maternal, infant and child health	449	37	9
Tobacco use	429	35.34	10
Cancer	428	35.26	11
Education and community-based programs	400	33	12
Oral health	381	31.4	13
Quality of life and well-being	327	26.9	14
Immunizations and infectious diseases	324	26.7	15
Public health infrastructure	315	26	16
Family planning and sexual health	278	22.9	17
Injury and violence prevention	265	21.8	18
Social determinants of health	258	21.3	19
Health communication and health IT	257	21.2	20

Adapted from Bolin et al., 2015.¹¹

RHP2020 survey launch was once again included in virtual communications to members of national associations with a reminder to original respondents not to respond a second time to the survey. The survey link remained open for 30 days. The final overall response to the RHP2020 survey totaled 1,214.

SURVEY PARTICIPATION BY STATE AND CENSUS REGION

Stakeholders from every state except Nevada participated in the RHP2020 survey. **Figure 1** shows the number of respondents for states with at least ten respondents. Ohio had the highest number of respondents at 147 (12 percent), followed by Texas at 129 (11 percent), Missouri at 96 (eight percent), West Virginia at 57 (five percent), Michigan at 52 (four percent), and Florida at 51 (four percent). In all, 29 states had at least ten or more stakeholders respond (**Fig. 1**). Unfortunately, 21 states had nine or fewer respondents. Why response rates were low in many states remains unknown, as uniform national and state web promotion was utilized.

Response Rates by Census Regions

When we compared United States Census Bureau (USCB) regions, the objective receiving the most top ten priority votes across all regions was “Access to Health Care,” with a higher percentage of respondents from the Northeast census region (83 percent) voting for “Access to Quality Health Services” as a top ten priority, compared to 75 percent in the South and 74 percent in the Midwest.

Oral health was also identified by 381 respondents as a top ten rural health priority; however, differences across USCB regions are noteworthy. While 34.5 percent of respondents from the Midwest voted for oral health as a top ten priority, just 24 percent of respondents from the Northeast voted for oral health as a top ten rural priority.

Response rate by census region (**Fig. 2**) differed substantially, with the highest number of respondents coming from the Midwest Census Region (42 percent), followed by the South (36 percent), West (14 percent), and Northeast (seven percent).

Figure 1. States with at least Ten Respondents¹¹

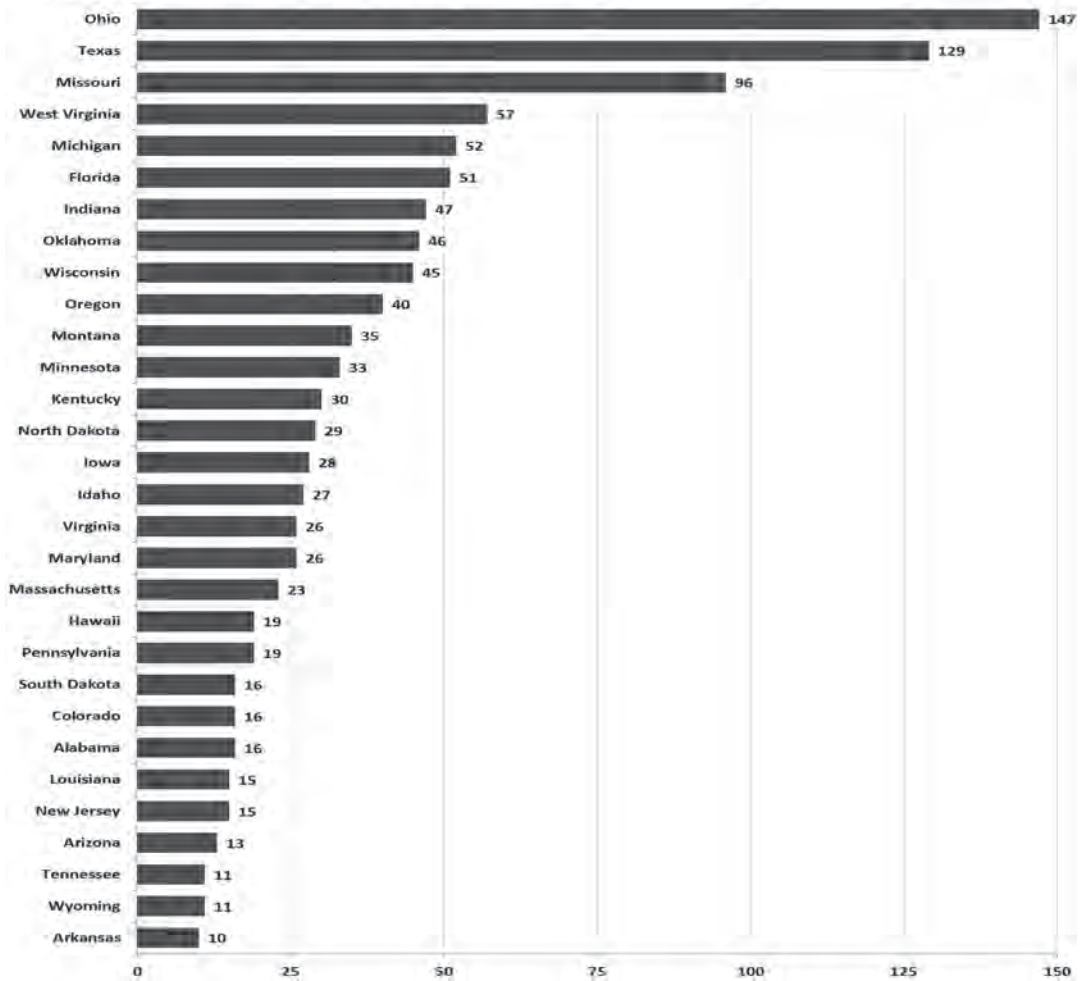
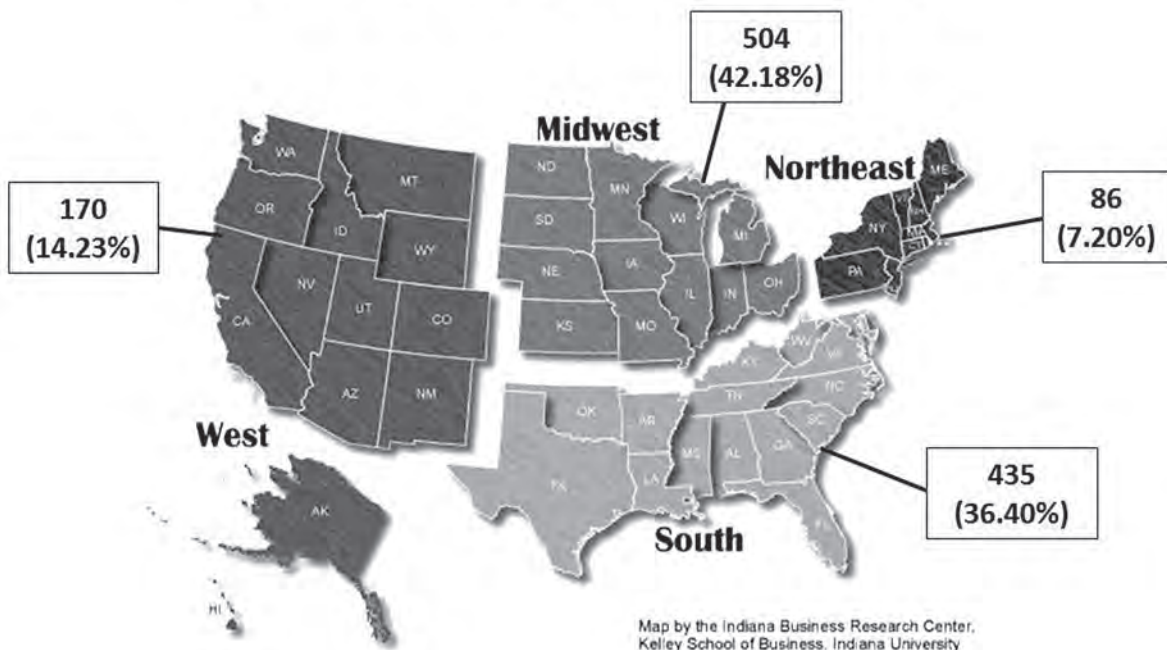


Figure 2. Response Rate by USCB Region (n=1195)¹¹



ORGANIZATION OF RHP2020

Rural Healthy People 2020 is organized into two separate volumes. Volume 1 addresses each of the ten top-ranked rural health priorities and includes reviews of relevant literature, updated for those topics previously identified as priorities in *Rural Healthy People 2010*, and models for practice that rural practitioners can utilize to support community and regional programs. Volume 2 is formatted similarly, addressing the current rural health priority rankings 11 through 20.

Volume 1:

The first few chapters of RHP2020 Volume 1 address **Access to Health Care**, selected as the top rural health priority by over 75 percent of respondents to our national survey. Access is divided into three chapters: (1.A.) addressing the sub-priority areas of insurance; (1.B.) primary care services; and (1.C.) emergency care.

Chapter 1.A. focuses on **Rural Access to Quality Health Insurance** and the Affordable Care Act (Bolin, Bellamy, Ferdinand, and Ojinnaka). An increasing proportion of the rural population is without health insurance, creating a financial barrier to health care that contributes to preventable hospitalizations and use of the emergency room for non-emergency problems. In this chapter, we look at changes over the past decade in access to affordable health insurance in rural areas.

Chapter 1.B. addresses the topic of **Access to Primary Care in Rural Areas** (Ferdinand, Johnson, Brown Speights, Taite, Myers, Speights, and Bellamy). Sixty-five percent of Health Provider Shortage Areas are in rural regions.¹² Rural areas are confronted by shortages of health providers and medically-related deficiencies.¹³ This chapter takes a unique, in-depth look at those primary care access characteristics unique to rural and underserved areas, emphasizing the need for effective health interventions, innovative techniques to integrate existing assets and deliver services, and dynamic partnerships necessary to maximize the reach and impact of community resources. Concluding with community models known to work, the authors highlight collaborative efforts of community organizations that have successfully coordinated efforts to address the needs of rural populations.

Rural Access to Quality Emergency Services (Chapter 1.C.) focuses on the continuing challenges

rural populations, especially minorities and the unemployed, face in obtaining health care in emergency situations, such as trauma, stroke, heart problems, and mental health. Notably, nearly 75 percent of rural dwellers live 30 minutes from an emergency care provider.¹⁴ Relying heavily on volunteer emergency staff, rural populations in need of immediate care are more likely to die or have higher morbidity and mortality associated with delay in accessing emergency care (Schulze, Bolin, and Radcliff).

Nutrition and Weight Status in Rural Areas (Chapter 2) climbed from number ten in 2000 to number two overall in 2010 to become the second most important priority of this decade (Radcliff, Kash, Ferdinand, and Schulze). In this chapter the authors report on the barriers and challenges faced by rural providers and educators in addressing rising obesity rates in rural populations, when more often than not there are few options for safe, affordable physical activity and many regions are considered food deserts, providing few healthy food options.

Diabetes (Chapter 3) continues as a top-ranking rural health concern; therefore, the authors provide an update on the challenges rural populations face in preventing and managing diabetes (Bolin, Schulze, Helduser, and Ory). Because diabetes is an ambulatory care sensitive condition, this RHP2020 priority is closely linked to both access to primary care services and access to insurance. Diabetes self-management education has been shown to be helpful in providing needed information; however, rural populations often do not have access to these classes. Moreover, supplies may not be readily available, especially for the uninsured. In an attempt to address rural diabetes treatment and education disparities, many communities have organized community diabetes care models; a few of these are reported in the chapter's final pages.

Mental Health and Mental Disorders (Chapter 4) endures as a significant rural concern remaining in the top five of all rural health priorities. The authors discuss the significant challenges rural residents face in finding appropriate mental and behavioral health services (Ferdinand, Madkins, McMaughan, and Schulze), pointing out that 2.6 million rural adults live with depression. More than 85 percent of Mental Health Professional Shortage areas are in rural areas;¹⁵ yet, there are less than half the number of psychologists in rural areas compared to urban/suburban areas.¹⁶ Lack of access to mental health

specialists in rural areas is well-documented and often those residents suffering from mental health disorders may have to rely on a family provider rather than a specialized professional.

Substance Abuse (Chapter 5) remains a top ten rural health priority. There is reported variation in both type and rates of substance abuse across regions of the U.S. For example, nonmedical prescription opioid use is particularly problematic in Appalachia Kentucky, Virginia and West Virginia.¹⁷ Rural providers report challenges in substance abuse treatment options, screening tools, and medications. Likewise, rural schools perennially struggle with limited budgets and are often unable to address adolescent substance abuse challenges. The authors for this chapter (Kash, McMaughan, Hutchison, and Tan) provide rural stakeholders with an exhaustive literature review update and valuable models for practice.

Heart Disease and Stroke (Chapter 6): Closely tied to the issue of access, heart disease and stroke were identified as a top ten priority by 45 percent of respondents (551) in the RHP2020 national survey. Many rural regions have significantly higher rates of stroke mortality and poorer access to stroke management in the critical early minutes following a cardiovascular event. The authors focus on advances made in the previous decade and continuing challenges in addressing the needs of rural populations in accessing basic preventive and emergency services (Helduser, Du, and Bolin).

In **Chapter 7**, the authors (Helduser, Ferdinand, and Bolin) provide readers with an overview on a new rural health priority (since 2010) - **Physical Activity and Health**. Closely linked to nutrition, heart disease, obesity and a myriad of chronic conditions, physical activity and health are important for rural populations because of scarce community infrastructure resources for building healthier communities. This chapter reviews the significant health benefits of physical activity, options available to rural Americans for age groups ranging from senior adults to children, and the rural-specific barriers to increasing physical activity that may require alternative strategies and interventions.

Older Adults (Chapter 8), authored by Towne, Smith, Pulczinski, Lee, and Ory, documents the significant challenges rural populations face in accessing much-needed community services for the elderly and aging in their rural towns. The authors provide an overview of the challenges rural older

adults face, as well as examples of successful community-wide efforts to encourage regular preventive care, community resources and active living programs.

In **Maternal, Infant, and Child Health (Chapter 9)** authors McMaughan, DeSalvo and Creel provide readers with a well-documented review exploring the challenges faced by rural populations in addressing the daunting needs of women of child-bearing age, infants and children. Thirty-seven percent (449) of RHP2020 respondents identified maternal, infant and child health as a top ten priority, ranking highest in the Northeast and South. An estimated 14 million children live in rural America;¹⁸ however, obstetricians and pediatricians are in short supply in these areas,¹⁹ resulting in higher neonatal and post-neonatal mortality depending upon rural designation.^{20,21} Proposed solutions and working models are provided for rural stakeholders and community leaders.

In **Tobacco Use (Chapter 10)**, Geletco and Bellamy provide updated statistics and research pointing to the continued problem of tobacco use across all spectrums. They report on disparities, which continue to exist, between rural and urban tobacco use, both lifetime and current use. Interventions are discussed, including practitioner interventions, pharmacotherapy, behavioral counseling, and policy interventions.

DISCUSSION

Rural health challenges are complex, reflecting both significant disparities across rural populations residing in the United States and unique regional, political and social differences that influence how we craft solutions to problems. Rural populations face even greater challenges today than they did in 2001 when *Rural Healthy People 2010* was first conceptualized. The increased challenges stem, in part, from economic crises of the last decade, an aging population, and a shrinking pool of primary care providers.

Even the fundamental process of defining rurality is challenging, because it must be carried out within the context of federal agency funding, studying or defining programs against the backdrop of unique regional differences, background, location, people, and health care access.²² To better understand the challenges that rural residents face in accessing health care, researchers, practitioners and policy makers must rethink the lens through which they

view rural populations.²³ Beyond location, rural challenges also include race, ethnicity, customs, the economy, and geography.

In this second decade of “carrying the torch” on behalf of Rural Healthy People initiatives, we look back on the historical changes in health care that have occurred in our nation and anxiously wait to see whether the new Affordable Care Act will impact the significant barriers rural populations face in both living in rural areas and staying healthy.

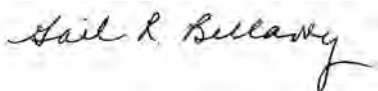
Finally, we would be remiss if we did not acknowledge the importance of contributions from the *Rural Healthy People 2020* Expert Advisory Board, whose members include healthcare providers, academicians, representatives of federal and state agencies, and rural advocates including Larry Gamm, PhD, the original editor of *Rural Healthy People 2010* and Regents Professor at the Texas A&M School of Public Health, and Dr. Wayne Myers, the Director of the Office of Rural Health Policy in the Health Resources and Services Administration, who in the late 1990s charged Dr. Gamm and his colleagues to create *Rural Healthy People 2010*, a companion document to Healthy People 2010.

Dr. Larry Gamm provided an enduring legacy when he envisioned what *Rural Healthy People 2010* could contribute to the body of literature - supporting the efforts of rural health leaders and researchers. We hope, as Dr. Gamm did in 2003, that *Rural Healthy People 2020* will also “...add to our collective understanding of rural health conditions, knowledge of some of the unique challenges facing delivery of health services in rural areas, and an appreciation of the innovativeness and commitment of many rural health leaders and communities to make the most of available resources to advance the health of rural residents.”²²



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The Rural Healthy People survey was originally approved by the Texas A&M University Institutional Review Board (IRB) as IRB No. 2003-0361M and reapproved for RHP2020 in 2010.

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RURAL ACCESS TO QUALITY HEALTH INSURANCE

By Jane N. Bolin, PhD, JD, BSN; Gail Bellamy, PhD; Alva O. Ferdinand, DrPH, JD; and Chinedum Ojinnaka, MBBS, MPH

SCOPE OF THE PROBLEM

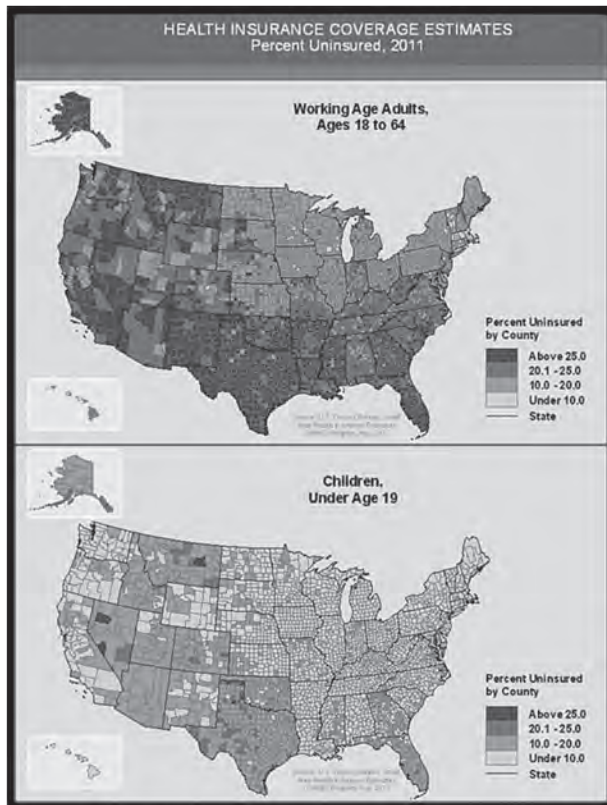
- The Healthy People 2010 target for insurance coverage was not met by any state.¹
- Nearly 48 million people in the United States were uninsured in 2012;² this is an increase of 6.7 million in uninsured compared to a 2001 study.³ However, a recent study released by the Kaiser Family Foundation shows that the rate of uninsured has decreased by between 2.5 percent and 4.7 percent with a gain of 5.4 million to 9.3 million.⁴ The numbers of uninsured are expected to continue to decline under the Affordable Care Act.
- A larger proportion of the rural population is uninsured and poor (below 138 percent federal poverty level) compared to the urban population (9.9 percent versus 8.5 percent).⁵
- Rural residents under age 65 are more likely than urban residents to be uninsured. Estimates range from ten percent to 49 percent depending on region of the country.⁶
- Disparities in insurance coverage increased significantly for those residents in remote and frontier areas.⁷
- Hispanics and Blacks continue to be less likely to have health insurance coverage compared to non-Hispanic whites.²
- Among rural residents, all minority races combined are less likely to have insurance coverage than whites.⁷
- Rural populations would benefit disproportionately from the expansion of Medicaid nationwide (43.5 percent rural compared to 38.5 percent urban).⁵
- Only 25 states expanded Medicaid coverage under the Affordable Care Act.⁸
- It is estimated that in states that do not expand coverage, about five million individuals will have income higher than Medicaid eligibility criteria but lower than required to qualify for market place premium tax credits.⁸

Prior to the Affordable Care Act (ACA) enrollment deadline, the number and proportion of uninsured individuals had continued to climb steadily since 2000⁹ (Fig. 1) with a modest decline reported in 2011 and 2012.¹⁰ With the ACA enrollment period implemented and Medicaid expansion occurring in 27 states, including D.C. (three states undecided, 21 states refusing to expand), rates of uninsured declined from 2.5 percent to 4.7 percent.⁴ While most attribute the recent decline to the ACA enrollment deadline, others point out that allowing children to remain on their parents' health plan until age 26 has also contributed.^{4, 8} It is also estimated that after the ACA is fully implemented, insurance coverage will be expanded to about 17

million previously uninsured individuals⁸ including 7.8 million rural residents below age 65.¹¹ New ACA coverage will include 600,000 young adults between ages 19 and 26 who will have insurance coverage through their parents' insurance plans.¹¹ Approximately eight million individuals enrolled in the health insurance marketplace for the 2013/2014 enrollment period.¹²

Several other provisions of the ACA should assist rural healthcare providers in providing care in difficult, rural and remote markets and individuals are going to find insurance where previously consumer choices were either nonexistent or controlled by one insurer or plan, often at cost-prohibitive rate levels.¹³

Figure 1. Health Insurance Coverage Estimates



Source: USCB, 2011

Some have predicted that the Health Insurance Marketplace will increase competition in rural areas historically dominated by a single insurer and consequently reduce insurance premium costs.¹¹ However, preliminary analysis of county level data provided by the Department of Health and Human Services indicates that, contrary to expectations, rural communities and small towns in states with federally run marketplaces continue to have only one to two carriers and are among the highest priced plans.¹⁴ However, the federal government has provided funding to organizations involved in rural health care to provide customer assistance, counseling and navigation services.¹¹

HEALTHY PEOPLE 2020 (HP2020) GOALS AND OBJECTIVES

Healthy People 2020 Objectives

Access to health insurance is critical for persons who need chronic, preventive and health care services.¹⁵⁻¹⁷ Without health insurance one is significantly less likely to receive *any* medical care, more likely to die at a younger age, and have one or more chronic conditions with overall poorer health status.^{1, 18-20}

The HP2020 objectives for health insurance are:

- **AHS-1** Increase the proportion of persons with health insurance
- **AHS-1.1** Increase the proportion of persons with medical insurance (Goal is 100 percent coverage)
- **AHS-1.2** (Developmental): Increase the proportion of persons with dental insurance
- **AHS-1.3** (Developmental): Increase the proportion of persons with prescription drug insurance

Affordable Care Act Addresses Disparities in Access to Health Insurance

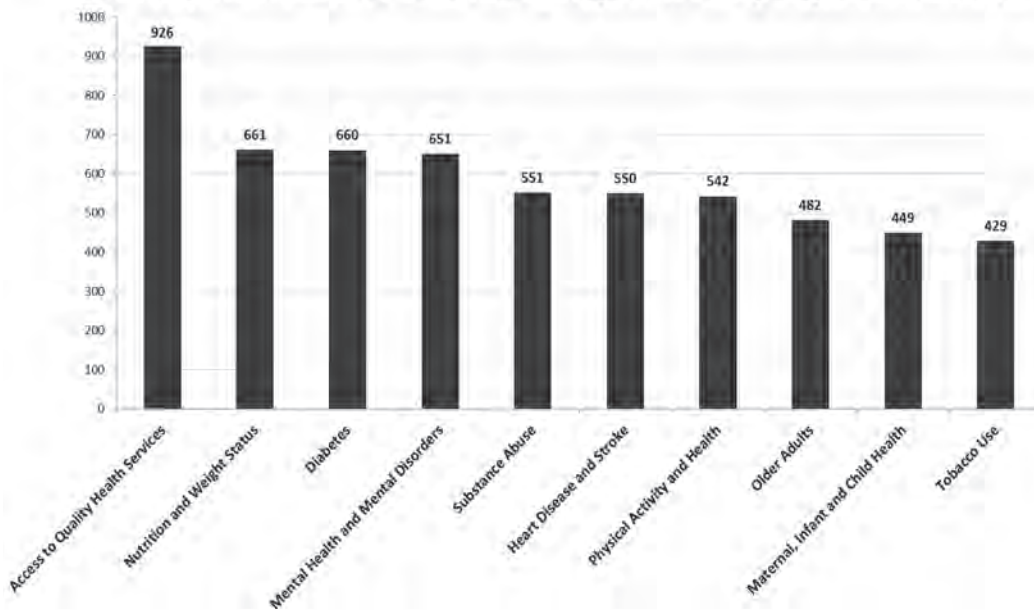
The U.S. Department of Health and Human Services (HHS) estimates that more than 7.8 million uninsured rural Americans under age 65 will enroll in a health insurance plan in 2014.¹¹

Of the estimated 60 million Americans living in rural areas, nearly 20 percent are uninsured.¹¹ The ACA is expected to increase availability and selection of commercial health insurance options as well as expand Medicaid eligibility in those states which opted to participate in the ACA. The non-profit Center for Rural Affairs estimates that an estimated five million to nine million rural residents will benefit from Medicaid expansion. Unfortunately predominantly rural states were less likely to expand Medicaid under the ACA²¹-which, in turn has created a significant rural health care “coverage gap,” “leaving rural communities without critical pieces of their health care foundation.”²¹

RHP2020 SURVEY RESULTS

Respondents to the RHP2020 survey again identified *access* as the most important rural health priority for the decade. Of the 1,214 respondents to the national survey, a total of 926 respondents (76 percent), identified access to quality health services as a “top ten” rural health priority. In all regions of the United States, access received the greatest number of votes. Twenty-nine percent of those identifying access as the most important priority were healthcare providers (e.g., doctors, nurses, counselors, dentists); 35 percent were healthcare administrators; 16 percent were educators; four percent researchers; two percent students; and 23 percent were other professionals.

Figure 2. Top Ten Priorities for Rural Healthy People 2020 Survey Respondents (n=1214) ⁵⁰



Across all census regions and DHHS regions, *access* was the leading rural health priority. As shown in **Figure 2**, access continues to lead all rural health priorities across all respondent types and across all regions of the United States.

PREVALENCE AND DISPARITIES IN RURAL AREAS

Compared to their urban counterparts, a larger proportion of rural residents are uninsured and have lower yearly income.⁵ Disparities in urban-rural variation in health insurance coverage are more pronounced as population density decreases, with “remote” regions suffering from extremely high rates of uninsured.⁷ Rural residents also bear a higher ratio of out-of-pocket health care costs to income than urban residents.²² Using a nationally representative dataset, Ziller and colleagues, found that residents of remote rural areas were more likely to spend more in out-of-pocket costs than urban residents.²³ Rural and remote dwellers were also more likely to be responsible for a higher proportion of their health care expenses than urban residents. Rural residents paid a higher proportion of emergency room visit bills compared to urban residents. This higher spending occurred regardless of proximity to urban areas.²³ Factor in travel and lodging expenses for rural residents and the overall costs of healthcare are much higher.

Even when privately insured, rural versus urban disparities in health insurance coverage continue to persist.²³ Under private pay, rural residents are more likely to be underinsured compared to urban

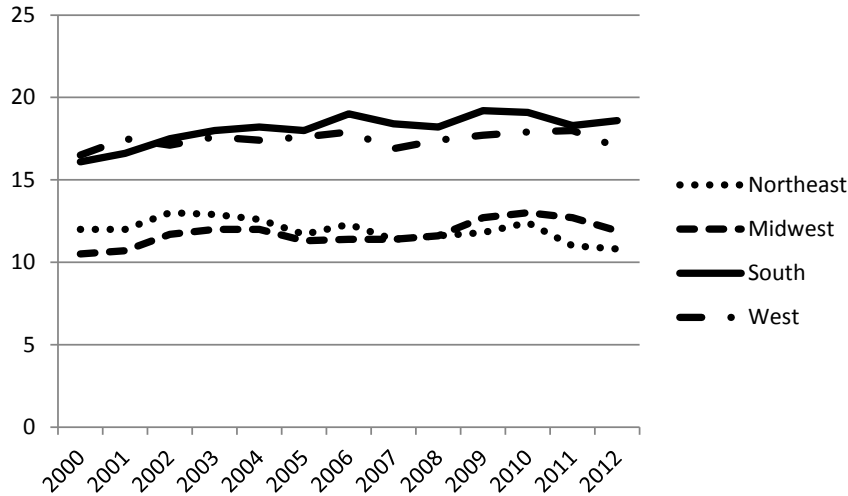
residents. Previous research has shown that this disparity increases with increasing degrees of rurality.²³ Rural residents have been reported to be less likely covered through a group coverage or managed care plan.²³ They are also less likely to have prescription drug coverage.²³

VARIATION BY RURAL REGION

Health insurance coverage varies across regions of the United States. Although proportions of uninsured individuals were highest in the West for years 2000 and 2001, this trend was reversed, with the South maintaining higher rates of uninsured individuals since the last decade (**Fig. 3**).²⁴ Southern rural residents are more likely to be uninsured compared to other regions.⁷ Moreover, uninsured individuals residing in the rural south are more likely to be in the <139 federal poverty level (FPL) category compared to their urban counterparts (**Fig. 4**).⁵

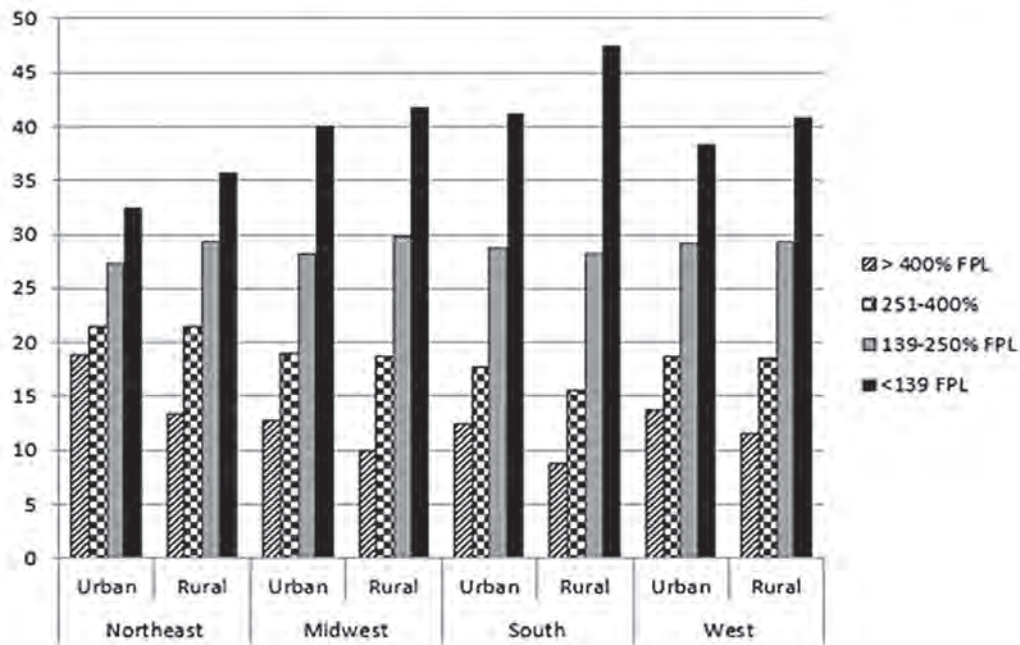
Rural residents in the Northeast, West and Midwest are twice as likely to be underinsured as their urban counterparts while rural dwellers in southern states are 1.5 times more likely to be underinsured.²³ It is estimated that with the implementation of the ACA, residents of the rural South will potentially account for the highest proportion of individuals eligible for Medicaid while rural Northeast and urban Northeast will have the least proportion of residents eligible for Medicaid expansion as a function of the differences historically in Medicaid eligibility levels.⁵ However, residents of rural Northeast and Midwest areas are more likely than rural south residents to qualify for Health Insurance Market subsidies.⁵

Figure 3: Percentage of uninsured individuals by region



Adapted from USCB Current Population Reports (2000-2012).²⁴

Figure 4: Comparison of rural and urban uninsured by income and region



Adapted from Barker et al. 2013.⁵

VARIATIONS BY RACE AND ETHNICITY

For every year between 2000 and 2012, Hispanics were about three times (2.6 percent to 3.4 percent) less likely to have insurance coverage compared to non-Hispanic whites. Additionally, Blacks were about two times (1.8 percent to 1.9 percent) less likely than non-Hispanic whites to be insured (Fig. 5).²⁴ Rural-urban variations in insurance coverage exist across all races and ethnicities.²³ However,

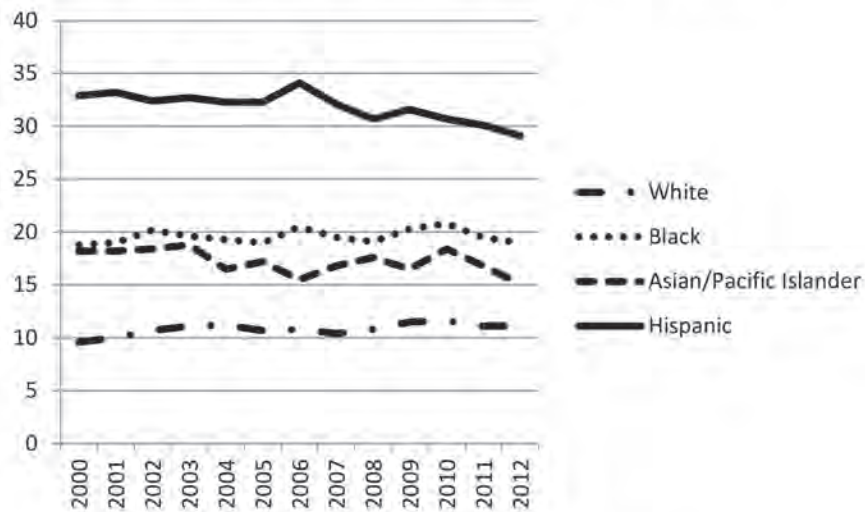
lack of health insurance coverage is higher among minorities residing in rural areas.⁷

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Health Problems Associated with Lack of Health Insurance

In general, lack of health insurance coverage is a major contributor to, or accelerator of, morbidity

Figure 5: Percentage of uninsured individuals by race



Adapted from USCB Current Population Reports (2000-2012).²⁴

and mortality.^{15, 17, 23, 25-29} These problems are more significant in rural areas due to fewer healthcare providers, longer traveling distances for care and delays in receiving health care.^{30, 31}

Lack of health insurance adversely affects access to preventative health care.^{15, 16} An Oregon study found uninsured women were less likely to be up-to-date with screening mammography or colorectal cancer screening compared to those who had insurance.¹⁶ Vyas and colleagues also reported decreased likelihood of adherence to breast cancer screening guidelines, as well as, decreased physician visits among uninsured women.³² An Arkansas study found that rural residents were less likely to have health insurance coverage for eye care compared to their urban counterparts. They were also less likely to have had a dilated eye exam within the past year compared to urban residents.³³

The negative impact of being uninsured on enrollment in chronic disease management programs has also been reported.^{15, 17, 26, 27} In a California study that analyzed the effect of insurance status on medication compliance among adults with chronic disease, Rice and colleagues found that those who did not have insurance were less likely to take medications for their conditions.¹⁷ Multiple studies have reported the adverse effect of lack of insurance on persons with diabetes.^{15, 26, 27} Reported blood sugar levels of uninsured diabetics are more likely to be elevated compared to their insured counterparts.²⁶

Using the Medical Expenditure Panel Study (MEPS), a nationally representative data, Pu and colleagues

found that lack of health insurance was associated with lower rates of obtaining A1C tests, foot exams and eye exams among Hispanics and African Americans.²⁷ Another study, also using MEPS data, found that uninsured adults residing in the rural South, were the least likely to have access to any diabetes education.¹⁵

Rural residence and lack of insurance have been found to adversely affect dental health.³⁴ Emergency department visits associated with dental caries have been found to be higher among individuals paying out of pocket compared to privately insured patients³⁵ and higher among rural residents compared to urban residents.^{35, 36} Using the National Health Interview Survey (NHIS), a nationally representative dataset, Palmer et al. found that lack of health insurance was associated with forgoing medical and dental care.²⁵ This same study also found that rural cancer survivors were less likely to receive recommended medications.²⁵ Palmer and colleagues also found that younger cancer survivors were more likely to forego all types of care while older rural cancer survivors were more likely than their urban counterparts to forego medical and dental care.²⁵

Uninsured children have been found to have higher all-cause mortality rates following hospitalization compared to their insured counterparts.³⁷ Uninsured neonates have also been found to be more likely to die following hospitalization compared to insured neonates.²⁹ These neonates were also more likely to die in rural hospitals without a children's unit.²⁹

Lack of health insurance has been associated with decreased likelihood of being treated according to recommended guidelines.^{28, 38} A study assessing difference in quality of care indicators between uninsured and insured patients found that uninsured patients were less likely to receive evidence-based care for coronary artery disease.²⁸ Coronary artery disease patients treated at community health centers with high proportion of uninsured patients were found to be less likely to be treated according to recommended guidelines compared to their counterparts.²⁸ In a study involving lung cancer patients residing in New York, New Jersey and Pennsylvania, Stizenberg et al. found that rural residents and uninsured individuals were less likely to be treated using video assisted lobectomy despite increased use of this procedure on patients residing in urban areas.³⁸

BARRIERS TO HEALTH INSURANCE

Although rural residents acknowledge that health insurance coverage is among the most important necessities of life,³¹ barriers to obtaining coverage, such as unavailability and unemployment, limit their ability to purchase coverage.⁷

Cost or lack of affordable insurance is a significant barrier to health insurance coverage,^{31, 39} limiting the ability of rural residents to obtain insurance coverage.³¹ Complexities associated with understanding the process of obtaining insurance has also been identified by as a barrier.³¹ Employers also identify cost as a barrier to providing insurance for their employees.³¹ Since the rural workforce is more likely to be older, insurance premiums are usually higher for rural employers, thus deterring them from providing health insurance as an employee benefit.⁴⁰ Other barriers cited by employers include amount of required paperwork and regular changes in regulations of insurance companies.³¹ Additionally, many states that are predominantly rural have historically refused to participate in Medicaid expansion which would significantly benefit their rural populations.²¹ Thus, although many rural residents earn just slightly more than poverty level, the politics and policies of their state have resulted in continued unavailability of affordable health insurance.

Pre-ACA, a significant barrier to obtaining insurance coverage was employment status. While insurance may still be prohibitively expensive, individuals qualifying economically are provided with federal assistance in meeting premium costs. However,

Table 1. Strategies used to improve insurance coverage.^{44, 45}

Strategies	
Increasing awareness of available insurance benefits	<ul style="list-style-type: none"> • Use of mass media such as television, radio, newspapers and printed materials to raise awareness of available programs • Increasing awareness at specific locations such as religious events, community events and events targeting low income populations • Use of social media • Phone calls • Home visits
Ensuring availability of affordable premiums	<ul style="list-style-type: none"> • Subsidizing health insurance by paying premiums for the indigent • Expanding Medicaid eligibility limits
Enrollment processes	<ul style="list-style-type: none"> • Simplifying the enrollment process • Involving community organizations and health services such as community health centers in the enrollment process • Provision of culturally relevant paperwork explaining the enrollment process • Assisting with eligibility determination and enrollment • Assisting with monitoring enrollment status and providing update • Providing options for premium payment such as monthly, quarterly or semi-annually
Improving health care delivery	<ul style="list-style-type: none"> • Expanding available services • Controlling payments of services to include a ceiling for co-payments and deductible
Improving management of insurance organizations	<ul style="list-style-type: none"> • Improving information systems • Training staff • Transparent management of programs

Adapted from Vega et al., n.d.⁴⁴ and Meng et al., 2010.⁴⁵

despite the ACA, employer-sponsored insurance still provides coverage for the majority of adults under age 65 in the United States. The United States Census Bureau reports that in 2011 and 2012, about 55.1 percent of insured individuals had all or parts of their insurance coverage through their employer; 45.1 percent of individuals only had employer based coverage.² A greater proportion of uninsured individuals residing in rural areas are unemployed

Table 2. Names of state ACA Marketplaces.⁴⁷

State	Name of ACA Marketplace
California	Covered California
Colorado	Connect for Health Colorado
Connecticut	Access Health CT
District of Columbia	D.C. Health Link
Hawaii	Hawaii Health Connector
Kentucky	Kentucky's Healthcare Connection
Maryland	Maryland Health Connection
Massachusetts	Health Connector
Minnesota	MNSure
Nevada	Nevada Health Link
New York	New York State of Health
Oregon	Cover Oregon **
Rhode Island	HealthSource RI
Vermont	Vermont Health Connect
Washington	Washington Healthplanfinder

**Oregon will be switching to a state-federal partnership exchange model by the start of the 2015 open enrollment period.⁴⁸

compared to urban residents.⁷ In addition, compared to individuals residing in urban areas, rural residents are less likely to be offered insurance coverage through their employers.⁷ This is true both for full time and part time workers.⁷ Furthermore, 69 percent of uninsured individuals in remote rural areas work for small firms compared to 59 percent in urban areas and rural areas adjacent to urban areas.⁷ Rural residents who are uninsured are more likely to be self-employed or employed by small firms which do not offer insurance coverage.⁷ Self-employed rural and remote residents are also less likely to possess health insurance coverage compared to self-employed residents of urban and less remote areas.⁷ The loss of a job or change in employment also adversely affects

insurance coverage.³⁹ Uninsured non-Hispanics are also more likely than uninsured Hispanics to be without insurance coverage as a result of change of employment or job loss.³⁹ Rural Latinos employed in the agricultural sector have been found to have greater uninsured rates than their counterparts employed in other sectors,⁴¹ indicating the potential influence of employment sectors on health insurance coverage. It has also been reported that working for a large employer does not lead to increased insurance coverage for rural Latinos likely due to lower wages compared to their urban counterparts.⁴⁰

Low-income individuals are more likely to put-off purchasing insurance coverage as a result of competing demands.³¹ Also, individuals in low income categories may still earn above state qualifying levels for Medicaid limiting their chances of obtaining health insurance coverage.^{31, 42} Among those below age 65, educational attainment has been associated with health insurance coverage; individuals with lower educational attainment have been found to be more likely to be uninsured compared to those with higher educational attainment.³⁹ Individuals with a high school diploma or higher degree are more likely than those with a less than high school degree to be uninsured as a result of loss of job or change in employment.³⁹ Children of parents with lower educational attainment are also more likely than children of parents with higher educational attainment to be uninsured.⁴³ Change in marital status or death of parent has also been found to contribute to lack of health insurance coverage.³⁹ Females are more likely than males to be uninsured as a result change in marital status or loss of a parent while males are more likely to be uninsured because of change or loss of employment.³⁹ Termination of Medicaid or other public coverage also contributes to the likelihood of being uninsured with children four times more likely to be affected than adults.³⁹

Individuals who have chronic health conditions or poor health status have been found to be at higher risk of being underinsured.²³ Ziller and colleagues found that people reporting poor or fair health were three times more likely than those in good health to be underinsured regardless of urban-rural locale.²³

KNOWN CAUSES OF THE PROBLEM

The reasons for rural populations having poorer access to insurance vary, but, for working age adults (≤ age 65), there are fewer employers and fewer full-time jobs and a higher percentage of seasonal

and agricultural jobs. Moreover, rural employers are more likely to be smaller (≤ 50), and 36 percent of all rural employers do not offer health insurance⁷. Rural residents are also less likely to have a college degree, a fact which is associated with lower wage jobs. Even the complexity of enrolling in an insurance plans has been identified as a cause of lower insurance coverage rates among vulnerable (rural) populations.^{31, 44}

PROPOSED SOLUTIONS OR INTERVENTIONS

To ensure that the estimated 7.8 million rural residents who are able to obtain health insurance coverage through the ACA benefit from this program, efforts (public and private) have been made to raise awareness of the benefits of the program and reduce bureaucracies that might deter enrollment among rural residents. Some strategies employed to increase the number of insured individuals in different populations, not exclusively rural, are presented in **Table 1**.

COMMUNITY MODELS KNOWN TO WORK

Many resourceful community insurance enrollment programs were implemented with the ACA. These can be accessed at the Office of Rural Health Policy's Rural Assistance Center.⁴⁶

The ACA Section 1311(i) requires that Health Insurance Exchanges (renamed Marketplace) establish enrollment and referral programs that facilitate the needs of rural residents. Many states and community programs have established programs to assist the uninsured with registering through their Health Insurance Marketplace. Currently 14 states and the District of Columbia have established Marketplaces for the ACA (**Table 2**).

The Federal Government operates the Marketplace in the remaining states.

Funding provided under the ACA, has enabled FQHCs hire patient navigators to help with outreach and enrollment. This effort grew out of the successful efforts of earlier programs, e.g., FQHC-sponsored Patient Centered Medical Homes that have reached out to the uninsured in their communities and have assisted with enrollment in CHIP and Medicaid. Examples of such programs include the Outreach Eligibility Workers: Connecting Families in Connecticut and the

Insuring Hard to Reach Populations: Texas Migrant Care Network.⁴⁹

SUMMARY AND CONCLUSIONS

Rural populations continue to face significant barriers and challenges in accessing affordable health insurance. While the ACA may change the trajectory of access issues, rural populations in the 29 states opting not to expand Medicaid will continue to face significant financial barriers and those with incomes above >138 percent FPL may continue to have fewer affordable insurance options from which to choose. Latinos and African Americans continue to be the most affected by the problem of lack of access. For undocumented populations the problems of being uninsured will continue to be a significant challenge until immigration laws are reformed.

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Suggested Chapter Citation:

Bolin JN, Bellamy G, Ferdinand AO, Ojinnaka C. Rural Access to Quality Health Insurance. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:1-11.

ACCESS TO QUALITY HEALTH SERVICES IN RURAL AREAS – PRIMARY CARE: A LITERATURE REVIEW

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SCOPE OF THE PROBLEM

- The Healthy People 2010 target for increased access to primary care was not met. In fact, there was a decline in the proportion of persons with a usual primary care provider over the last decade.
- A recent survey of state and local rural health leaders revealed that access to quality health services remains the leading rural health priority for 2020, as it was for 2010.
- Many survey respondents highlighted the need for adequate access to primary and preventive services.
- In 2008, rural counties had, on average, 62 primary care physicians for every 100,000 residents compared to 80 primary care physicians for every 100,000 residents in urban areas.
- Approximately 65 percent of primary care health professional shortage areas are in rural counties.
- It remains a challenge to attract health care professionals to rural areas. Rural community health centers experienced higher proportions of unfilled positions than their urban counterparts.

According to the American Academy of Family Physicians, primary care is “that care that is provided by [practitioners] specifically trained for and skilled in comprehensive first contact and continuing care for persons with any undiagnosed sign, symptom or health concern...not limited by problem origin... organ system, or diagnosis.”¹ Primary care is often provided and managed by a physician, who then collaborates, consults with, or refers to other health professionals as she or he deems appropriate.¹ There are four main features of primary care: (1) first-contact access, (2) long-term person-focused care, (3) comprehensive care for most health needs, and (4) coordinated care when health care services must be obtained elsewhere.² According to Starfield and colleagues, the quality of primary care is often assessed according to how well these four features are achieved.² Based on the aforementioned definition of primary care and its features, primary care is often thought to be the first point of contact with the health care system. Moreover, access to primary care is especially important because the services provided are instrumental in the early detection and treatment of diseases, thereby reducing mortality and morbidity.³

An estimated 23.2 percent of individuals in the United States do not have a usual source of primary care.⁴ The proportion of individuals without a usual source of primary care is higher in rural areas relative to urban areas. According to Starfield and colleagues, having a primary care physician improves health outcomes by providing greater access to needed services, better quality of care, greater focus on prevention, early management of health problems, and reductions in unnecessary specialist care.²

This chapter will address the following sub-objectives associated with the Healthy People goal, “to improve access to comprehensive, quality health care services:”

- **AHS-3** Increase the proportion of persons with a usual primary care provider
- **AHS-4.1** Increase the number of practicing medical doctors
- **AHS-4.3** Increase the number of practicing physician assistants
- **AHS-5.1** Increase the proportion of persons of all ages who have a specific source of ongoing care

- **AHS-5.2** Increase the proportion of children and youth aged 17 years and under who have a specific source of ongoing care
- **AHS 6.2** Reduce the proportion of persons who are unable to obtain or delay in obtaining necessary medical care

RURAL HEALTHY PEOPLE 2020 SURVEY OUTCOMES

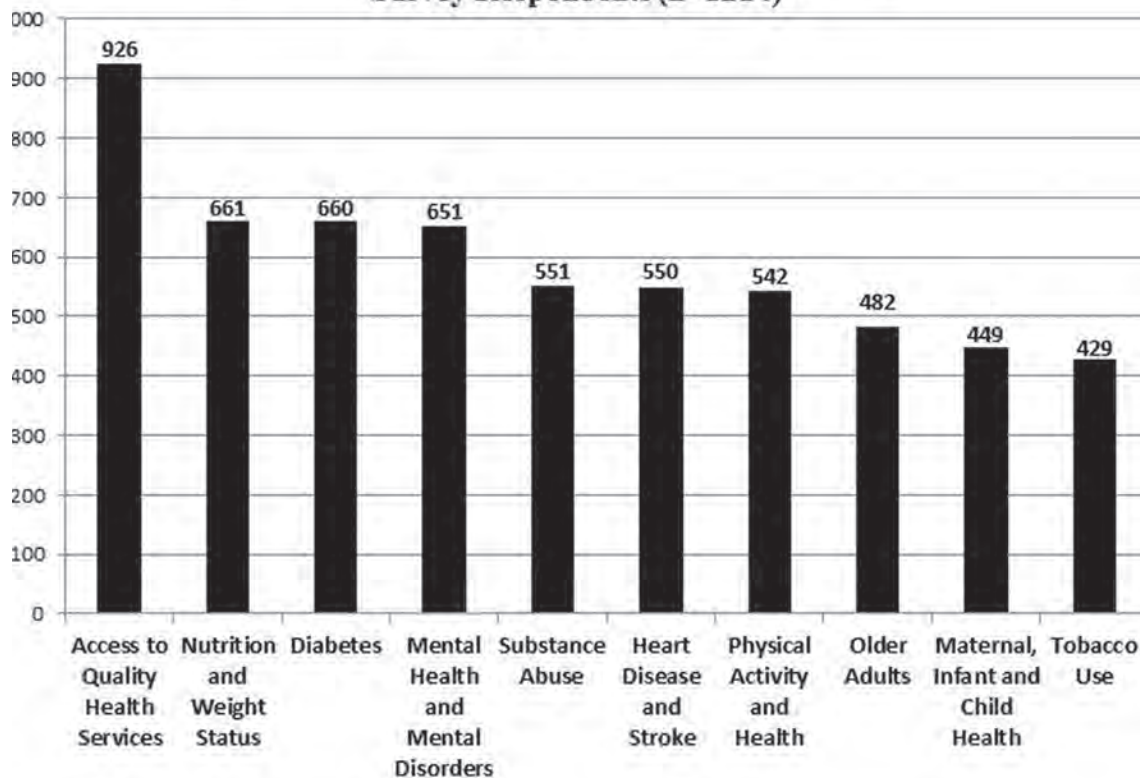
The Rural Healthy People 2020 (RHP2020) national survey of priorities found that access to quality health services remains the leading health priority for rural America (**Fig. 1**). This finding held constant across geographical regions. “Access is key,” said several respondents. In addition to comments about the affordability of health care and the high proportion of residents lacking health insurance in rural areas, there were several comments highlighting the need for access to primary care services. Many respondents highlighted problems of retention of quality health care providers in rural areas. Others mentioned the significant distances between rural dwellers and primary care services, and the transportation issues often involved in traveling those distances.

PREVALENCE AND DISPARITIES IN RURAL AREAS

There has been a decrease in the proportion of persons who have a usual primary care provider over the last decade. More specifically, between 2000 and 2010, there was a 1.8 percent decline in the number of persons who reported having a usual primary care provider.⁵ This is concerning, especially given the impact of limited access to primary care on morbidity and mortality. Individuals without access to primary care tend to seek care at later stages of disease progression. They often seek care in emergency departments,^{6,7} which is more costly than a primary care visit.⁸ They are admitted to the hospital for ambulatory care sensitive conditions, i.e., conditions that could have been prevented had care been sought earlier, and they have higher rates of mortality.²

Individuals residing in rural areas have significantly less access to health care – primary care included – than their urban counterparts. When considering disparities in access to primary care, it is helpful to first examine the primary care workforce in the U.S. The healthcare workforce in the U.S. is geographically maldistributed. While approximately 20 percent of the U.S. population lives in rural

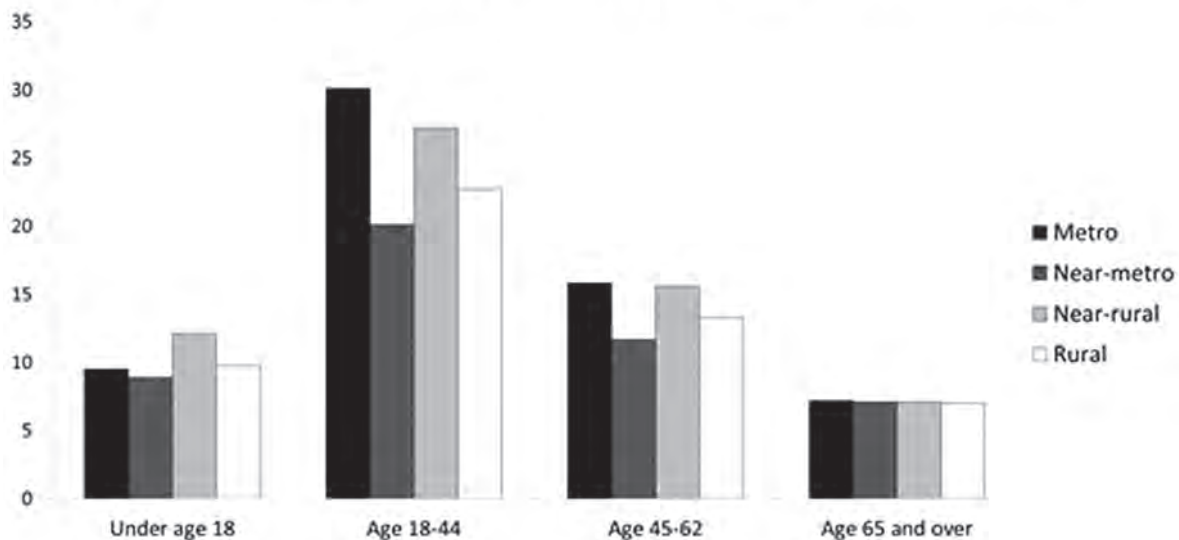
Figure 1. Top Ten Priorities for Rural Healthy People 2020 Survey Respondents (n=1214)⁶⁹



areas, only 11 percent of physicians practice in those areas.⁹ This helps explain why approximately 65 percent of health professional shortage areas (HPSAs) are in rural areas.¹⁰ Doescher and colleagues identified areas with persistent primary care health professional shortages and examined the degree to which these persistent shortages are associated with deficiencies in access to health services.¹¹ They found that the supply of primary care physicians was

as a result of the Affordable Care Act of 2009.¹⁸ If the HPSA ratio of 3500:1 is used as a benchmark, today's rural areas require an additional 12,635 practitioners.¹⁹ Even with additional providers, disparities in access to primary care in rural areas are expected to worsen, with longer wait times due to existing providers closing their practices to new patients.

Figure 2. Percent without a Usual Source of Care by Geographic Location



Source: AHRQ 2004.

lowest in rural counties with a whole-county HPSA designation.¹¹

Consequently, many residents in rural areas do not have a usual source of care (**Fig. 2**), and even when they do report having a usual source of care, researchers have found that they report fewer visits than their non-rural counterparts.¹² Previous research has also noted that those without a usual source of care face higher costs when they do seek medical care,¹³ and experience poorer health outcomes.¹⁴ Moreover, researchers have shown that the lack of a usual source of care is also associated with significant delays in obtaining urgent care, tests, and treatment.^{15, 16}

Based on the results of a 2012 study designed to look at projected primary care provider needs, it is estimated that an additional 52,000 providers will be needed to care for Americans, rural and urban, by 2025.¹⁷ This is due to a combination of population growth, aging, and a large group of newly insured

VARIATION BY RURAL REGION

There is reason to believe that access to care may vary by rural region. Researchers have posited that access to care may differ between residents of rural counties depending on their proximity to urban areas.^{13, 20} According to the UnitedHealth Group, there are three types of rural areas: areas adjacent to urban areas, regional population centers not bordering larger urban areas, and geographically remote areas.²¹ Other researchers have measured levels of rurality in an even more fine-tuned manner by describing some rural areas as adjacent to small or large metropolitan areas.²² According to a 2009 report by the Center for Studying Health System Change, physicians are overrepresented in the Northeastern part of the country and in major metropolitan areas, and underrepresented in the South.²³ Looking specifically at Metropolitan Statistical Areas (MSAs), physicians are over-represented in large MSAs, slightly over-represented

in small MSAs, and underrepresented in non-MSAs (i.e., rural areas). There are many definitions of rural.²⁴ For most programmatic purposes, the definition most often used is that developed by the Office of Budget and Management, i.e., metropolitan, micropolitan, and non-metropolitan. Studies paint a mixed picture with respect to whether these variations in access to care by degree of rurality exist.²⁴ For example, Reschovsky and Staiti found no consistent pattern in access to primary care indicators, suggesting that access is better or worse in nonadjacent counties than in adjacent counties.¹³

Conversely, in examining hospitalizations for ambulatory care-sensitive conditions (ACSH),²⁵ which is a widely-used indicator of access to quality primary care, Laditka and colleagues found that ACSH rates increased with increasing levels of rurality.²² Moreover, Zhang and colleagues, in examining the relationship between rural health clinics (RHC) and ACSHs, found that elderly patients residing in HPSAs in rural Nebraska in which there was an RHC were significantly less likely to experience hospitalization due to ACSHs.²⁶ Thus, their findings suggest that access to primary care varies by rural region.

VARIATIONS BY RACE AND ETHNICITY

Previous research has suggested that there are variations in access to primary care by race and ethnicity.²⁷ Haas and colleagues found that Blacks and Latinos experience difficulties in obtaining health care in that they faced delays in obtaining care or did not receive the care that they thought they needed.²⁷ Similarly, the Centers for Disease Control and Prevention (CDC), in examining data from the Behavioral Risk Factor Surveillance System (BRFSS) surveys, reported that Hispanics were significantly less likely to have a regular health

care provider.²⁸ Additionally, the CDC reported that Hispanics were significantly more likely to report having a medical need in the last year, but the inability to obtain it.²⁸ In their study of health care utilization among residents of a rural region in North Carolina, Arcury and colleagues found that non-whites had significantly fewer health care visits than whites.²⁹ Moreover, previous research has shown that a higher percent of rural Blacks live in a county without a hospital relative to rural whites.³⁰ Given the fact that rural communities typically have high proportions of minority residents such as Native Americans, Blacks and Hispanics,³¹ and that disparities in access to care are prevalent in these areas, these disparities have profound implications for these racial and ethnic groups.

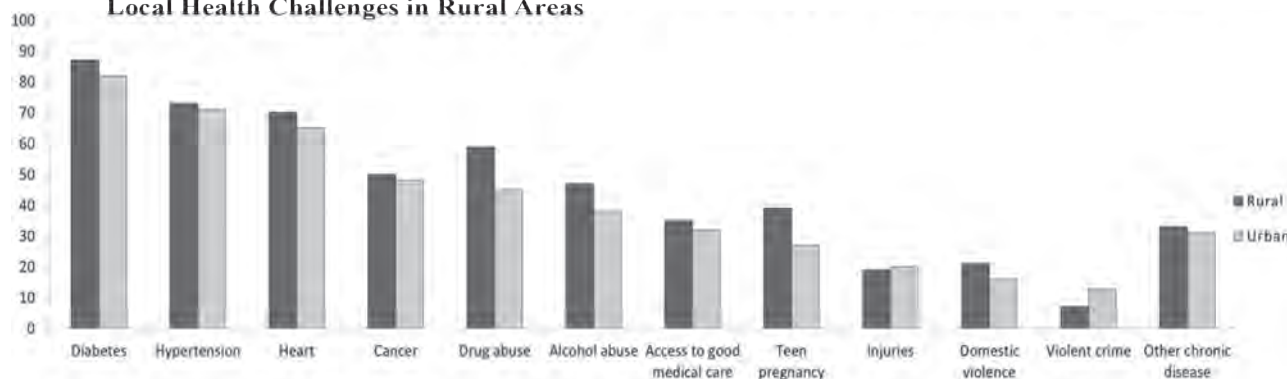
IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Limited access to primary care in rural areas has been associated with poor health outcomes for residents in these areas (Fig. 3). Some of these poor health outcomes include diabetes, cardiovascular disease, and cancer, which are both chronic and costly.³¹ Not only does poor access to care present higher health care costs and poorer quality of life implications for residents with chronic diseases in rural areas, but it also has implications for preventive screening and early detection of diseases among rural residents. Many of the diseases that disproportionately affect rural residents, and are exacerbated by all of the problems caused by poor access to care, will be discussed elsewhere in this volume.

BARRIERS

Distance is a known barrier to access to primary healthcare services.³² However, the degree to which

Figure 3. Percent of Primary Care Physicians Identifying Chronic Conditions as the Greatest Local Health Challenges in Rural Areas



Source: Modernizing Rural Health Care: Coverage, quality, and innovation. United Health Center for Health Reform & Modernization, Working Paper 6, July 2011.

distance is a barrier is not well described in the literature. Buzza and colleagues conducted a mixed-methods study to assess the extent to which distance plays a part in access to primary care.³² Distance was identified as the most important barrier to accessing health care for rural veterans by patients, providers and staff. Analysis of in-depth interviews revealed specific examples of barriers to care such as long travel for diagnostic services, routine specialty care, and emergency services. Patient factors compounding the impact of these barriers on rural veterans were health status, functional impairment, travel cost, and work and/or family obligations. Transportation challenges in reaching primary health care providers among rural residents have also been identified.³³⁻³⁵ In a study on rural HIV-infected women's access to medical care in California, findings suggested that being unemployed and having 30-90 minutes worth of travel time were associated with transportation challenges.³⁴

In addition to long distances and transportation challenges, Hiratsuka and colleagues reported that rural patients in their study cited concerns about finding adequate, affordable, housing and reliable vehicle transportation as well as becoming oriented to unfamiliar environments when seeking care.³⁶ Additionally, from the perspective of the providers studied by Hiratsuka and colleagues, it was also noted that rising travel costs and lost clinic time when traveling to remote sites were barriers to the provision of primary care.³⁶

Immigrants make up a rapidly growing group in the United States. In 2013, it was estimated that over 40 million foreign-born persons resided in the United States.³⁷ Moreover, according to the U.S. Census Bureau, approximately 5.1 percent of non-naturalized immigrants live in rural areas.³⁸ This equates to over 2 million immigrants residing in rural areas. It has been noted that immigrants are often classified as a vulnerable population due to social and political marginalization, as well as a lack of societal resources.³⁹ These vulnerability factors are even more pronounced in rural areas. For example, previous research has noted a substantial part of the growth of the Mexican immigrant population has taken place in rural areas, and the mechanisms to provide quality care for this particular group have been lacking.^{40,41} In their study that investigated disparities in access to care between non-Latino whites and Latinos of Mexican origin in metropolitan and non-metropolitan areas, Berdahl and colleagues found that compared to Mexican Latinos in metropolitan areas, Mexican

Latinos in non-metropolitan areas had a substantial disadvantage in having a usual source of care.⁴¹ Access barriers identified among immigrant groups included language barriers, and lack of knowledge about the U.S. health care system.⁴² Additionally, among undocumented immigrants, fear of detection by immigration authorities also limited immigrants' abilities to effectively access health services.⁴²

Access to primary care services for rural pediatric patients continues to be limited and fosters unmet health care needs. While several studies have suggested etiology for this disparity, work needs to be completed by region and across the United States to further investigate the access to rural pediatric/primary care. This access limitation may be associated with race/ethnicity, household income, parental employment, parental and child's insurance, State Medicaid and Children's Health Insurance Program (CHIP) policies, and special needs of vulnerable populations or children with chronic medical conditions, such as obesity and diabetes. Barriers to care continue to exist around travel distance, availability of providers, and "safety net clinics."⁴³ Continued expansion of children's health insurance, and increasing the pool of providers with pediatric and adolescent expertise to practice in rural areas, should be coupled with policy interventions to ensure availability of health care services for children in rural areas.

PROPOSED SOLUTIONS OR INTERVENTIONS

Patient-Centered Medical Homes

Patient-centered medical homes (PCMHs) are thought to be among the most promising approaches to facilitating better access to care and receiving higher-quality primary care in general,⁴⁴ and even more so among rural residents.⁴⁵ Though there are several conceptualizations of PCMH models, there are certain shared concepts among the models. For example, there is general consensus that in a PCMH, each patient should have close contact with a clinician, whether a physician, nurse practitioner (NP), or physician assistant (PA). The clinician is responsible for the patient's continued care and for referring the patient to specialists. Another key and agreed-upon component of PCMHs is the extensive use of electronic medical records to monitor and coordinate care. These components of PCMHs are believed to significantly improve the provision of primary clinical services, especially in rural patients with chronic diseases.⁴⁵ Additionally, it is believed

that the PCMH will facilitate both the provision and the seeking of the right care at the right place and time, lessen use of the emergency room or hospital for primary care, and reduce the number of duplicate labs, tests, or procedures.⁴⁶

Because primary care practices vary in size and resources depending on their location, there has been some concern about whether rural clinical practices would have the wherewithal to become PCMHs. Ullrich and colleagues conducted a study to evaluate the readiness of urban and rural primary care practices to provide PCMH services.⁴⁷ They found that, generally, a significant majority of primary care practices were not ready to offer the full gamut of PCMH services, regardless of urban or rural location.⁴⁷ Nevertheless, they found that rural practices were less likely than urban practices to use electronic data in their diagnosis procedures and clinical performance measures. Moreover, small and/or solo physician practices, such as those prevalent in many rural communities, have been slower to adopt the electronic health record.⁴⁸ This difference may have important implications for PCMH endeavors in rural areas, as data are necessary for effective coordination of care. Despite limited use of data to support clinical procedures, larger rural primary practices were more likely to actively support patient self-management.

Rural Health Clinics

Rural Health Clinics (RHCs) were created under legislation, Public Law 95-210, which was passed in 1977 to help improve access to primary care in rural areas. The RHC is a Medicare and Medicaid reimbursement designation for qualified primary care practices. Today there are over 3,900 certified sites located across the country, making the RHCs an important piece of the rural health care infrastructure and safety net. A requirement of the 1977 law was that a non-physician provider have part-time employment at the .50 full-time equivalent level. The growth of RHCs was constrained initially due to state scope-of-practice laws, which limited what NPs and PAs were allowed to do without direct supervision of a physician.

Rural Health Clinics can be private/for-profit or non-profit. Moreover RHCs, can be provider-based or independent. However, the majority of RHCs are provider-based, i.e., they operate as part of a hospital-owned system or other health care organization. Rural Health Clinics receive cost-based reimbursement, subject to tests of reasonableness,

for primary care services provided to Medicare beneficiaries.⁴⁹

Non-Physician Primary Care Providers (Physician Assistants and Nurse Practitioners)

Given difficulties in recruiting and retaining physicians in rural areas,⁵⁰ reliance on physicians to fill primary care needs in these areas is not always feasible. Today, many more patients are being seen by primary care providers who are nurse practitioners and physician assistants.⁵¹ This is due to the critical shortage of primary care physicians in the U.S. A similar shortage of healthcare professionals during the 1960s led to the creation of Family Medicine Residency Programs.⁵² At that time, it was theorized that even the new family medicine programs would not be enough to close the gap. In 1961, Dr. Charles Hudson addressed the American Medical Association to advocate for starting a “Physician Assistant” (PA) program.⁵² This was widely accepted, and the first program was started at Duke University in 1965.⁵² ⁵³ At the profession’s inception, many of the PAs were Vietnam era corpsmen who had substantial “battlefield” experience in medicine, but little formal training.⁵² In 2011, PAs accounted for seven percent of the primary care practitioners in the country.⁵⁴ There are 187 accredited programs in the U.S. Most programs award a master’s degree upon completion, and the average time to complete the program is just over two years.⁵⁵

Because of the ongoing primary care shortage, some new medical schools have been designed with a specific mission to produce primary care physicians.⁵⁶ Similarly, the thought has arisen that by specifically targeting students who are from, or have strong ties to rural areas, PA programs are more likely to produce graduates who will practice in rural areas. Another strategy has been to train PAs in rural areas to help them bond with their community. The hope is that they will stay in the area of training or move to a similar rural area upon graduation.⁵⁷

Nurse practitioners are registered nurses with advanced training and education. Many of them practice in primary care settings. According to the American Academy of Nurse Practitioners survey report, the most widely held certification is the family nurse practitioner, reported by nearly half of the NP workforce.⁵⁸ Also according to the American Academy of Nurse Practitioners, 87.2 percent of NPs are trained in primary care (Table 1). Additionally, 75.6 percent of NPs practice in at least one primary care site.⁵⁸ Moreover, 76 percent of the NP workforce

Table 1. Nurse practitioner focus areas.

Nurse Practitioner (NP) Focus	Percent of NPs
Acute Care	6.3
Adult*	18.9
Family*	48.9
Gerontological*	3.0
Neonatal	2.1
Oncology	1.0
Pediatric*	8.3
Psych/Mental Health	3.2
Women's Health*	8.1

* indicates primary care focus

Adapted from American Association of Nurse Practitioners Fact Sheet.⁵⁸

maintain certification in what is generally considered a primary care specialty (e.g., family, pediatric, or gerontology).⁵⁹

Reviews of studies done early in the current decade found that as many as 50 percent of PAs provide primary care services.⁶⁰ The same studies showed that PAs and Advanced Registered Nurse Practitioners (ARNPs) are more likely than their physician counterparts to provide services to underserved patients in rural areas.⁶⁰ However, though many rural areas have been successful in recruiting PAs, their retention has been difficult due to perceived lack of support, benefits, time off, or pay increases.⁶¹

A number of states are adopting legislation easing licensing restrictions that would increase the autonomy of PAs along with their ARNP counterparts. This would allow them to practice without direct physician oversight. The aim is to increase the number of independent providers that are available to care for patients. This would also allow these providers to extend care into areas where they are the only health care provider. There are mixed opinions in communities where physician extenders are used.⁶¹ Overall most communities show satisfaction with their PAs, especially those where the PAs are very involved in community activities.⁶¹ This would seem to bolster the notion that by increasing their access to practice independently, PAs could effect significant change in rural and underserved communities in critical need.

A survey conducted by the National Conference of State Legislatures (NCSL) found that 41 percent of rural Medicare beneficiaries saw a physician assistant or nurse practitioner for all (17 percent) or some (24 percent) of their primary care in 2012. Yet despite the growing need for primary care as a function of health reform and the growing population, the scope-of-practice debate still continues. In the 2012, the NCSL tracked 827 bills from 29 states aimed at redefining non-physician providers' scope of practice. One hundred and fifty-four of them were enacted in 24 states and the District of Columbia.⁶²

A recent study conducted by the Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI) Rural Health Research Center examined the geographic distribution of advanced nurse practitioners.⁶³ The authors found that there were 2.8 rural and 3.6 urban NPs per 10,000 population. Moreover, just three states had either the same or more rural NPs than urban NPs per capita.⁶³ The choice of rural location was marginally related to states in which practice autonomy was greatest, compared to those states requiring direct supervision. Likelihood of rural practice was also related to gender, with more rural NPs being male.

The Role of Technology in Improving Access to Health Care –Telemedicine

The practice of medicine and healthcare in rural areas has changed drastically in its scope, partially due to the technological tool of telemedicine. Telemedicine is the use of electronic communication to transmit medical information from one site to another in the delivery of clinical services.⁶⁴ Various mechanisms ranging from an expedient exchange of health records to voice consultation or voice and video, has narrowed the gap in access to care for patients in rural areas by removing the geographical deterrent of distance.

The proximity of specialists and services via teleconferencing, as well as the expanding network of telemedicine sites, helps connect rural clinics to academic centers or health systems. Telemedicine allows rural primary care physicians to expand their scope of practice by obtaining specialty consults in real time. Telemedicine also enables urban-based specialists to expand their patient base by caring for patients in rural or underserved areas.

Evidence suggests that telemedicine provides socioeconomic benefits to patients, families, health practitioners, and the health system, including

enhanced patient-provider communication and educational opportunities.⁶⁵ While studying the feasibility of telemedicine to aid in a team approach to diabetes care for rural patients, and the effect on patient outcomes when compared to in-person visits, Ciemins and colleagues found few differences existed in preventive care services, vascular risk factor control, patient satisfaction, and patient self-management.⁶⁶

Adoption of telemedicine has had its barriers. Training is still rare and frequently on demand. Physicians are required to be licensed in each state where they treat patients remotely or in person. Questions and concerns about security, privacy, and fraud have been expressed and consequently technology continues to evolve to address these concerns. Medicare has been paying for telemedicine services since 2000, while 43 states and the District of Columbia allow some form of Medicaid reimbursement for telemedicine services. However, debates continue over the broad range of reimbursement, such as whether or not the specialist or the local provider should be reimbursed for their services.⁶²

COMMUNITY MODELS KNOWN TO WORK

Over the last decade, there have been various task forces, work groups, and advisory groups that have been actively thinking about and implementing novel models for improving access to primary care in rural areas. In a report by the Office of Rural Health & Primary Care at the Minnesota Department of Health, some alternative models of health care delivery were described.⁶⁷ One health system – the *Sanford-Canby Health System* – makes use of health information technology to connect acute and post-acute care by monitoring rural patients who require chronic care management.⁶⁷ In this model, home care nurses and pharmacists monitor patients and check in with primary care providers to coordinate care. Despite inadequate reimbursement for all associated costs this model demonstrates success in using technology in rural areas.⁶⁷

Another example provided in the aforementioned report is the *Todd-Wadena Health Connections* collaborative.⁶⁷ Coalition partners include clinics, hospitals, public health organizations, and senior care facilities. This mission of this coalition is to provide collaboration and communication with a focus on community health. Together, this collaborative produces unified messages about public health

awareness and shares scarce resources such as maternal and child health education, immunization outreach, and translation services.⁶⁷ In so doing, this collaborative expands access to essential primary care services.

Pipeline projects have been a major focus of efforts to increase the numbers of physicians and mid-level practitioners by recruiting rural students with aptitude and interest in science early in their academic career, i.e., middle and high school. One current example is the Rural Assistance Center's *Forward New Mexico Pathways to Health Careers* program.⁶⁸ The Pathways project addresses the chronic shortage of primary care providers in four southwestern New Mexico counties using a comprehensive workforce pipeline program. It includes programming for middle and high school students, undergraduates, medical students, graduate students, and residents. Formal affiliations with local schools and providers for experiential learning have been established. The program reaches over 2,000 school-aged students throughout the service areas, hosts over 70 rural rotation experiences annually, and in May 2013 received accreditation for a new family medicine residency program. The Pathways project builds on the experiences of decades worth of Health Careers Opportunity Program grantees.

SUMMARY AND CONCLUSIONS

Access to primary care in rural areas is often insufficient. Not only was the Healthy People 2010 target for increased access to primary care not met, but there was also a general decline in the proportion of individuals with a usual primary care provider in the last decade. This trend is especially concerning given recent health reform in the U.S., which is now expanding the number of insured persons who would, in theory, have the financial wherewithal to establish a usual source of primary care. This concern was echoed in the recent RHP2020 survey of state and local rural health leaders, who overwhelmingly cited access to health services as the leading health-related priority for rural America. Recruitment and retention of providers in rural areas has continued to be challenging in the last decade, and many rural counties face significant shortages in primary health care providers as a result. Research has noted that racial and ethnic minorities make up high proportions of rural residents. Thus, these groups face significant challenges in obtaining quality care. Future efforts to address access to care among racial and ethnic minorities should entail cultural and language-sensitive approaches to providing care. Access

to care for children in rural areas is also limited. While the challenges in access to care in rural areas have increased, there are policies, interventions, and programs that have remedial promise. Patient-centered medical homes can facilitate better access to primary care in rural areas. Moreover, non-physician primary care providers, such as NPs and PAs have been successfully providing primary care to rural residents. Furthermore, changes in scope-of-practice, telemedicine, and pipeline initiatives also hold promise in expanding access to care in rural areas.

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Suggested Chapter Citation:

Ferdinand AO, Johnson L, Brown Speights JS, et al. Access to Quality Health Services in Rural Areas – Primary Care: A Literature Review. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:13-24.

RURAL ACCESS TO QUALITY EMERGENCY SERVICES

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SCOPE OF THE PROBLEM

- Access to quality health services, including emergency medical services (EMS), continues to be the top rural health priority as identified by respondents to the Rural Healthy People 2020 (RHP2020) survey.¹
- Response delay and transport times by emergency department (ED) personnel to a hospital are significantly longer in rural areas compared to urban areas.²
- Nearly 75 percent of rural residents live more than 30 minutes from emergency services.³
- The rural mortality rate for stroke is ten percent,⁴ and the 45.7 percent mortality rate for motor vehicle accidents (MVAs) in rural counties is much higher compared to the 21 percent MVA mortality rate for urban residents.⁵
- Rural Latinos are particularly at risk for death due to delayed acute stroke treatment with an average 60 minute drive time to emergency care.⁴
- Seventy-five percent of rural emergency responders are volunteers compared to just 7.5 percent of urban emergency responders.⁶
- The barriers and challenges faced by rural emergency responders are significant and include poor phone service, “dead zones,” and significantly longer transport times to and from rural clinics to appropriate ED care.⁷
- Rural children are particularly at risk for disability and death due to lack of access to quality pediatric emergency medical services.⁸
- There was no improvement made in access to emergency care services for rural residents between 2000 and 2010.¹⁰
- Critical Access Hospitals (CAHs), in particular, face greater challenges as a result of federal laws requiring at least a 35-mile distance to a non-CAH hospital, and receive lower reimbursement rates from Medicare, which fluctuate.¹¹ Inability to predict CAH funding has made it challenging for rural EMS to provide infrastructure support or to appropriately furnish EMS trucks to respond to emergencies, train needed EMS workers, or even retain and pay staff.¹²
- Rural EDs are more likely to have only one board-certified emergency physician on staff compared to other EDs. Most rural EDs cannot physically staff the ED with physicians at all times.⁹
- Only 33 percent of physicians working in rural emergency departments are residency-trained or board-certified in emergency medicine, while 72 percent of urban ED physicians specialize in emergency medicine.¹³

Rural populations continue to face significant delays, or have difficulty, in accessing emergency medical care. Poor rural populations face more than twice the delay in accessing emergency medical care compared to high-income populations. If a rural person is disabled, he or she is at least three times

more likely to face a delay in accessing emergency medical care compared to a nondisabled person.¹⁰ Furthermore, rural populations are more likely not to have access to appropriate specialty care (e.g., specialty surgeons or focused internists) once entering a rural emergency room. These disparities

are especially significant among rural minority ethnic groups, where the rate of delay in accessing emergency medical care is about three times longer than for the non-Hispanic white population.¹⁰

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

Healthy People 2020 (HP2020) goals reflect the ongoing importance that Americans place on access to emergency medical services. Access to ED services continues as an important goal for the next decade and represents a critical component in basic health care services (HP2020 Goals and Objectives). All EMS services should include both basic and advanced life support. Availability of adequate emergency medical services is critical for addressing the healthcare needs of the rural population.

Healthy People 2020 has established 11 goals related to access to emergency medical services that are applicable to rural populations:

- **AHS-6.2** Reduce the proportion of persons who are unable to obtain or experience a delay in obtaining necessary medical care
- **AHS-8 (Developmental)** Increase the proportion of persons who have access to rapidly responding pre-hospital emergency medical services
- **AHS-8.1 (Developmental)** Increase the proportion of persons who are covered by basic life support
- **AHS-8.2 (Developmental)** Increase the proportion of persons who are covered by advanced life support
- **AHS-9.1 (Developmental)** Reduce the proportion of all hospital emergency department visits in which the wait time to see an emergency department clinician exceeds the recommended timeframe
- **AHS-9.2 through 9.6 (Developmental)** Reduce the proportion of Level 1 immediate (9.2), Level 2 emergent (9.3), Level 3 urgent (9.4), Level 4 semi-urgent (9.5), and Level 5 non-urgent (9.6) hospital emergency department visits in which the wait time to see an emergency department clinician exceeds the recommended timeframe

PREVALENCE AND DISPARITIES IN RURAL AREAS

While many rural hospitals offer emergency medical services, the availability of trained providers and specialty services tailored to emergency care needs are more limited in rural areas of the U.S. Transportation to needed services in emergency situations is of particular concern in rural areas. Lack of transportation may include pre-hospital services, often described as first-responders or EMS personnel. Persons who are in MVAs or injured in agricultural accidents may not receive trauma support for 30

“NEARLY 75 PERCENT OF RURAL RESIDENTS LIVE MORE THAN 30 MINUTES FROM EMERGENCY SERVICES.”³

minutes or even an hour. In contrast, persons in urban or suburban areas usually receive EMS support with trauma expertise within 15 minutes.^{14,15} Access to quality health

services, including EMS, continues to be ranked as the top rural health priority by respondents to the RHP2020 survey.¹ For example, emergency response and transport times by qualified ED personnel to any hospital are significantly longer than in urban areas. Moreover, nearly 75 percent of rural residents live more than 30 minutes from *any* emergency services.³

Thus, it is not surprising that rural mortality rates for response-time sensitive emergencies such as stroke are at ten percent, compared to seven percent mortality rates in urban areas,¹⁵ a difference that likely captures the longer distances and travel times for accessing medical services in rural areas.⁴ Similarly, rural residents experience a 45.7 percent mortality rate for MVAs when an accident occurs in rural counties, compared to a 21 percent MVA mortality rate for urban residents.⁵

The pre-hospital death rate from motor vehicle crashes is significantly higher in rural areas; however, the in-hospital death rate from motor vehicle crashes is similar among rural, urban, and suburban areas.^{5,16} This distinction could be attributed to longer transport times from the scene of the crash to appropriate acute care for rural residents. Moreover, rural crashes are significantly more likely to be a one-vehicle crash.¹⁶

Rural EMS companies are more reliant on volunteer staff as volunteers make up nearly 75 percent of rural personnel, while urban EMS companies only staff 7.5

percent with volunteers.⁶ Across all levels of EMS personnel (i.e., Basic, Intermediate, and Paramedic) differences in the scope of pre-hospital activities were reported between rural and urban EMS staff of the same level. Rural EMS staff reported a significantly broader scope of authorized activities than urban EMS; however, this difference could be due to significantly longer transport times to hospitals in rural areas.⁶

“SEVENTY-FIVE PERCENT OF RURAL EMERGENCY RESPONDERS ARE VOLUNTEERS, COMPARED TO JUST 7.5 PERCENT OF URBAN EMERGENCY RESPONDERS.”⁶

Time sensitive conditions, such as stroke, trauma, or ruptured abdominal aortic aneurysms, add an extra challenge in rural areas as patients may require transport to specialists after they have been transported to a rural hospital.¹⁷⁻¹⁹ Many designated stroke centers are located in or near urban areas, and rural counties are significantly more likely to not have a stroke center.²⁰ Timely access to appropriate care can be a major influence on morbidity and mortality from time sensitive conditions.

Children (and their parents) are more likely to utilize emergency departments for non-emergency conditions and rural adolescent EMS patients experience higher rates of morbidity and mortality than urban child patients.²¹⁻²³ Additionally, higher rates of medication errors have been reported for rural, adolescent emergency department patients as compared to similar urban patients.^{22,23}

VARIATION BY RURAL REGION

Limited data is available but available evidence from the literature shows that increased driving time to the nearest hospital (in minutes) is associated with reduced ED use. Additionally where more primary care providers are available in a community the fewer ED visits per year.²⁴

VARIATION BY RACE AND ETHNICITY

In both rural and urban settings, access to emergency care, such as a hospital with an emergency room or a trauma center, has been found to be significantly less in communities with larger populations of Hispanics or African Americans, as measured by required travel time to care.^{14,26} Minority races and

ethnicities may underutilize EMS, as only one-third of EMS patients were of minority race or ethnicity in 2010.²⁴ Also, racial and ethnic minorities, such as Hispanics and African Americans, were significantly less likely to arrive by EMS transport when having a stroke.²⁷ Rural EMS often lack an interpreter for non-native English speakers.^{14,28} Considering the large population of migrant farm workers that reside in rural areas, a language barrier can severely impact health outcomes.

Rural trauma patients are more likely to be non-Hispanic whites, and urban trauma patients had a significantly higher proportion of African Americans.²⁹ Rural non-Hispanic whites were the most likely to present in an emergency department with non-traumatic dental conditions.³⁰

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Medically underserved rural areas had large populations of users presenting at Emergency Departments with non-emergency conditions such as dental issues and primary care services.^{24,31} In 2008, 81 percent of rural counties were classified as primary care Health Professional Shortage Areas, which contributes to a higher number of rural patients using EMS for non-emergency services.³² Rural patients may substitute EMS for primary care, if inaccessible, and may present with more severe conditions if routine screenings and early intervention through primary care providers has been forgone due to lack of access.^{28,32-34}

Rural patients with trauma resulting from a motor vehicle crash have less access to trauma centers, primarily due to long distances to the center. Trauma patients who are initially sent to a non-trauma center hospital have a 30 percent higher risk of dying in the first 48 hours after the motor vehicle crash than patients sent directly to a trauma center.³⁵ Patients with other time sensitive conditions, such as stroke, heart attack and injury, also tend to have higher morbidity and mortality rates as access to EMS diminishes.^{7,14,16-18,25,36-38}

BARRIERS

Cultural attitudes in rural areas may prevent EMS use, as rural residents are less likely to call 911 or utilize the emergency department than urban residents.^{20,39} Rural stroke patients are also significantly less likely to arrive at the hospital by EMS transport, due to high out-of-pocket

expense.^{14,27} This resistance to EMS usage, whether due to cultural attitudes or financial constraints, could negatively impact health outcomes as EMS transport is independently associated with earlier arrival to hospital, more prompt evaluation, and more rapid treatment.²⁷

Rural areas often lack specialists on staff in emergency departments as well as appropriate trained trauma nurses, forensic nurses, and other trained staff.^{21,23,36,38,40-48} Many rural hospitals struggle to recruit and retain physicians who are residency-trained or board-certified in emergency medicine.^{9,13} As a result, rural emergency departments may not always have an emergency medicine physician physically in the emergency department.⁹ The lack of rurally located emergency medicine specialists and equipment means a larger proportion of patients that

“THE BARRIERS AND CHALLENGES FACED BY RURAL EMERGENCY RESPONDERS ARE SIGNIFICANT AND INCLUDE POOR PHONE SERVICE, ‘DEAD ZONES,’ AND SIGNIFICANTLY LONGER TRANSPORT TIMES...”⁷

may need to be transferred. The additional transfer time could increase morbidity and mortality for time-sensitive health issues like trauma or stroke.⁴⁴ For example, only 26 percent of rural residents live within a 30-minute travel to a Joint Commission certified primary stroke center versus 70 percent of urban residents.⁴

Rural EMS patients also face geographic isolation and longer distances from their place of injury to the hospital.^{4,5,7,14,17,19-21,25,26,36-38,49-53} Rural patients facing limited EMS access due to distance from care have higher levels of mortality from treatable injuries and illnesses.³⁷ Compounding the limiting factor of distance to care is the lack of infrastructure, such as roads that connect rural areas with EMS or hospitals with an emergency department.⁴⁹

KNOWN CAUSES OF THE PROBLEM

Emergency conditions often require on-site specialists, such as neurologists, neurosurgeons, obstetricians, orthopedists, and thoracic surgeons, all of whom are less likely to be available in rural areas. Consequently, rural patients in need of emergency surgery from a specialist are more likely to travel 30 minutes to one-hour in search of appropriate

ED services.^{32,38,40,42} Solutions to this problem are complex and require collaboration and clinical integration within and among health care systems that support rural areas.

PROPOSED SOLUTIONS OR INTERVENTIONS

A significant barrier to rural emergency care is the lack of rurally-located specialists and board-certified emergency medicine physicians. Telemedicine technologies could

“ONLY 33 PERCENT OF PHYSICIANS WORKING IN RURAL EMERGENCY DEPARTMENTS ARE RESIDENCY-TRAINED OR BOARD-CERTIFIED IN EMERGENCY MEDICINE...”¹³

be used to improve access to primarily urban-located specialists in rural emergency departments.^{8,9,40,45,47,54} An increase in emergency department residency slots in rural areas could also improve staffing problems.^{13,32,55}

Another solution to improve health outcomes for rural EMS patients would be to create evidence-based protocols for rural hospitals to treat time-sensitive conditions such as stroke or heart attack. Some rural hospitals are not located near specialist services, such as a certified stroke center, and additional patient transfer time to the specialist services could lead to higher morbidity and mortality from time-sensitive conditions.⁴ An evidence-based protocol for treatment, and clear guidelines detailing when to transfer to specialist services, could allow rural EMS services to treat the time-sensitive conditions without patient transfer.^{4,27,29,42} Rural pediatricians could also be utilized to create protocols for appropriate EMS treatment of patients under 18.²³

COMMUNITY MODELS KNOWN TO WORK

EMS Live @ Night

Several programs have organized to address the unique challenges facing rural emergency services in several northeastern states, such as Washington, Idaho, Oregon, Montana, and parts of Alaska. EMS Live @ Night is a continuing education program created to enhance the knowledge of and provide evidence-based practices to rural emergency workers who provide pre-hospital services. Each training session is broadcasted, free of charge, and is

geared towards rural specific topics like gun wound emergencies, head trauma, pharmacology, helicopter safety, burns, or wilderness rescues.⁵⁶ EMS Live @ Night allows many volunteer rural emergency workers to maintain certification.⁵⁶

Great Basin College Emergency Medical Services Program

The Great Basin College Emergency Medical Services Program, based in rural Nevada, has created a consortium of local stakeholders to address the inability to recruit and retain rural emergency medical technicians (EMTs).⁵⁷ The consortium, which includes a medical school, the state Health Division of Emergency Medicine, and the Nevada Emergency Medical Association, have joined to recruit new EMTs, help rural areas retain existing EMTs by providing continuing education and help rural areas secure training equipment, thusly improving pre-hospital response services in the large rural service area.⁵⁷

Protecting the Golden Hour Program

The Protecting the Golden Hour Program, based in Idaho, is improving health outcomes and response times of rural, pre-hospital emergency services by coordinating the previously disparate emergency response units to prevent overlapping services and gaps in service coverage.⁵⁸ This program also provides online basic EMT training to increase the numbers of rural emergency response workers.⁵⁸

SUMMARY AND CONCLUSIONS

Rural populations continue to lag significantly behind urban and suburban regions in access to first-responders, emergency rooms, longer travel times to emergency services, and appropriate trauma, stroke and pediatric care. As noted in Rural Healthy People 2010, "...given that some sources of these disparities, such as large geographic distances and low population density, are by their very nature, intrinsic to rurality and unmodifiable, it may never be possible to completely eliminate the rural-urban disparities in EMS."⁵⁹

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Suggested Chapter Citation:

Schulze A, Bolin JN, Radcliff T. Rural Access to Quality Emergency Services. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: The Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:25-32.

NUTRITION AND WEIGHT STATUS IN RURAL AREAS

By Tiffany A. Radcliff, PhD; Bita A. Kash, PhD; Alva O. Ferdinand, DrPH, JD; and Avery Schulze, BS

SCOPE OF THE PROBLEM

- Overweight and obesity remain leading indicators of health status in the U.S.
- Rural residents have higher rates of obesity and overweight than the general U.S. population.
- An increased awareness of the obesity epidemic over the past ten years has increased programs aimed at all age groups, but especially diet and activity programs for school children.
- The rate of overweight and obesity for women in rural areas has remained stable, but has been increasing for men. The rates for both genders are becoming more equivalent.

Over the past ten years, there has been increasing awareness of an obesity epidemic in the U.S. Citing causes of suboptimal dietary patterns and low activity lifestyles, more programs recognizing a need to change dietary habits and reduce health consequences of sedentary lifestyles have emerged in both rural and urban areas. Changing long-term behavioral patterns and structural barriers to healthier lifestyle choices, however, remain a challenge in all communities. As such, several federal, state, and local initiatives have been implemented to help reverse the obesity epidemic. For example, First Lady Michelle Obama launched a multi-faceted campaign to encourage improved nutrition, and more active lifestyles, including healthier foods and more physical activity in schools along with structural changes to encourage a more active lifestyle and better nutrition for families. The First Lady's "Let's Move!" campaign began in 2010. Implications of policies and programs aimed to improve nutrition and weight status are starting to emerge in 2014.¹

Obesity is defined as a body mass index (BMI) over 30.0, which is calculated by dividing weight in kilograms by height in meters squared and rounding to the nearest tenth. A healthy BMI is between 19 and 24.9, and overweight is defined as a BMI between 25-29.9. Some classifications include sub-classifications of obesity for those with BMI over 35.0 (grade 2) or over 40.0 (grade 3). The Centers for Disease Control and Prevention (CDC) reported that in 2010, more than 35 percent of adults and almost 17 percent of children in the U.S. were obese, with prevalence of obesity increasing among men and remaining relatively constant for women over the decade between 1999-2000 and 2009-2010.² Even more concerning is the fact that obesity rates have

increased in all states such that every state has an obesity rate of at least 20 percent. In 2000 only 20 states reported adult obesity rates of 20 percent or higher.³ In 2011-2012, there was a significant decline in the rate of obesity among 2- to 5-year old children compared to 2003-2004, but no overall changes in obesity prevalence youth or adults in the most recent CDC study.¹ As noted by the study authors,¹ "Obesity prevalence remains high and thus it is important to continue surveillance." Finally, the number of "extremely obese" adults and children in the U.S. has been following an upward trend over time.⁴ Extreme obesity is defined as a BMI that is greater than or equal to 40. Today, the number of extremely obese women is nearly twice that of men; among children rates are particularly high among Hispanic boys (nine percent) and non-Hispanic Black girls (13 percent).

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

The goal of Healthy People 2020's nutrition and weight status objectives collectively is to "promote health and reduce chronic disease risk through the consumption of healthful diets and achievement and maintenance of healthy body weights."⁵ This goal reflects a growing body of science to support these objectives and emphasize the importance of healthy behaviors and supportive institutional environments in schools, the workplace, healthcare settings, and communities.⁵

Some specific objectives of Healthy People 2020 relative to nutrition and weight status are:

- **NWS-8** Increase the proportion of adults who are at a healthy weight

- **NWS-9** Reduce the proportion of adults who are obese
- **NWS-10** Reduce the proportion of children and adolescents who are considered obese

An emphasis of Healthy People 2020 is to promote healthful diets and healthy weight, which encompasses decreasing household food insecurity, defined as “a household-level economic and social condition of limited or uncertain access to adequate food,” and eliminating hunger.⁶

Americans with a healthful diet tend to:

1. Consume a variety of nutrient-dense foods within and across the food groups, especially whole grains, fruits, vegetables, low-fat or fat-free dairy products and lean meats, and other protein sources.
2. Limit the intake of saturated and trans-saturated fats, cholesterol, added sugars, sodium, and alcohol.
3. Limit caloric intake to meet caloric needs.

The recommendations of Healthy People 2020 also include advice for Americans to avoid unhealthy weight gain for many of those whose weight is too high, and additional weight loss for those whose weight is too low.

RHP2020 SURVEY OUTCOMES

Survey results placed nutrition and weight status as the #2 priority for Rural Healthy People 2020, representing a dramatic leap from 10th place in the 2010 Rural Healthy People survey. Over half of the survey respondents in the South, Midwest, and Northeast listed obesity and nutrition as a priority area, while almost half (47 percent) of the Western respondents listed it as a priority. Increased awareness of the problems of poor nutrition or dietary habits, increasing sedentary lifestyles, and clearly defined health consequences of obesity have made an impact on rural respondents’ perceptions of the problem as it pertains to rural areas.

PREVALENCE AND DISPARITIES IN RURAL AREAS

Figure 1 shows the percentage of obese adults by state, and indicates generally higher rates of obesity in states that have more rural areas in 2010.³

Even more striking, **Figure 2** presents the rate of obesity by county in the U.S. as of 2012, indicating

Figure 1. Percentage of Obese Adults by State

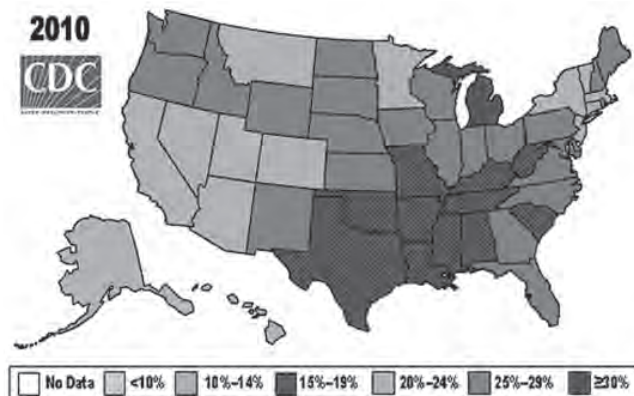
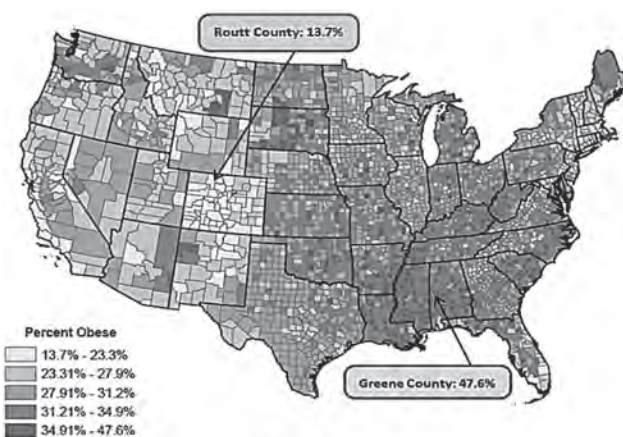


Figure 2. Obese Population by County (2012)



that many areas have rates that are even higher, with the two rural counties at both ends of the spectrum indicated (highest rate=Greene County, Alabama and lowest rate=Route County, Colorado).⁷

Rural areas remain disproportionately limited in offering programs to promote healthy lifestyle and eating behaviors.⁸⁻¹¹ Befort and colleagues,¹² using National Health and Nutrition Examination Survey (NHANES) data from 2005-2008, noted that obesity prevalence for rural adults was 39.6 percent compared to 33.4 percent among urban adults, and remained higher even after controlling for demographic, diet, and physical activity variables. Some of the reasons for these disparities include lower food literacy,¹³ more “food deserts”, i.e., areas that have limited access to supermarkets that sell fresh produce,¹⁴⁻¹⁶ and more limited community-based resources or economic conditions to facilitate programs for healthy lifestyle promotion. Counties that are classified as “frontier,” i.e., population density of less than six people per square mile, also have the lowest percentage of healthy food readily available for purchase and lower incidence of obesity compared to urban areas,¹⁴ which may reflect a

greater reliance on manual labor and subsistence activities such as gardening, hunting, and fishing to increase food security.¹⁴

CHILDREN AND ADOLESCENTS

More rural children and adolescents are overweight or obese compared to their urban counterparts.^{9,17-21} For example, Watts and colleagues reported that the prevalence of obesity is 25 percent in rural areas, representing an eight percent higher rate compared to the overall U.S. population.¹⁸ Reasons beyond those mentioned earlier for the general population include less access to healthy food in schools.^{16,22-27} Lutfiyya²⁸ found that rural children in the U.S. are about 25 percent more likely to be overweight or obese compared to other American children independent of other known risk factors such as physical inactivity, television watching, and computer use. Ohri-Vaschaspati (2013) reported as part of an evaluation of the quality of elementary school lunches that it is often financial barriers that prevent families and schools from providing nutritious lunches.²³ Combined with nutritional barriers for children, Foley¹¹ noted that rural areas offer more limited options for safe, affordable physical activity than urban areas. Holm²⁹ examined the relationship between health behaviors and both BMI and cardiovascular fitness for children and found that risk factors such as diet, active and passive screen time, and physical activity were related to weight and cardiovascular fitness. Of particular concern was that the rate of obesity/overweight was higher in the rural children studied and highest for those of Native American descent. In response to some of these growing concerns about diet and obesity in rural children, some innovative interventions have been introduced to reduce the consumption of sugar sweetened beverages and increase water consumption,³⁰ improve the quality of school-provided meals, and increase physical activity.

VARIATION BY RURAL REGION

Rural areas of the South are disproportionately impacted by overweight and obesity, though pockets of other regions have relatively high rates of obesity (**Fig. 1** and **Fig. 2**). Some noted risk factors for both poor nutrition and obesity include lower levels of education, lower health literacy, and poverty. There is substantial overlap in counties with higher rates of obesity and poor nutrition along with more poverty and lower average educational attainment. As noted by Greening,³¹ there are cultural attitudes in some geographic areas that are receptive to

sedentary lifestyles and high-calorie low-nutrition food choices that lead to higher rates of obesity starting in childhood. Local availability of affordable healthy foods, however, is often more limited in rural areas. In one assessment of dietary intake,³² rural residents reported a significantly higher daily intake of fruits and vegetables, but it was well-below the nine servings that are recommended by the USDA dietary guidelines. Additionally, consumption of sugar sweetened beverages (juice, soda, etc.) has a greater association with less-healthy eating behaviors for adults in rural versus urban areas.³³ Parental and other adult influences can impact eating and lifestyle behaviors of children and adolescents. Teen mentoring of younger children in Appalachia resulted in better health habits and knowledge of nutrition and exercise compared to educational programs delivered by adults,²⁰ while “permissive” parenting styles were associated with greater consumption of low-nutrient foods.³⁴

VARIATIONS BY RACE AND ETHNICITY

The geographic concentration of obesity in rural areas is also reflected in some disparities by race and ethnicity. Based on the NHANES data, prevalence of obesity is highest and increasing for non-Hispanic Black women and Mexican American women.³⁵ These study data were not reported by rural versus urban location. Dunn³⁶ examined the impact of fast-food availability and consumption by race as it relates to obesity in rural Texas and found that non-white Texans in rural areas had both higher average BMI and shorter average distance to fast food outlets compared to others.

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

As mentioned in Healthy People 2020, the evidence linking nutrition and weight status with overall health status is strong.⁵ Many studies note the established correlates of food insecurity, obesity, and downstream health detriments that were identified using epidemiological and clinical data. Poor nutrition is associated with higher rates of obesity, metabolic syndrome, type 2 diabetes, and cardiovascular disease, stroke and depression as well as with lower self-reported health.^{11,13,18,19,37} Moreover, childhood obesity and overweight are associated with developing cardiovascular disease and hypertension earlier in life^{21,38} and increases the risk of diabetes, sleep apnea, gall bladder disease, and some cancers later in life.^{27,39} Rural women at midlife and older ages experience both higher rates of obesity and

poorer health, but also self-reported lower intake of fiber, calcium, fruits, and vegetables than urban women.⁴⁰ Poor nutrition and sedentary lifestyle are related to increased risk of diabetes, osteoporosis, hypertension, and stroke.⁴⁰

BARRIERS

Studies note a variety of barriers to healthy diets and exercise in rural areas including:

- reduced access to fitness and nutrition classes,^{8,18,27,40-42}
- cultural attitudes of communities toward food and weight that may span across generations^{12,17,20,27,31,38,43} leading to less social support for healthy lifestyle changes,^{25,42,44,45}
- busy schedules,^{10, 46}
- reduced access to preventive care messages (along with other differences in access to health care),⁴⁷⁻⁴⁹
- distance to grocery stores that stock healthy foods^{28,50-54},
- higher prices of healthy foods that prevent families and schools from providing nutritious meals,^{13,23,28,34,36,46,49,55-57} and
- skewed perceptions of weight status.^{11,25,58-60}

KNOWN CAUSES OF THE PROBLEM

Reasons for disparities in nutrition and weight for rural versus urban Americans are complex and likely depend on a variety of barriers suggested above. Environmental characteristics such as limited access to parks, few sidewalks and street lights, and terrain and travel distances may encourage less physical activity in rural and remote places.⁶¹ Cultural attitudes toward dietary habits, exercise, and weight that may lead to the disparities also depend heavily on the socio-demographic characteristics of rural residents that are similar to the risk factors for overweight and obesity. Financial and geographic barriers to affordable healthy food are commonly cited problems for a variety of rural issues. Additionally, socio-demographic differences for rural Americans overlap with many of the risk factors for obesity. Finally, misperceptions of healthy weight ranges and lack of education regarding nutritional balance and active lifestyles may be tied to lack

of access to a formal system of care that includes extended visits with primary care clinicians or others that can serve as health educators throughout the life course.

PROPOSED SOLUTIONS OR INTERVENTIONS

Though overweight and obesity have proven to be challenging to prevent and poor nutritional habits based on cultural norms are difficult to change, increased awareness of obesity as an epidemic is reaching rural audiences. Web-based or telephone-based lifestyle counseling is increasingly viewed as an option to reduce barriers to weight loss or weight maintenance programs.^{14,48,62,63}

Local communities might also consider faith-based or school-based educational, fitness, or nutrition programs to reach audiences that are not actively seeking a healthier lifestyle.^{8-10,17,18,23,27,31,44,47,64,65}

Some of the models that have shown promise for long-term changes to improve weight status and nutrition in rural areas include community gardens to increase the availability of affordable healthy food, changing what is sold in of school vending machines, and increasing the number of hours that often limited local recreation facilities are open for community use. The First Lady, Michelle Obama, has also launched nationwide efforts to encourage more activity and better dietary options in public schools. The “Let’s Move!” program that she introduced in 2010⁶⁶ includes a variety of resources to improve physical activity and nutrition for all age groups, but with a particular focus on improving life-long habits for school-age children and adolescents. Early evidence of progress was reported by CDC researchers indicating a decline in childhood obesity among low-income preschoolers who participated in federally funded maternal- and child-nutrition programs between 2008 and 2011.⁶⁷ The Instant Recess[®] program, which predates “Let’s Move!”, was intended to increase physical activity in elementary schools by introducing ten-minute physical activity breaks in classrooms. This program has been evaluated and was found to increase both physical activity and time spent engaged in task-oriented learning behaviors.⁶⁸ Moreover, two past U.S. Secretaries of Agriculture recently highlighted food and farm policy as essential determinates of future nutritional options for many American families that currently depend on the Supplemental Nutrition Assistance Program (SNAP) and other federal programs, with a particular emphasis on improving healthy food options for these programs.⁶⁹

COMMUNITY MODELS KNOWN TO WORK

Better educational programming regarding the problems of obesity and overweight, as well as nutrition counseling, have been considered successful by a number of recent studies,^{37,58} with some research suggesting that the focus on communities rather than individuals might encourage changes to infrastructure or group behavior and lead to more individuals adapting better health habits.^{56,64,70} Other models indicate that additional resources or financing may be necessary to enact community-level changes to improve physical activity and nutrition in rural areas.^{26,37,38,49,51}

The CHANGE (Creating Healthy, Active, and Nurturing Growing-up Environments) Program

The CHANGE program aims to foster healthy eating and exercise habits in school children, in grades one through six.³⁸ The children participate in weekly modules addressing themes such as making healthier snack choices, daily activity and playtime, and limiting screen time. These modules are integrated into the classroom. Simultaneously, the CHANGE program collaborates with the school's cafeteria staff to improve the nutritional content of served foods by offering whole grains daily; providing five different fruit and vegetable options weekly (with a fresh fruit or vegetable option daily, and a dark green or orange vegetable or fruit at least three times per week); providing beans or peas weekly; supplying one percent and nonfat milk daily; limiting ice cream sales; and encouraging a healthier à la carte portfolio.³⁸ By addressing unhealthy habits in childhood, the CHANGE program hopes to build healthier adults and a healthier community.³⁸

Instant Recess®

Instant Recess® is a program that seeks to combat elevated childhood obesity rates by increasing physical activity throughout the school day.⁶⁸ In the program, the teacher schedules three ten-minute bouts of physical activity throughout the school day. During the ten-minute intervals, students participate in moderate intensity, low impact dance aerobics, calisthenics, and sports movements that are designed to be performed by anyone, in any attire.⁶⁸ The exercise is performed as a group and social interactions are promoted during the ten-minute instant recess. Participating teachers are provided with exercise materials such as DVDs, CDs and a paper copy of possible exercise routines.⁶⁸

Delta Body and Soul

Delta Body and Soul is a six-month, church-based nutrition and obesity intervention.¹⁷ The program utilizes an established community center, in this case a church, where residents regularly gather to recruit participants and then create a social support network for continued participation. The participating churches hold a monthly, 60-minute educational session that addresses consumption of fruits, vegetables, whole grains, and low-fat dairy foods, and decreasing solid fats, added sugars, and sodium with an emphasis on regional foods.¹⁷ In tandem with the dietary information session, pedometers are distributed and participants are encouraged to organize group walks and activities.¹⁷

SUMMARY AND CONCLUSIONS

The problem of an increasingly sedentary U.S. population with alarming obesity rates among certain rural communities, and of various racial/ethnic populations within those communities, constitutes not only a population health concern for the nation but also leads to increased medical spending attributed to obesity. Compared to a person of normal weight, obese people in the U.S. have average annual medical spending that is about \$1,400 higher across all payers.⁷¹ It is estimated that medical costs associated with obesity translates to \$147 billion more per year nationwide.⁷¹ Considering the resources and investments needed to facilitate the implementation of these models of change at the individual, community, state, and national level, the investment in promising models of change with a focus on evidence-based behavior change interventions seems critical for both urban and rural areas to combat the problem of obesity.

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Suggested Chapter Citation:

Radcliff TA, Kash BA, Ferdinand AO, Schulze A. Nutrition and Weight Loss in Rural Areas. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:33-41.

THE BURDEN OF DIABETES IN RURAL AMERICA

By Jane N. Bolin, PhD, RN, BSN; Avery Schulze, BS; Janet Helduser, MA; and Marcia G. Ory, PhD, MPH

SCOPE OF THE PROBLEM

- Diabetes is the 7th leading cause of death with nearly 70,000 diabetes-related deaths per year.¹
- Diabetes prevalence is approximately 17 percent higher in rural areas than urban areas.²⁻⁴
- The Healthy People 2010 goals for diabetes were met or exceeded for five objectives pertaining to screening and monitoring.
- Partial progress in diabetes prevention was made in reducing lower limb amputations, improvement in glycemic control, annual eye exams and diabetes education.
- There was no progress and/or a worsening of health status with respect to new cases or overall prevalence of diabetes, annual foot exams or annual dental exams.
- Diabetes is an ambulatory care sensitive condition. Caring for persons with diabetes is challenging for physicians because they have limited time with patients and diabetes self-management may not be a priority for the patient.^{5,6}
- Rural disparities and challenges include:
 - Rural patients have higher “no-show” rates for preventative screening appointments.⁷
 - Rates of type 2 diabetes mellitus (T2DM) are on the rise, especially among minority populations.⁸⁻¹⁶
 - Rural adults are more likely to report a diagnosis of diabetes than urban adults, 9.6 percent vs 8.4 percent.^{11,17}
 - Rural persons with diabetes have higher morbidity from diabetes-related complications.^{12,17-19}
 - Diabetes education is less available in rural areas due to scarcity of providers.
 - A higher proportion of rural persons with T2DM have retinopathy associated with diabetes compared to urban persons with T2DM, 25.8 percent vs 22 percent.¹¹
 - Rural Latinos with diabetes living along the U.S.-Mexico border are far more likely to undergo lower extremity amputation than whites.^{20,21}

Following a national trend, rural areas have, since 2010, experienced an increase in both the prevalence and incidence rates of diabetes.^{17,22,23} This increase in diagnosed diabetes means the Healthy People 2010 goal of reducing the prevalence rate and new case rate has not been met, especially in rural areas. The proportion of people who have been diagnosed with diabetes is improving,¹⁷ but the proportion of persons with diabetes receiving preventive screenings, though improving, has not met the Healthy People 2010 goals.^{17,22,24} While the rate of diabetes-related

deaths has slowly decreased, and rates of diabetes-related complications such as end stage renal disease and non-traumatic lower-limb amputation have decreased over the last decade, they are still high in rural areas.^{12,17,19,24-27} Access to diabetes education is increasing with the introduction of telemedicine technology, but still lags behind the Healthy People 2010 goal of 60 percent of persons with diabetes receiving diabetes education.^{2,18,24,28,29} Telemedicine and computerized support for diabetes prevention and management is more difficult in rural areas.

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

The Healthy People 2020 goal for diabetes is to “reduce the disease and economic burden of diabetes mellitus (DM) and improve the quality of life for all persons who have, or are at risk for, DM.”³⁰

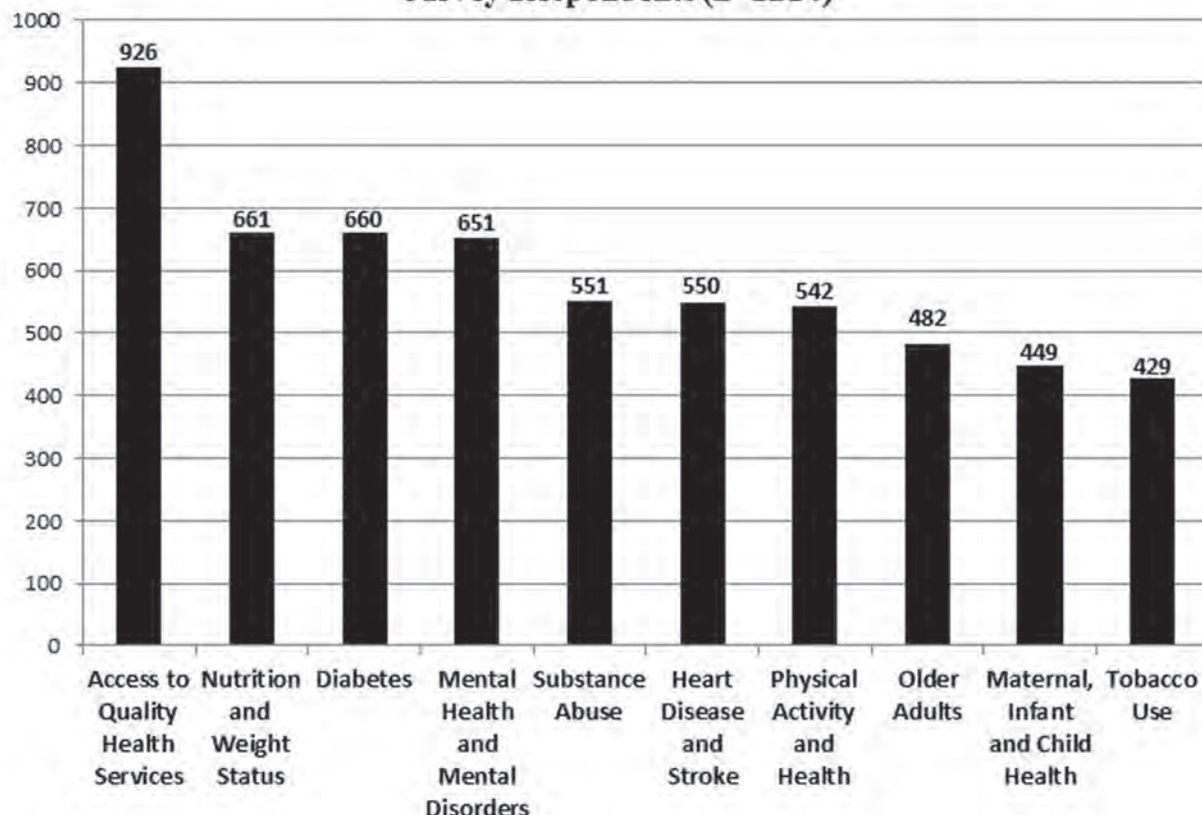
RHP2020 National Survey Outcomes

In a national survey of rural health stakeholders, respondents scored diabetes as the third most important rural priority, and reported diabetes risk factors such as nutrition and weight status as top ranked national rural health priorities (Fig. 1). Subpriorities and subobjectives focused on the importance of prevention and self-management, as well as accessible health services and supplies. Screening and early detection, as well as recognition of complications, were noted by multiple respondents as additional RHP2020 priorities.

markedly different burdens of diabetes prevalence, with border areas experiencing the highest rates.^{4,31} The Southeastern section of the United States has the highest prevalence of diagnosed diabetes, including primarily rural states like Alabama, Georgia, Mississippi, Louisiana, and North and South Carolina. This region has a diabetes prevalence rate of greater than 10.6 percent of adults at least 20 years of age.³²

The Southeast, dubbed the “diabetes belt,” has the highest rates of adult obesity and physical inactivity, as well as diabetes rates up to 33 percent higher in some population groups. A study done in North Carolina found that the age-adjusted prevalence rate for diabetes is 68 percent higher in rural counties than the state average and is nearly double the national rate.³³ Rural areas of Appalachian states, specifically West Virginia, Kentucky, and Tennessee, also experience considerably high diabetes prevalence

Figure 1. Top Ten Priorities for Rural Healthy People 2020 Survey Respondents (n=1214)⁸⁰



PREVALENCE AND DISPARITIES IN RURAL AREAS

Rural areas have an overall diabetes prevalence rate 15 to 17 percent higher than urban areas; however, different geographic regions of the United States bear

rates when compared to the national average of 8.3 percent of adults over 20 years old.³²

Over two-thirds of Southerners with diabetes have not received diabetes self-care education and are the least likely to participate in diabetes self-management

education or support groups.² The Midwest enjoys the lowest diabetes prevalence rate, although it is steadily increasing, and the rate creeps upward as it moves toward the West coast.³² The border states of Texas, Arizona, and California have all had significant increases in prevalence rates. The U.S.-Mexico border population has a diabetes prevalence rate estimated at 16.1 percent and a prediabetes rate of 13.6 percent.^{21,34}

VARIATIONS BY RACE AND ETHNICITY

Diabetes prevalence is higher overall in rural areas compared to urban areas; however, there is a large degree of variation in disease burden within rural populations. Diabetes prevalence rates are significantly higher in rural African American, Hispanic, Pacific Islanders, and American Indian populations than in rural white populations, with ten percent to 15 percent of adults in the minority populations being diagnosed with diabetes.^{9-12,17,35-38} Rural minorities residing in the Southeast section of the United States experience the highest prevalence rates.⁹

When compared to rural non-Hispanic whites, minority populations are nearly twice as likely to experience diabetes-related complications such as blindness, non-traumatic lower limb amputation, and kidney failure. Higher rates of complications among rural minority populations could be the result of poor glycemic control and a lower likelihood that minority persons with diabetes have had regular preventive screenings; however, rural African Americans are more likely to self-report participation in a diabetes education program.^{10,12-14,16,20,36,38-43}

Rural minority populations have an average age of diabetes diagnosis three to five years younger than geographically similar whites.^{8,44} Diabetes diagnoses, both type 1 and type 2, among rural youth aged ten to 19 years is increasing with the rate of childhood obesity. Rural African American, American Indian, Hispanic, and Pacific Islander youth experience rates of type 2 diabetes equal to or greater than rates of type 1 diabetes.²³

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Diabetes mellitus is a metabolic disease that is caused by the body's inability to produce or respond appropriately to insulin. Insulin is a critical hormone required for absorbing and using glucose (sugar) for fuel. If insulin is not produced or used, then blood

glucose levels become very high and cause damage to blood vessels and nerves causing serious, disabling complications. The three common types of diabetes are:

- type 1 diabetes, in which the body does not produce insulin;
- type 2 diabetes, caused by resistance to insulin, which can be caused by body fat and insufficient insulin;
- gestational diabetes which occurs during pregnancy. Gestational diabetes can lead to complications for both mother and child. Gestational diabetes is known to be associated with type 2 diabetes later in life.³⁰

Depression and diabetes have a high rate of co-morbidity. Primary care physicians may not be equipped to manage the mental health, as well as the physical health, of patients with diabetes. This in turn could contribute to higher rates of diabetes-related complications because of the negative impact of depression on diabetes self-care practices.^{10,38,45-47}

BARRIERS

Rural individuals with T2DM face unique challenges in diabetes self-management. Diabetes management and educational programs are crucial for helping to prevent complications. Rural persons with diabetes have historically had a higher proportion of poorly controlled diabetes and to combat this trend, diabetes management programs have been expanding into rural areas.^{12,29} Many rural areas have limited resources and are utilizing non-physician led chronic disease management programs as a cheaper, effective alternative to traditional education provided by primary care physicians. Rural diabetes management programs have been led by pharmacists, nurses (both advanced practice nurses and LPNs), and community health workers (CHWs). Rural patients who have participated in the non-physician led management programs have shown improvement in their self-care habits indicated by weight loss, healthier HbA1c levels, higher blood glucose measurement frequency, and better glycemic control.^{4,33,35,48-50} Also, participants were more likely to have regular diabetes-related complication screenings such as professional foot and eye exams and HbA1c tests.^{4,33,35,49,50}

In 2010, the American Diabetes Association (ADA) changed the guidelines for their recommended diabetes screening system. The ADA added HbA1c tests as a form of screening and diagnosis of diabetes; whereas, prior to the change, HbA1c tests were used exclusively to monitor existing cases of diabetes. Fasting plasma glucose measurement and casual plasma glucose testing were the recommended screening tools for primary care physicians for diabetes diagnosis before the ADA guidelines changed in 2010.⁵¹

The lack of diabetes self-management education available to rural persons with diabetes serves as another barrier leading to poorly controlled diabetes, more diabetes-related complications, and higher mortality. Limited diabetes education can result in misuse or no use of insulin or oral diabetes medication.^{10,19,25,33,35,42,47,49,50,52-56} Diabetes educators are crucial for helping people with diabetes to understand the causes, implications, and management strategies of well-controlled diabetes and rural areas face a shortage of qualified diabetes educators.^{4,14,28,57-59} Also, many rural persons with diabetes are unaware of screenings such as foot and eye exams which could prevent diabetes-related complications.^{19,60}

Many rural individuals with diabetes report that the financial burden of diabetes self-management supplies, like insulin, syringes, and oral medication, is a considerable hurdle to proper diabetes control. Poorly controlled diabetes may not be as acutely severe as an injury from a car crash, and many rural persons with diabetes have other financial obligations that take priority over self-management supplies.^{8,11,20,38,44,45,50,51,54,60,61} Along with high cost of supplies, many rural persons with diabetes face a food landscape with readily available fast food options and limited access to healthy foods, with availability determined by both travel distance and cost. This disparity in access could lead to higher rates of poor glycemic control.^{8,37,38,44,47,58,62}

Rural areas generally do not have the mental health services to support the higher rates of depression among rural persons with diabetes.^{46,63} Diabetes and depression have a high rate of co-morbidity and are associated with worse self-care behavior that can be exacerbated in rural areas with poor mental health service infrastructure.

The built environment of rural areas can also impose obstacles on rural persons with diabetes. Many rural

areas lack infrastructure like sidewalks, street lights, and cross walks that are necessary to encourage safe exercise.^{3,15,38,64} Rural areas are also less likely to have a public transport system. Many patients, especially older residents, may face challenges in scheduling an appointment with their primary care physician, or attending a diabetes self-care management educational session, due to lack of transportation.^{7,25,35,39,46,61,62,65,66} Even rural residents with diabetes and access to transportation face longer travel times to primary care clinics.^{13,15,31,38,55,67}

KNOWN CAUSES OF THE CONDITION

Diabetes is a complex metabolic disease generally regarded to be linked to genetic predisposition (T1DM), patient demographics, and lifestyle (T2DM). The risk of developing diabetes significantly increases with age, especially at age 60 and older.^{10,25,46,62,65,68,69} In 2010, 18.9 percent of U.S. adults aged 60 and older had diabetes compared with 8.3 percent of the general population.²² Diabetes development is also associated with unhealthy lifestyle habits including a diet high in sugar,^{3,42,57,62} with obesity and overweight status,^{8,10,11,18,20,25,35,37,42,44,47,48,52,57,69-72} and with physical inactivity.^{3,42,50}

PROPOSED SOLUTIONS OR INTERVENTIONS

Interventions aimed at reducing morbidity and mortality associated with diabetes and diabetes-related complications need to tailor evidence-based practice to the unique needs and challenges in rural areas. Diabetes is a chronic disease that is most effectively managed through lifestyle interventions. As rural communities are disproportionately affected by diabetes, diabetes interventions should be integrated into the community. Communities have undertaken programs that increase the amount of, and awareness of, diabetes-related complications and have hosted community-wide preventative screenings in community centers like churches, YMCA or other community meeting places like senior centers. Increased access to HbA1c, lipid and kidney testing, eye examinations, and blood pressure testing could prevent morbidity and mortality associated with diabetes-related complications.^{9,12,15} This type of intervention could also be utilized to screen for pre-diabetes in community centers. Individuals with pre-diabetes can prevent or delay diagnosis of type 2 diabetes by losing five percent to seven percent of their body weight and increasing their physical activity to a minimum of 150 minutes per week.²²

Since 1997, the U.S.-Mexico Border Diabetes Prevention and Control Project has focused on diabetes burden reduction along the U.S.-Mexico border. Beginning in 2004, the initiative addressed the problem at a local level by training CHWs to deliver diabetes management and prevention education in both English and Spanish in border towns. As of 2010, the project has increased public health capacity by establishing seven CHW training sites and programs at 12 federally qualified health clinics serving border populations.^{21,34}

Rural areas have increasingly relied on technology to provide diabetes management education and coaching to rural persons with diabetes. Many rural areas are considered medically underserved and have trouble recruiting specialists.^{46,55,73} Video-conferencing and telephone-based interactions allow rural residents with diabetes to interact remotely with diabetes educators and learn proper self-care techniques remotely. Diabetes self-management knowledge and complication prevention screenings have both been shown to increase after technology-based interactions with diabetes specialists, although some patients, particularly older patients, preferred face-to-face programs.^{6,18,46,56,59,67}

Another way to increase access to diabetes self-care education in rural areas is to utilize telehealth technologies like video conferencing to connect rural persons with diabetes with urban or suburban certified diabetes educators. Telehealth technologies could be used to teach proper self-care techniques, help patients set and achieve self-care goals, and to provide counseling.^{6,18,28,56,58,59,67} Diabetes and depression have a high co-morbidity rate and rural areas largely do not have the mental health resources to adequately manage depression. Telemedicine could be crucial in combining self-care education with counseling to improve the overall health outcomes of rural persons with diabetes.⁴⁶

Low literacy kiosks placed in clinical or community settings frequented by individuals with diabetes and their families may serve as a low-technology approach to providing at-risk individuals with needed information about the causes and consequences of diabetes. A kiosk developed by researchers at the Texas A&M University has demonstrated potential reach and success of disseminating specific recommendations for concrete lifestyle behaviors that can reduce the risk for diabetes or help those with diabetes better manage their daily routines.^{74,75}

SUMMARY AND CONCLUSION

Diabetes is a chronic disease with serious, permanent consequences if not closely monitored and controlled. Unfortunately in rural and remote regions of the United States much needed healthcare providers, resources and support for adequate management of diabetes are scarce. The observed increase in diabetes prevalence rates in rural areas speaks to the need for improved funding for rural health care services and community-based services.

Finally, health outcomes and quality of life of people with diabetes are largely determined by lifestyle choices and patient participation in self-care behaviors. Increasing diabetes prevention and self-management education in rural areas could reduce diabetes-related complications or delay or prevent onset of diabetes for patients with pre-diabetes. The proliferation of telecommunication technologies, including computerized education through touchscreen and cell-phone or other app technology could provide a cost-effective solution to the diabetes-education shortage in rural America.

COMMUNITY MODELS KNOWN TO WORK

1. **Program Name:** REACH US: SEA-CEED (South Eastern African American Center of Excellence in the Elimination of Disparities in Diabetes)

Location: Southeast U.S.A.

Problem Addressed: Eliminating racial disparities in diabetes prevalence

Web Address: <http://academicdepartments.musc.edu/reach/>

Description. REACH US: SEA-CEED is a part of the Medical University of South Carolina's Diabetes Initiative.⁷⁶ This program is a multi-state diabetes support network that operates in Alabama, the District of Columbia, Florida, Georgia, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia where the African American population comprises more than 20 percent of the total population. The program works to eliminate disparities in health outcomes for African Americans focusing on diabetes prevention, diabetes management, and reduction of diabetes-related complications.

REACH US: SEA-CEED pools system-wide stakeholder resources to provide evidence-based guidelines for diabetes prevention and management programs and community action plans to local community organizations. SEA-CEED focuses on systems changes at three levels: health organizations, other community organizations, and coalition advocacy.⁷⁶

Services Offered. REACH US: SEA-CEED supports local diabetes goals by providing educational materials such as healthy eating guides, physical activity promotion, and guides to preventative measures such as self-check foot exams. The program also provides worksheets for community engagement tools for setting diabetes-related personal goals and provides a checklist to facilitate a conversation between the person with diabetes and their primary care doctor about diabetes-related complication risk and screening.⁷⁶ System level changes at hospitals, across multiple local community organizations and other health organizations are implemented to focus on community diabetes goals.

REACH US: SEA-CEED funds Legacy projects, non-renewable start-up grants, for communities to establish local diabetes prevention and education programs. These funds could be used to conduct community needs assessment, training health workers in diabetes management and prevention and program use or development.

Results. REACH US SEA-CEED builds on the networks and successes of other REACH coalitions, such as the REACH 2010 Charleston and Georgetown Diabetes Coalition, to reach nearly 300,000 African American persons with diabetes in the Southeastern US.⁷⁶

2. Program Name: Diabetes Empowerment Education Program (DEEP)

Location: Indiana

Problem Addressed: inadequate diabetes self-management

Web Address: <http://www.in.gov/isdh/24865.htm>

Description. DEEP is a two-pronged approach for communities to develop and sustain a diabetes self-management program to improve the quality

of life of and reduce complications in persons with diabetes.⁷⁷ Two distinct groups are targeted by DEEP: community health workers and community members who are either at-risk for diabetes or have been diagnosed with diabetes⁷⁷. The information provided during the program is evidence-based and revised every two years to provide the most current information.

Services Offered. The first service offered by DEEP is the Training of Trainers Program. Community health workers participate in a twenty-four hour workshop to develop knowledge of diabetes and self-management education delivery skills.⁷⁷ The second service offered by DEEP is the Diabetes Patient Education Program. This program covers topics related to living with diabetes, including knowledge of risk factors, complications, nutrition, physical activity, psychosocial effects of diabetes, problem-solving strategies, and practical knowledge of glucose meter and medications usage, how to access community diabetes resources and how to do self-check foot exams.

Results. DEEP is implemented at 22 healthcare organizations around the state of Indiana.⁷⁷

3. Program Name: Tennille Community Health Center

Location: Georgia

Problem Addressed: lack of diabetes self-management programs in rural Georgia

Web Address: <http://www.chcsga.org/web/new/>

Description. Nearly ten percent of Georgian adults have been diagnosed with diabetes.⁷⁸ The Tennille Community Health Center is aiming to improve health outcomes and quality of life of rural persons with diabetes through knowledge dispersed through a diabetes self-management education program. The Tennille Community Health Center combines access to a primary care physician with diabetes education and diabetes-related complication screening services at one location. This integration of care is designed to increase the proportion of persons with diabetes who receive self-care education and screenings. The Tennille Community Health Center is one of nine health centers a part of Community

Health Care Systems. Community Health Care Systems supports over 7,000 patients in Johnson, Washington, Twiggs, Wilkinson, Laurens, Telfair and Jones Counties, Georgia.⁷⁸ The Tennille Community Health Center offers access to primary care physicians for all community members, not just persons with diabetes, but the integration of diabetes education, screenings and medication disbursement into the primary care setting improves compliance and health outcomes for patients with diabetes.

Services Offered. Tennille Community Health Center offers access to primary care physicians, diabetes medication disbursement, and routine health screenings. The health screenings measure blood glucose, blood pressure and eye and foot exams.⁷⁸ The Tennille Community Health Center also offers diabetes self-management classes that focus on seven self-care behaviors including medication usage and compliance, monitoring blood glucose levels, problem solving, reducing the risk factors of complications, improving nutrition and healthy coping methods for living with diabetes. The education program is one of only twenty organizations in the state of Georgia that is accredited by the American Association of Diabetes Educators.⁷⁸

Results. Tennille Community Health Center has received high patient satisfaction ratings and has successfully engaged the community with diabetes management issues. In addition, patient wait time for diabetes-related complication screening has significantly decreased, thusly increasing the amount of patients receiving screenings.⁷⁸ The diabetes self-management education program at Tennille Community Health Center has shown significant improvement in the lives of rural persons with diabetes and the Community Health Care System is planning to spread the program to its other eight health centers.

4. Program Name: KIPDA Rural Diabetes Coalition (KRDC)

Location: Kentucky

Problem Addressed: Accessibility of medical care, healthy foods and safe exercise opportunities for rural persons with diabetes.

Web Address: <http://www.krdcoalition.com/>

Description. KRDA is a coalition of concerned citizens, health care professionals, health care organizations, and community groups committed to improve the health of persons with diabetes in Bullitt, Shelby, and Henry Counties, Kentucky. Bullitt, Shelby, and Henry Counties all have a high diabetes prevalence rate at nearly 11 percent.⁷⁹ Funded through a grant from the Centers for Disease Control and Prevention (CDC), KRDA works with local stakeholders to improve the community's access to medical care, healthy foods, and safe opportunities for physical exercise in an effort to reduce the burden of type 2 diabetes. The KRDC utilizes tools, training and resources from the National Diabetes Education Program (NDEP) model designed by the CDC and then, tailors them to meet the unique needs of the counties it serves. A community meeting is held on the third Thursday of every month. At this meeting, community stakeholders discuss needs and concerns of their community and KRDC disperses new diabetes literature from NDEP.

Services Offered. KDRA offers a variety of diabetes self-management education classes and support groups. Stanford diabetes classes are offered to anyone who wishes to learn more about diabetes.⁷⁹ Two trained educators from the community lead the Stanford diabetes classes to include topics such as tips for dealing with physical and emotional symptoms of diabetes, exercise, nutrition, proper medication usage, tips for physician interaction and techniques for caring for someone who has type 2 diabetes. KDRA also offers faith-based diabetes education classes set in local churches. In addition to the education classes provided by KDRA, support groups are also available for each county. Support groups are mediated by a trained community member and attendees discuss the everyday struggle of living with diabetes and concerns, especially related to diabetes-related complications.

Results. A community needs assessment was performed by surveying nearly 300 persons with diabetes in Bullitt, Shelby and Henry Counties about their ability to manage their diabetes and their level of diabetes knowledge.⁷⁹ This assessment also included risk factors such as fast food availability relative to healthy food options, exercise opportunities and number of health care providers. The NDEP model was adapted

to meet the needs highlighted in the community needs assessment. Diabetes class attendees report a significantly higher degree of self-care knowledge, medication adherence and healthier eating.⁷⁹

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Suggested Chapter Citation:

Bolin JN, Schulze A, Helduser J, Ory MG. The Burden of Diabetes in Rural America. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: The Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:43-53.

MENTAL HEALTH AND MENTAL DISORDERS: A RURAL CHALLENGE

By Alva O. Ferdinand, DrPH, JD; Jeanette Madkins, PhD; Darcy McMaughan, PhD; and Avery Schulze, BS

SCOPE OF THE PROBLEM

- The Rural Healthy People 2020 survey of state and local rural stakeholders found that mental health and mental disorders remain the fourth most often identified rural health priority.
- Hispanic persons were more likely than non-Hispanic white persons to have experienced serious psychological distress during the past month.¹
- Major depression rates in some rural areas exceed those in urban areas.²
- More than 85 percent of the 1,669 federally designated mental health professional shortage areas are in rural areas.³
- Improvement was made in the last decade in addressing the mental health needs of homeless adults, eating disorders, juvenile justice programs, and jail diversion for adults.⁴
- Despite the Healthy People 2010 goal to reduce the overall suicide rate over the next decade, the suicide rate increased from Healthy People 2010 measures.⁴
- Mental illness is the most significant disabling chronic condition, often resulting in work disability for working age adults.⁵
- Rural veterans with mental conditions are particularly at risk due to extreme shortages of mental health providers in rural areas.⁶

Mental illness renders a substantial burden of disease in the U.S. In fact, the disease burden resulting from mental illness is among the highest of all diseases.⁷ According to estimates from the Substance Abuse and Mental Health Services Administration, approximately 45 million of U.S. adults, that is, about one in five adults, had a mental illness in 2009.⁸ Mental disorders are often associated with significant impairment and disability.^{9,10} Moreover, the financial costs associated with mental illness are quite substantial. It is estimated that mental illness costs the U.S. at least \$300 billion annually, with disability benefit payments of about \$24 billion, health care expenditures of \$100 billion, and lost earnings and wages of approximately \$193 billion.¹¹ Despite the prevalence and significant costs associated with mental illness, there generally remains a lack of mental health services for individuals that need them. This is also especially true for residents of rural areas.¹²

GOALS AND OBJECTIVES

Among its priorities, Healthy People 2020 (HP2020) states that its goal for mental health is to “improve mental health through prevention and by ensuring access to appropriate, quality mental health service.”⁷ This literature review will address this priority as it relates to appropriate, quality mental health services in rural areas. Additionally, this chapter will address three associated objectives of the HP2020 mental health goal:

- **MHMD-1** Reduce the suicide rate
- **MHMD-4.1** Reduce the proportion of adolescents aged 12 to 17 years who experience major depressive episodes (MDEs)
- **MHMD-6** Increase treatment for children with mental health problems
- **MHMD-9** Increase treatment for adults with mental health disorders

We note that Healthy People 2020 distinguishes among a few related definitions as they relate to mental health:

- *Mental health* is a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with challenges. Mental health is essential to personal well-being, family and interpersonal relationships, and the ability to contribute to society.
- *Mental disorders* are health conditions that are characterized by alterations in thinking, mood, and/or behavior that are associated with distress and/or impaired functioning. Mental disorders contribute to a host of problems that may include disability, pain, or death.
- *Mental illness* is the term that refers collectively to all mental disorders.⁷

Generally, mental disorders include three major categories of mental illness:

- *Schizophrenia*, which affects approximately 2.4 million American adults in a given year.¹³
- *Mood disorders*, which are major depression and manic-depressive illnesses, are the leading cause of disability among adults, affecting approximately 20.9 million American adults, or about 9.5 percent of the U.S. population aged 18 or older in a given year.¹⁴ High rates of suicide are associated with mood disorders. In 2006, approximately 33,000 people died as a result of suicide in the U.S. It is estimated that more than 90 percent of those individuals had a diagnosable mental disorder, most commonly a depressive disorder.¹³
- *Anxiety disorders*, which include panic disorder, obsessive-compulsive disorder, post-traumatic stress disorder (PTSD), generalized anxiety disorder, and phobias, affect approximately 40 million American adults in a given year in the U.S.¹³

MENTAL HEALTH AND MENTAL DISORDERS IDENTIFIED AS A HIGH-PRIORITY RURAL HEALTH ISSUE

Results from the Rural Healthy People 2020 survey indicated that mental health and mental disorders

were the fourth most popular health concerns of the 26 leading health indicators identified by Healthy People 2020. In this nationwide survey, 53.6 percent of the state and local rural health leaders selected mental health and mental disorders as one of their top rural health priorities, after access to quality health services, nutrition and weight status, and diabetes. When results were examined by organizational type, mental health and mental disorders were ranked as one of the top five rural health priorities by rural public health agencies, federally qualified health centers or rural health clinics, community health centers, and critical access hospitals alike. Mental health was also ranked in the top five rural health priorities across all four regions of the country, with 61 percent of respondents from the Northeast, 55.6 percent from the Midwest, 52.8 percent from the South, and 48 percent from the West indicating it as such.

PREVALENCE AND DISPARITIES IN RURAL AREAS

Researchers have noted that determining the prevalence of mental illness is challenging, especially given the wide array of survey instruments used to assess mental illness, the variance in how the data are collected or reported (e.g. by trained mental health professionals versus self-reported), and how thoroughly the assessments are conducted.¹⁵ Moreover, some survey instruments include substance use disorders as mental illness, while others do not.¹⁵ Researchers that have included substance abuse in mental illness calculations have reported a prevalence of about 32.4 percent while researchers not including substance abuse disorders in their estimations have reported a prevalence of approximately 25 percent among adults.¹⁵ Moreover, it is estimated that over 46 percent of adults in the U.S. will develop a mental illness at some point during their lifetime.¹⁶

Like many other illnesses, mental illnesses can be characterized at three levels of severity: mild, moderate, or serious.¹⁴ Conditions such as bipolar I or II disorder, schizophrenia, non-affective psychosis, impulse control disorder with repeated serious violence, or any disorder that resulted in 30 or more days out of one's work-related role are considered "serious."¹⁴ Examples of moderate mental health illness include suicide gestures, plans, or ideation, and moderate work limitation without serious role impairment, while examples of mild mental illness include minor depressive order and specific phobias. Researchers have estimated that among the 25

percent of adults identified with a mental disorder, 40.4 percent experienced mild disorders, 37.3 percent experienced moderate disorders, and 22.3 percent experienced serious mental disorders.¹⁵

Utilization of Mental Health Services

While underutilization of preventive health services has been noted in several areas of health care, it has been very pronounced in mental health services settings.¹⁷⁻¹⁹ Researchers have identified predictors of the underutilization of mental health services. These predictors include, but are not limited to, race,²⁰⁻²² cultural identification,²³ language,²⁴ health insurance status,^{25,26} and degree of rurality.^{19,27,28} Generally, previous research has noted that living in a rural area was associated with a decreased likelihood of receiving treatment for a mental disorder relative to living in an urban area.²⁹⁻³¹ Reif and colleagues found that among HIV-infected survey respondents, those living in rural areas were less likely to report seeing a mental health provider in the last year despite a finding of no differences in levels of psychological distress relative to the degree of rurality in which participants resided.¹⁹ Brossart and colleagues noted that underutilization of mental health services for rural residents translates into the increased likelihood that they will enter treatment with more severe disorders.³²

Children and Adolescents

Merikangas and colleagues noted that the number of observations of children with mental disorders in community surveys has substantially risen over the years.³³ Researchers at the Centers for Disease Control and Prevention have also noted an upward trend in the prevalence of children with mental illness.³⁴ Nationally, approximately 13 to 20 percent of children living in the United States experience some form of mental illness.³⁴ Children experiencing mental illness often experience serious difficulties in school settings, with peer relationships, and at home.³⁵ It has also been shown that children experiencing mental disorders can also engage in risky sexual and criminal behaviors.^{36,37}

Using a sample of 6,483 adolescents, Kessler and colleagues found a 42.6 percent prevalence of mental illness among adolescents.³⁸ The researchers also sought to assess the severity of mental illness among this sample of adolescents. They found that most of the sampled adolescents deemed to experience mental illness had mild mental disorders (58.2 percent), while 23 percent of those with mental

illness experienced moderate mental disorders.³⁸ The researchers determined that 18.8 percent of the adolescents experiencing any mental illness had disorders that could be classified as “serious.”³⁸ Given the high prevalence of mild mental disorders among adolescents, some have argued that treatment is largely not needed for this age group and that the disorders will resolve on their own. However, in a study assessing the severity of mental disorders, Kessler and colleagues found that mild mental disorders during adolescence might predict serious disorders in adulthood.³⁹

Low family income has been found to be an important predictor in the prevalence of mental illness among children.⁴⁰ Howell found that 12 percent of children between the ages of six and 17 with family income below the federal poverty level (FPL) had a mental disorder compared to six percent of children above 200 percent of the FPL.⁴⁰ Researchers have noted that mental health services are used more among children with public coverage, such as Medicaid or a State Children’s Health Insurance Program (SCHIP).⁴¹ It has also been noted that rural children rely substantially on SCHIP and Medicaid for insurance coverage.⁴² Medicaid coverage for mental health services is thought to be very comprehensive and typically entails mandated benefits, including inpatient and outpatient care, and Early and Periodic Screening, Diagnosis, and Treatment (EPSDT).⁴⁰ Nevertheless, because of states’ varying approaches to Medicaid coverage of mental health services, there are variations in the use of mental health services by Medicaid beneficiaries across states.⁴³

Older Persons

Persons aged 65 and over make up a substantial proportion of rural residents. More specifically, it was estimated that approximately 7.5 million of the 50 million persons living in rural America were 65 years of age or older.⁴⁴ Previous research has suggested that significant numbers of older individuals live with anxiety disorders, mood disorders, and impaired cognition due to Alzheimer’s Disease and other related dementias.¹² It has been estimated that approximately 20.4 percent of adults aged 65 or older met criteria for a mental disorder during the previous 12 months.⁴⁵ Additionally, it is estimated that two percent of elderly persons have a severe mental illness.⁴⁶

Generally, researchers have found that older adults that exhibit mental disorders are less likely than

younger and middle-aged adults to receive mental health services.⁴⁵ Moreover, older adults who do seek mental health services are less likely to get that care from mental health specialists, but rather receive care from physicians with little specialized mental health training.^{12,45} In a study conducted to examine the mental health service needs and utilization of older rural adults, it was noted that one-half to two-thirds of the respondents were aware of local mental health services, but 75 percent of them never used those services.⁴⁷

VARIATION BY RURAL REGION

Residence setting, i.e. urban versus rural, is thought to be a risk factor for mental disorders.^{48,49} However, previous research has rendered mixed findings about whether the prevalence of mental illness is higher in rural areas relative to urban areas or vice versa. In a study published in 2006 by Probst and colleagues examining the prevalence of depression in urban versus rural areas, it was noted that approximately 2.6 million rural adults live with depression.⁴⁹ This was somewhat higher than the prevalence of urban adults experiencing depression.⁴⁹ Nevertheless, other research published in 2010 that involved a meta-analysis of the literature on urban-rural differences in mental disorder prevalence indicated that living in urban environments tends to be associated with heightened prevalence of mental disorders.⁵⁰ However, despite the fact that this meta-analysis included research from the U.S., it also included literature from several other developed countries. Thus, the generalizability of the study's findings to the U.S. is debatable. Breslau and colleagues recently examined whether the occurrence of mental disorders is more common in urban areas in the U.S.⁴⁸ To do this, they distinguished mental illness prevalence among residents of large metropolitan areas, small metropolitan areas, semi-rural areas, and rural areas. They found that the prevalence of mental disorders was slightly higher in semi-rural and small urban areas relative to large metropolitan areas.⁴⁸ Thus, there is some indication that the burden of mental disorders is largely felt in rural areas.

According to the Office of Rural Health at the U.S. Department of Veterans Affairs, there are approximately 5.3 million veterans living in rural areas.⁵¹ Despite the fact that rural veterans display lower prevalence of mental disorders relative to their urban counterparts, rural veterans with mental disorders are typically sicker and experience lower health-related quality-of-life than urban veterans.⁵² Moreover, research has shown that rural veterans

with mental illness were more likely to incur greater health care costs than their urban counterparts.⁵²

While prevalence of some mental health disorders (PTSD, for example) may be the same among rural and urban residents, the level of access to treatment options may be starkly different.^{53,54} This disparity in access becomes more distinct as rurality increases. On the continuum of rurality, sparsely populated geographic areas have fewer mental health care resources than more densely populated areas.⁵⁵ While the number of family physicians providing mental health care was higher in more rural areas (indicating some level of access), the number of psychiatrists dropped as rurality increased, indicating a rural 'dose effect' associated with the disparity in access to specialized mental health care commonly reported in rural/urban comparisons.^{47,56-63} The lack of mental health care professionals in urban areas may be related to lower incomes (compared to specialized professionals in urban centers) and a perceived lack of professional network or support.⁶⁴ When rural residents do have access to specialized mental health professionals, these professionals sometimes lack basic competencies found among their urban colleagues.⁶⁵ Without the routine mental health care provided by specialized professionals, rural people living with medication-sensitive, severe, chronic mental illness (like schizophrenia) are at risk of not receiving stable pharmaceutical treatment.⁶⁶

Similarly, rural residents living with mental illnesses amenable to behavioral therapy (such as depression) often must rely, instead, on psychotropic treatment.⁶⁷ These various mechanisms for lack of access can be exacerbated by diminished financial resources. For example, about 35 percent of Medicaid enrollees living in rural areas live in a county without an outpatient mental health facility that accepts Medicaid.³¹ During an economic turndown, rural community-based mental health organizations felt more pressure to reduce operations (i.e. close satellite clinics) than urban organizations⁶⁸ – compounding a potentially preexisting disparity in available resources between rural and urban clinics.⁶⁹ This may explain why rural emergency room (ER) patients with a mental disorder accounted for a higher percentage of ER visits than urban patients with a mental health disorder (35 percent compared to 23 percent).⁷⁰

VARIATION BY RACE AND ETHNICITY

Rates of mental illness and access to mental health care in rural areas can vary by race and ethnicity,

depending on the specific mental illness. Some of these differences are based on variations in race and ethnicity of people living in rural areas. In general, African Americans living in rural areas report higher rates of depression than rural whites and Hispanics,^{32,69} and rural African Americans diagnosed with schizophrenia are more likely to be hospitalized than urban residents with schizophrenia.⁶⁶ Minorities residing in rural areas are also less likely to have access to mental health care than whites and urban residents.⁴⁷ For example, rural Black children tend to seek mental health care through the public school system (a system not equipped to provide mental health care).⁷¹ Other differences are based on variations in geographic location of people within the same race and ethnic group. Looking specifically at anxiety disorder, rural African Americans and Hispanics report higher prevalence of active anxiety than African Americans and Hispanics living in urban areas.⁷² Not all differences are detrimental. Even though young, rural Hispanics are more likely to report mental health problems and less likely to know of treatment options compared to young, urban, Hispanics, they are also less likely to feel stigmatized by mental illness than their urban counterparts.⁷³ And, not all mental health disorders are associated with racial and ethnic disparities. No significant differences were found between rural African Americans and rural non-Hispanic whites in the expression of post-partum depression symptoms (after controlling for marital status and education level).⁷⁴

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Perhaps the greatest impact of mental health and mental health disorders on mortality is suicide. Suicide was the tenth leading cause of death in the U.S. in 2009.⁷⁵ Moreover, suicide has been found to be the second leading cause of death in primarily rural states.⁷⁶ Not only are the rates of suicide found to be 54 percent higher in rural areas, but suicide is also more likely to be by firearm.⁷⁷ This is concerning as firearms carry greater potential for lethality. Further, compared to their peers in urban areas, adolescents and older adults have a significantly higher suicide rate.⁷⁸ The leading predictor of suicide is depression.^{79,80} The prevalence of major depression has been found to be significantly higher in rural (6.11 percent) than in urban (5.16 percent) populations.⁸¹ Moreover, the prevalence of depression in rural women has been shown to be greater than in non-rural women.⁷⁸ Additionally, 11 percent of

farmworkers had elevated symptoms of depression.⁷³ These documented elevations in incidence of depression could contribute to a heightened risk of suicide.

Researchers have noted that persons with mental illness have heightened rates of comorbid diseases.⁸² The prevalence of mental illness in people living with chronic conditions is high.¹⁹ Thus, it is not surprising that researchers have found that some of the leading causes of death in people with mental illness have been chronic conditions, such as heart disease, cancers, lower respiratory diseases, hypertension, and diabetes.^{83,84} Additionally, unintentional injuries, homicide, pneumonia, and influenza are also leading causes of death among those with mental illnesses.^{82,83}

Previous research has highlighted the fact that persons with severe mental illness are also at increased risks of contracting sexually transmitted infections.⁸⁵ Research has shown that mental illness is high among people living with the human immunodeficiency virus (HIV).^{86,87} Further, in a study conducted in four states, researchers found that having posttraumatic stress disorder (PTSD) was significantly associated with being HIV-positive.⁸⁵ Moreover, in a study that examined mental health differences between urban and rural men living with HIV, researchers found that those residing in rural had higher rates of depression.⁸⁸ Despite higher rates of depression among rural residents living with HIV, other researchers have noted that, compared to urban HIV-infected adults, rural HIV-infected adults were less likely to report visits with mental health providers.¹⁹ Underutilization of mental health services by those infected with HIV has been shown to have implications for their medication-adherence and subsequent health outcomes.⁸⁹

BARRIERS

The barriers noted in the Healthy People 2010 report remain notable today, and include limited access to specialty mental health providers, lack of sufficient mental health training, expertise, and coordination among rural health care providers, and limited utilization of available mental health services due to stigma or limited awareness of mental health issues. These barriers are often more pronounced in rural areas than they are in urban areas.⁹⁰⁻⁹²

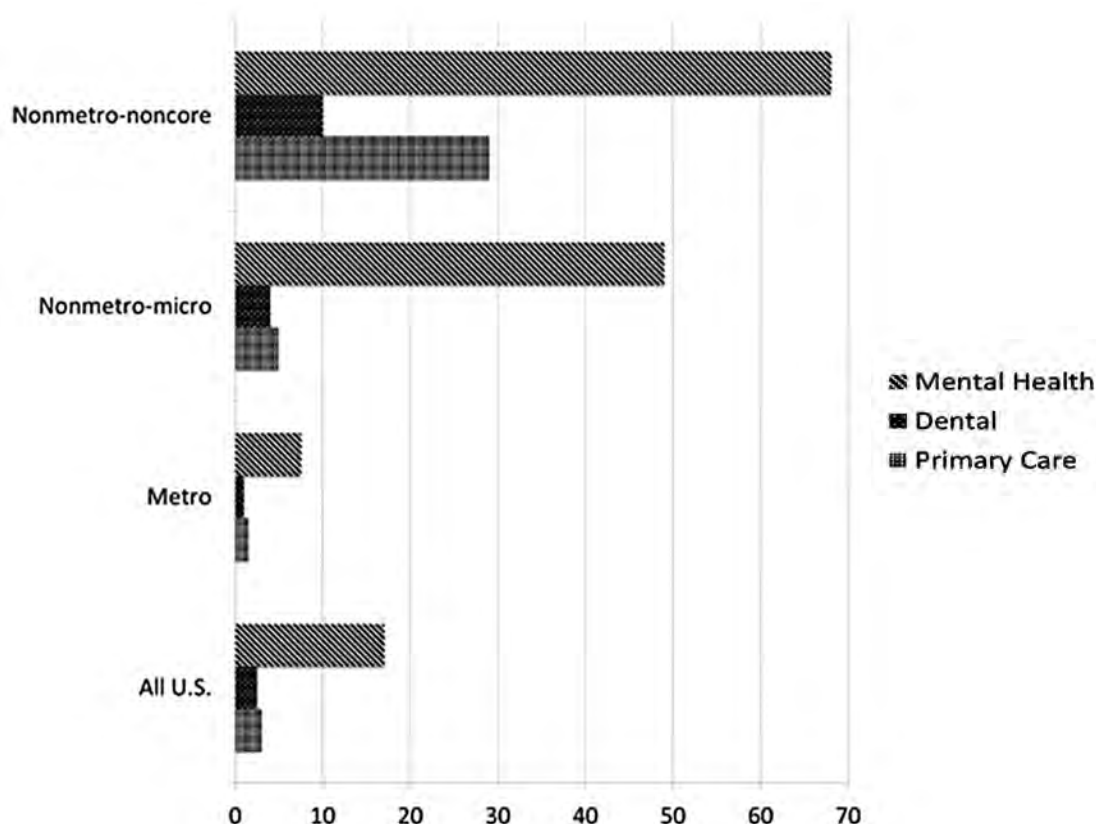
Several barriers have emerged as prohibitive to mental health access for residents in rural areas. Although aggregated research has presented mixed

results of whether there are significant differences in the prevalence rates of mental health concerns of rural and urban populations, research has established that the density of small populations inhibits the support of comprehensive resources.⁵⁵ In their estimation of the likelihood of a household being located in a county with a shortage of healthcare professionals, the United States Department of Agriculture showed that households in remote counties were more likely to be in shortage areas (Fig. 1).⁹³ In fact, more than 85 percent of Mental Health Professional Shortage Areas are in rural areas.⁷⁸ Research indicates that there are less than half as many psychologists in rural areas

mental health services, the shortage of mental health professionals was identified as a major obstacle.⁹⁴ In a survey of Chief Executive Officers (CEOs) of rural hospitals, it was widely noted that there was a shortage of mental health professionals in their respective areas.⁹⁵

Stigma is often identified as a barrier to accessing mental health services.⁹⁰⁻⁹² In mixed-methods study conducted by Murry and colleagues about the perceptions of mental health care among rural African American families, respondents voiced concerns about other community members finding out about their seeking of mental health services.⁹⁰

Figure 1. Percentage of Households in Counties Designated as Health Professional Shortage Areas



Source: United States Department of Agriculture, Economic Research Service.⁹³

Note: Nonmetro-micro counties are centered on urban clusters that have populations between 10,000 and 50,000. Nonmetro-noncore counties have no nearby urban clusters with a population of 10,000 or more.

as urban/ suburban areas – 39 psychologists per 100,000 in urban/ suburban areas as compared to 16 psychologists per 100,000 in rural areas.⁷⁶ As such, mental health services are typically sought after outside of psychologists’ and/or psychiatrists’ offices. In a study of HIV case managers’ perceptions of barriers to HIV-infected individuals’ use of

Furthermore, respondents were generally anxious about what would be said about them as parents, and about their children needing mental health care.⁹⁰ Another study found that patients and their family members dealing with mental illness in rural communities voiced feelings of shame as contributing to their hesitation in seeking services.⁹⁶

These concerns are warranted, as other research has noted that confidentiality and anonymity are often harder to maintain in rural areas.^{92,95,97-100} Further compounding rural residents' use of mental health services is their inherent value of independence and self-reliance.¹⁰¹

The distance to mental health specialty care is also often cited as a barrier to obtaining services.^{96,102,103} Rural residents typically must travel significant distances into other towns to obtain care. Previous research has noted that patients living a considerable distance away from their source of mental health services were less likely to obtain needed care.^{102,103} Moreover, the time needed to travel those distances is often prohibitive to obtaining treatment.⁹⁶ This time often has to be taken off from a workday. Some rural residents have expressed frustration over taking time off work and traveling for a significant portion of the day for a 15 to 20 minute visit with a mental health provider.⁹⁶

Another barrier to obtaining mental health services is the financial burden of those services and medications.^{96,104} In their qualitative study of the experience of rural residents with mental illness, Robinson and colleagues found that even with insurance, patients were often unable to afford the copays for their medications.⁹⁶ Furthermore, the cost of traveling to the appointment is also prohibitive. Additionally, the economic burden of taking off work to attend the mental health treatment is also an issue for rural residents.

Yet another barrier to obtaining mental health services is the lack of culturally appropriate mental health services.^{105,106} Researchers have noted that mental health professionals often do not devote serious attention to diversity and culture.¹⁰⁷ Given substantially lower rates of mental health service use by minorities, many have posited that inattention by mental health providers to deeply held cultural beliefs in the nature of mental illness and its appropriate treatment is largely to blame for the underutilization of services by racial and ethnic minorities.¹⁰⁷⁻¹¹⁰ This inattention may factor into minorities' perception of access to adequate and acceptable treatment, especially those residing in rural areas.¹¹¹ Additionally, it has been noted that some minority patients may not view their care to be acceptable when all of the providers identify with the cultural majority, and this is especially true among minority residents in rural communities.¹¹² Moreover, rural residents, regardless of whether they identify with the racial or ethnic majority or minority, sometimes

prefer providers who are themselves from rural areas or providers who understand the cultural distinctions associated with living in a rural community.¹¹³

Mental health care providers in rural communities face increased workloads relative to their urban counterparts.¹¹⁴ There is also some evidence that rural providers care for patients with more complex needs,¹¹⁴ perhaps due to late entry into the mental health system by these patients. Generally, mental health care providers have found it difficult to provide services for patients due to demands for cost containment and limited access to integrated programs and services.¹¹⁵ Moreover, mental health providers have seen substantial decreases in continuing education and professional development opportunities, and administrative support.^{115,116} As such, there have been concerns about burnout among mental health providers. A study published in 2012 found that 21 to 67 percent of mental health service providers experience high levels of burnout.¹¹⁷ Researchers have noted that burnout results from emotional exhaustion, and decreased feelings of personal satisfaction with their provision of services among mental health providers.¹¹⁸ Moreover, burnout has also been associated with a lack of integration with other professionals. This phenomenon of burnout has substantial implications for the quality of services provided by mental health professionals.¹¹⁹ Given significant shortages in the availability of specialty and non-specialty mental health services in rural areas,^{29,120} burnout can have an even more profound effect on access and quality of care for rural residents.

PROPOSED SOLUTIONS OR INTERVENTIONS

Central to improvements in access to mental health care in rural communities is better coordination of services.¹²¹ Researchers have noted that many individuals living with serious mental illness can be classified as "medically homeless," i.e. they do not engage with any providers on a regular basis.¹²² As such, these individuals often fall through the gaps in care.¹²² Academic and practitioners alike have noted that the patient-centered medical home (PCMH) may provide a good model for creating "mental health homes" for the mentally ill.¹²² Borrowing from the principles of the PCMHs, mental health home attributes would include continuity of care, family support and involvement, accountability, patient and provider shared decision-making, and the promotion of self-management.¹²²

Successful collaboration among clinicians, social workers, and educators, among others, would be key to the mental health home. Not only would the mental health needs of patients in mental health homes be addressed, but the general physical health and wellness of the individual will also be catered to.¹²² Given the comorbidities that the mentally ill experience, the mental health home has the potential to improve the overall health of its patients. The limited resources of mental health facilities in rural areas would not necessarily need to be stretched to facilitate mental health homes. Existing clinics, providers, and treatment programs could become mental homes by implementing the PCMH principles previously mentioned.¹²²

The mental health home would foster better integration of mental health services in rural areas. Integrated care is a delivery model that combines mental and medical health services to improve access.¹²³ In this model of care, patients are typically referred to a mental health specialist for evaluation and brief problem-focused interventions and subsequently treated and managed by the referring primary care provider, who maintains overall responsibility for the patient's treatment plan.¹²⁴ It has been widely observed that primary care professionals in rural areas play a larger role in the provision of mental services than their urban counterparts.¹¹⁹ Nevertheless, integration between primary care providers and specialty mental health providers is generally lacking in rural areas.¹¹⁹ Previous research has demonstrated that integrated mental health care generally improves access to care and patients' mental health functioning.¹²⁴⁻¹²⁶ Researchers have noted that this is even true for more severe mental illness in integrated care settings.¹²⁴ Given limited access to care and the fact that rural residents often present with more advanced mental illness, integrated care shows promise for mental health services in rural America.

Telemedicine, telemental health, telepsychiatry, telepsychology, or telehealth are terms used to describe a form of delivery that continues to be a viable solution to problems of access to mental health services in rural areas.¹²⁷⁻¹²⁹ Generally, these terms describe the use of information technology and telecommunications by providers to screen, assess, consult, supervise, and exchange information from a distance.¹³⁰ These technologies include, but are not limited to, video, telephone, television, and the Internet.¹³⁰ It has been demonstrated that internet-delivered mental health services may serve as an

accessible and cost-effective solution to the ability of rural residents to obtain care.¹³¹ Additionally, previous research has shown that awareness of telemedicine services among rural patients is associated with improved opinions about the quality of local care.¹³² This is in contrast to diminished opinions about the quality of care among those who travel significant distances to obtain care.¹³² Moreover, rural providers have benefitted from continuing education rendered via teleconferencing, which enables them to provide care that is in line with current best practices.^{127,133} Additionally, urban specialty providers wanting to expand their reach into rural areas are able to do so via telemedicine without having to devote substantial amounts of capital to establish physical facilities.¹²⁷

Satisfaction with telemedicine among rural residents with mental health service needs has been well documented in the literature. In a study conducted at the Yakima Valley Farm Workers Clinic in rural Washington, researchers found that Latino patients receiving cognitive-behavioral therapy via telephone showed improved depression outcomes and general satisfaction with their care.¹³⁴ Similarly, in a study conducted at the McCurtain Memorial Hospital in rural Oklahoma, Holden and Dew found that compared to patients and families who had received traditional, on-site psychiatric care, those who had received care via teleconference perceived increased availability and attentiveness of their provider.¹³⁵ In their study of the effectiveness of school-based telemedicine care, Young and Ireson found that mental health consultations via a telehealth link were instrumental in improved diagnostic and referral procedures.¹³⁶ Not only has telemedicine been effective for children and adolescents,¹³⁷ but for college-aged individuals as well. In a study conducted at a rural university in Georgia, researchers noted that telepsychiatry services can effectively complement students with mental health problems at smaller, resource-challenged, rural academic institutions.¹³⁸ Primary care providers have also benefited from telemedicine in that they have experienced improved consultation quality and satisfaction with specialists in urban areas.¹³⁹ In addition to high patient satisfaction and improved convenience for patients and providers, observers have noted that telemedicine also fosters enhanced adherence to treatment plans, increased attendance rates for telehealth visits, and better continuity of care.¹⁴⁰

It has been noted that schools provide most of children's mental health services.⁴¹ Services provided by school counselors are among the most frequently endorsed setting for services by parents of children with mental health problems.^{90,141} In a study done by Wade and colleagues of the use of services in school-based health centers, it was shown that rural students had a higher percentage of mental health visits in these centers than their urban counterparts.¹⁴¹ In addition to school-based mental health services being a solution to access in rural areas, there is some evidence they also have a positive effect on suspension and drop-out rates among students in these areas.¹⁴² A study conducted in rural west Texas found that school-based mental health programming was not only feasible in impoverished rural communities, but effective in engaging students with behavioral and emotional problems in a manner that yielded positive results.¹⁴²

Advanced-practice psychiatric nurses (APPNs) have great potential to be a solution to the shortage of mental health workers in rural areas.¹⁴³ APPNs hold at least a master's degree in psychiatric mental health nursing.¹⁴³ They are trained to assess, diagnose, and treat individuals with mental health challenges, even those with very complex problems.¹⁴³ Some APPNs continue their training to obtain specialty training tailored toward the management of some of the comorbidities that the mentally ill sometimes face, such as diabetes and cancer. Most states allow APPNs to have prescribing privileges.¹⁴³ In their study comparing the treatment profiles of psychiatrists and APPNs, Hanrahan and Sullivan-Marx demonstrated that APPNs provided similar mental health services for those living with affective disorders.¹⁴⁴ Grossman and colleagues described the feasibility of using psychiatric nurse practitioner students to provide school-based mental health services in rural communities.¹⁴⁵ With supervision from nurse practitioners, psychiatric nurse practitioner students were not only able to improve access to mental health services for children in a rural community, but they were also able to develop cultural competencies relative to effectively treating rural residents.¹⁴⁵

Community involvement in the delivery of mental health services has been also shown to be a feasible solution for improving access in rural America.¹⁴⁶⁻¹⁴⁸ There is some evidence that community members and stakeholders, such as members of the clergy, and law enforcement personnel, are more likely to contact those with mental illness than personnel involved with the formal health care system.¹⁴⁷ Kirchner and

colleagues described the importance of including community stakeholders as key participants in the quest to provide better access to mental health services.¹⁴⁷

Members of the clergy are often among the first to be tapped for help by those experiencing mental discomfort.^{149,150} Wang and colleagues found that a higher percentage of individuals with mental disorders sought help from members of the clergy relative to psychiatrists or other medical doctors.¹⁴⁹ This is especially true in rural areas.¹⁴⁹ Those seeking help from members of the clergy are often not as concerned about the barriers that were previously mentioned, such as stigma, confidentiality, and the costs associated with attending counseling sessions. However, research has noted that members of the clergy often lack the expertise needed to properly identify and adequately treat mental illness.^{151,152} Likewise, it has been noted that law enforcement personnel are not properly equipped to interact with mentally ill persons, as their orientation is more toward punishment, and not rehabilitation.¹⁵³ Nevertheless, collaborations between informal mental health service providers such as the clergy and law enforcement, and formal providers such as psychologists and psychiatrists, can engage in cross training to better understand each other's roles in meeting the mental health services needs in rural communities.¹⁵³

COMMUNITY MODELS KNOWN TO WORK

There are several evidence-based mental health models and programs that have shown promise in rural areas. Many of these models are described on the Rural Assistance Center's (RAC) website.¹⁵⁴ The following programs are just a few examples of interventions used to address mental health concerns in rural areas.

Mental Health First Aid

The Mental Health First Aid (MHFA) program is one that educates members of the public about how to help someone who may be experiencing a mental health crisis.¹⁵⁵ Trainees of the program are equipped with the skills to identify, understand, and respond to individuals with mental health service needs. This program is particularly promising in rural areas as a way to build mental health services capacity. Typical participants of this training program include primary care providers, law enforcement, teachers, faith-based organizations, shelter volunteers, and

members of the business community. Participants have reported improved knowledge of mental disorders and treatments, appropriate strategies for helping those in need of mental health services, and confidence in providing assistance.

Sowing the Seeds of Hope

The Sowing the Seeds of Hope (SSoH) program is specifically designed to aid farm workers and their families in rural communities in seven plains states.¹⁵⁶ These states include Minnesota, Iowa, Wisconsin, South Dakota, North Dakota, Nebraska, and Kansas. These states collaborated to each establish a website and a 24/7 crisis hotline designed to connect farmers to mental health resources and to provide advice. The hotline responders were trained in mental health issues and also had backgrounds in agriculture. Additionally, services were administered in both English and Spanish. As such, the program delivered services that were culturally appropriate to their target groups. Moreover, the program provided training for health professionals on best practices for providing culturally appropriate care to farm workers, vouchers for farmers and their families to obtain otherwise unaffordable mental health services, and public awareness campaigns aimed at improving knowledge about mental illness. Between 1999 and 2011, 75,000 calls were made to the program's crisis hotlines. Additionally, more than 4,400 professionals were trained on delivering mental health services that are appropriate for persons in the agricultural industry. Moreover, 15,000 families received vouchers to obtain mental health services. This program did not only expand access for rural farm workers, but additionally allowed for mental health professionals to provide culturally appropriate care.

Rural Clergy Training Program for Veteran Support

The Rural Clergy Training Program for Veteran Support was designed to assist rural clergy in providing appropriate assistance to veterans in need of mental health care.¹⁵⁷ Recognizing that the clergy play an important role in providing assistance to veterans in their communities, the Office of Rural Health (ORH) funded the Rural Training Project in 2009. The program delivered one-day workshops to clergy in several states including, but not limited to, Alabama, Kentucky, Tennessee, Texas, Minnesota, and Oklahoma. Clergy were equipped with specific skills to better understand veteran and military culture, and identification techniques needed to make referrals. Moreover, the training taught the clergy how to leverage their positions in their communities

to impact public opinion about mental disorders and to decrease stigma. Using one-year follow up data, it was noted that there was a 242 percent increase in referrals to mental health providers. Additionally, more than 83 percent of the participating clergy reported using materials provided at the workshops to further learn and assist veterans in the year following the training.

SUMMARY AND CONCLUSIONS

Mental illness and access to appropriate care continues to be problematic for rural residents. The prevalence of rural children, adults, and the elderly with mental disorders has increased. Of particular concern has been the prevalence of mental illness among rural veterans, and various racial and ethnic minorities, including African Americans and Hispanics. This is because effective treatment for the mentally ill in these groups must be contextually and culturally appropriate. Moreover, mental health service providers must be keenly aware of the nuances that are unique to rural communities, such as self-reliance, and beliefs about stigma and the perceived lack of anonymity.

The shortage of mental health service providers in rural areas has perpetuated over the last decade. Primary care physicians play a major role in the treatment of mental disorders among rural residents despite their general lack of specialized mental health training. Collaborations with mental health providers in urban areas through referrals and videoconferencing can help primary care physicians administer better treatment and obtain continuing education about current best practices. Furthermore, advanced practice nurses can play an important role in filling the access gap in rural areas as many of them can address mental health disorders as well as the comorbidities associated with mental illness. Additionally, other informal mental health service providers such as members of the clergy, law enforcement personnel, and other community volunteers can improve access to care given adequate training and opportunities for collaboration.

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Suggested Chapter Citation:

Ferdinand AO, Madkins J, McMaughan D, Schulze A. Mental Health and Mental Disorders: A Rural Challenge. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:55-72.

SUBSTANCE ABUSE TRENDS IN RURAL AMERICA

By Bitá A. Kash, PhD, MBA; Darcy McMaughan, PhD; Linnae Hutchison, MBA; and Debra Tan, MPH

SCOPE OF THE PROBLEM

- Substance abuse continues to be one of the leading health indicators as part of the nation's Healthy People 2020 initiative.¹
- Rural women report more frequent use of crack cocaine and more cocaine abuse and dependence than rural males.²
- There was no significant change in the last ten years in the proportion of adolescents aged 12–17 years who reported using alcohol or illicit drugs in the past 30 days.¹
- Rates of alcohol or illicit drug use continue to vary by race and ethnicity.
- Overall, nonmetropolitan areas have experienced an increase from 6.3 percent to 7.3 percent in the prevalence of illicit drug use from 2008 to 2009.³
- The nonmedical use of prescription opioids has increased in the past 20 years, and nonmedical prescription opioids use in less urbanized counties is expected to be a growing burden on rural America.⁴ Prescription drug related overdose deaths now outnumber overdose deaths of all illicit drugs combined.⁵

Over the past decade, the nation as a whole has made some progress with reducing substance abuse among children and youth. For example, the percentage of adolescents (age 12 to 17) who reported using alcohol or illicit drugs in the past 30 days decreased from 22.2 percent in 2002 to 18.0 percent in 2011. Still, the use of alcohol or illicit drugs by adolescents varies by setting (including geography), age, race and ethnicity, and country of birth.¹

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

A primary and overarching goal of Healthy People 2020 is to stop substance abuse before it begins through targeted education programs in younger years.⁶ Working toward this simple goal can significantly lead to longer, healthier, and more productive lives. This goal statement is highly purposeful when compared to the Healthy People 2010 goal of reducing substance abuse to protect the health, safety, and quality of life for all.⁷

For the purpose of this chapter, the authors have focused on alcohol and illicit drug use in rural America. According to the U.S. Census Bureau, a rural area is defined as all population and territory that is not classified as an Urbanized Area (UA) or

Urban Clusters (UC).⁸ Further, the federal Office of Rural Health Policy (ORHP) defines rural as located outside a Metropolitan Statistical Area (MSA), or located in a rural census tract of an MSA.⁹

Urban areas are described as UAs of 50,000 or more people and UCs are defined as having at least 2,500 but less than 50,000 people.⁸ Further, rural encompasses all population, housing, and territory not included within an urban area.⁸ Tobacco use (a legal drug, though highly addictive) is discussed in detail in a separate chapter authored by Geletko & Bellamy. The discussion in this chapter addresses the following Healthy People 2020 objectives:

- **SA-1** Reduce the proportion of adolescents who report that they rode, during the previous 30 days, with a driver who had been drinking alcohol
- **SA-2** Increase the proportion of adolescents never using substances
- **SA-3** Increase the proportion of adolescents who disapprove of substance abuse
- **SA-4** Increase the proportion of adolescents who perceive great risk associated with substance abuse

- **SA-7** Increase the number of admissions to substance abuse treatment for injection drug use
- **SA-10** Increase the number of Level 1 and Level 2 trauma centers and primary care settings that implement evidence-based alcohol Screening and Brief Intervention (SBI)
- **SA-12** Reduce drug-induced deaths
- **SA-13** Reduce past-month use of illicit substances
- **SA-14** Reduce the proportion of persons engaging in binge drinking of alcoholic beverages
- **SA-16** Reduce average annual alcohol consumption
- **SA-17** Reduce the rate of alcohol-impaired driving (0.08+ blood alcohol content [BAC]) fatalities
- **SA-19** Reduce the past-year nonmedical use of prescription drugs
- **SA-20** Reduce the number of deaths attributed to alcohol

In order to understand the scope and depth of the substance abuse problem in the U.S., particularly in rural America, and interpret the substance abuse literature of the past decade, it is important to first define the concept of substance abuse and identify the major substance abuse categories. Substance abuse is a “maladaptive pattern of substance use” that contributes to a myriad of health problems and, for certain individuals, leads to increased incidence of violence and accidents.¹⁰ In this literature review, *current use* is defined as one incidence of substance use in the last 30 days. For instance, consumption of one alcoholic drink in the past 30 days is considered current use. Licit drugs are a category of substances including alcohol, tobacco, and caffeine. Illicit drugs are a category of substances including methamphetamines, marijuana, and cocaine. Prescription opioids are licit if used by the

“SUBSTANCE ABUSE IS A ‘MALADAPTIVE PATTERN OF SUBSTANCE USE’ THAT CONTRIBUTES TO A MYRIAD OF HEALTH PROBLEMS”¹⁰

intended individual for the prescribed purpose, and illicit if used for an improper purpose.

RHP2020 SURVEY OUTCOME

A total of 551 (45 percent) respondents to the national Rural Healthy People 2020 survey identified substance abuse as the fifth leading rural health priority nationally. This trend continued across all Census regions and DHHS regions.

PREVALENCE AND DISPARITIES IN RURAL AREAS

The results of the comprehensive literature review in substance abuse trends, causes, consequences, greater societal impact, public health, and solutions allowed for an in-depth understanding of this public health issue but resulted in few studies that included a rural-urban comparison as part of their methods approach. For example, only 22 of the 89 articles retrieved and selected as relevant to substance abuse in rural America and published in the last decade included a rural-urban comparative study methodology. This initial core finding calls for additional research on substance abuse trends specific to region, rural and urban criteria, age, ethnic background, and interactions between these important factors.

Alcohol

There are often inconsistent research findings regarding the relationship between rurality and adolescent alcohol, tobacco, and illicit substance use. A recent study focused on two state representative samples in two western countries – Washington State in the U.S. and Victoria in Australia – and reports on the effect of rurality on alcohol, tobacco, and illicit drug use among adolescents.¹¹ The study found that rates of lifetime and current alcohol, tobacco, and cannabis use were significantly higher among rural students compared to urban students in both countries.¹¹ It seems that in most western countries early adolescent rural students use substances more frequently than their urban counterparts.

In the U.S. about half of Americans aged 12 or older reported being current drinkers of alcohol in a 2009 survey administered by the Substance Abuse and Mental Health Services Administration (SAMHSA). This means that an estimated 130.6 million people, similar to the 2008 estimate, are current drinkers in the U.S.¹² Nearly one quarter of Americans aged 12 or older participated in binge drinking at least once in the 30 days prior to the

survey. Although alcohol use has been ranked as a high public health priority as it results in accidents, violence, and deaths, it is generally consistent across the rural-urban continuum. A study by Webster and colleagues suggests that problem severity among female DUI offenders may be greater in rural areas and could produce challenges for practitioners who assess and treat rural female DUI offenders.¹³ Heavy binge drinking is a problem that continues to increase in rural areas nationwide. Because of the difficulties inherent in accessing and administering substance abuse treatment in rural areas, special attention should be given to tailoring alcohol abuse interventions to the needs of rural residents.¹⁴ Further, there are some regional differences that have been observed: alcohol use is generally lower in the South (48 percent) than compared to the Northeast (57 percent), Midwest (55 percent), and West (52 percent).¹² There has been a somewhat encouraging trend associated with driving under the influence (DUI) in the past decade; DUI rates fell from 14.2 percent to 12 percent from 2002 to 2009.

Studies of rural alcohol use among certain age groups and communities are insightful and provide a better understanding of alcohol use as a licit drug. For example, one recent study found that males living in more rural communities were somewhat more likely to have used alcohol and *gotten drunk* than their less rural counterparts.¹⁵ Consistent with a trend toward a narrowing gender gap across a number of substances, gender differences in alcohol use were not significant, except in the South.

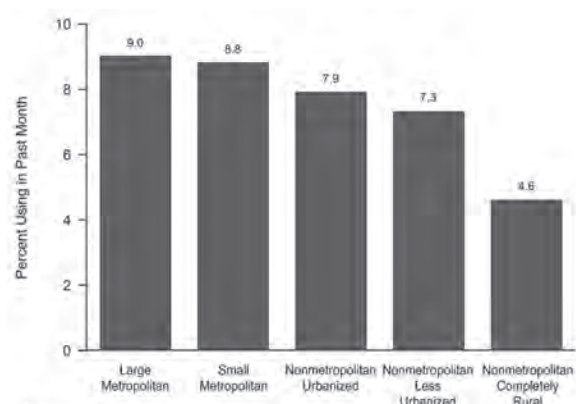
Illicit Drugs

Illicit drug use includes substances such as marijuana, psychotherapeutics, cocaine, hallucinogens, inhalants, and heroin. In 2009 an estimated 29 million Americans aged 12 years and older were current illicit drug users, translating to about nine percent of the population.¹² Marijuana is most commonly used by about 17 percent of the population, followed by psychotherapeutics (seven percent), cocaine (1.6 percent), hallucinogens (1.3 percent), inhalants (0.6 percent), and heroin (0.2 percent). The most alarming trend is the percent increase of psychotherapeutic drug users (from 2.5 percent of population in 2008 to 2.8 percent in 2009). This type of substance abuse is usually attributed to nonmedical prescription drug use, including pain relievers, tranquilizers, stimulants, and sedatives. Overall, illicit drug use in nonmetropolitan areas is lower than large metropolitan areas, although the usage rate is

growing most rapidly in less urbanized counties within the nonmetropolitan areas (**Fig. 1**).¹²

Although the prevalence of nonmedical use of prescription opioids seems to be similar among residents in urban and rural counties (4.7 percent vs. 4.3 percent), rural residents were more likely than urban residents to use acetaminophen with propoxyphene (61.1 percent vs. 55.8 percent), methadone (14.8 percent vs. 9.1 percent) and acetaminophen with codeine (3.5 percent vs. 1.9

Figure 1. Past Month Illicit Drug Use among Persons Aged 12 or Older, by County Type: 2009



Source:¹²

percent).¹⁶ Death rates attributed to, prescription rates for, and illicit uses of prescription opioids are highest in the Southeast (concentrated in the Appalachian areas) and the Northwest.^{5,17,18}

Nonmedical prescription drug use in less urbanized and rural areas might be of greatest concern when considering recent studies and evidence of high utilization rates among rural adolescents. One study reports that rural adolescents, after adjusting for race, health, and other drug use, were 26 percent more likely than their urban counterparts to have engaged in nonmedical prescription drug use.^{19,20} Factors associated with nonmedical prescription drug use included decreased health status, depression, and other illicit drug use.¹⁹ Gender plays another important role in nonmedical prescription drug use. More men abuse prescription opioids, die from prescription drug overdoses, and enter into treatment programs for opioid addiction compared to women.^{5,17,21-23} Even though the rate of emergency department (ED) visits for inappropriate opioid use is close to equal for men and women, a national representative sample of ED visits associated with

drug-related poisoning found that women 18 to 20 years old had the highest ED visit rate for suicidal poisoning, and the rate of drug-related poisoning in rural areas was three times higher than the rates in other geographies.^{5,19,22,24}

Studies of drug abuse treatment programs also contribute to evidence that nonmedical prescription drug use may be more problematic in rural areas.^{25,26} Prescription opioid abuse was found to be disproportionately high in many small urban, suburban, and rural areas.²⁵

“WOMEN BEGIN USING ALCOHOL, MARIJUANA, AND COCAINE AT LATER AGES THAN MEN.”²

There seems to be considerable evidence of different drug usage patterns among rural men and rural women in the U.S. We have recently learned that women begin using alcohol, marijuana, and cocaine at later ages than men; however, there are no gender differences in current powder cocaine use.² Furthermore, females reported more frequent use of crack cocaine and more cocaine abuse and dependence than males. In regression analyses, women who use crack cocaine had 1.8 times greater odds of reporting frequent crack cocaine use than men who use crack cocaine.² Even though rates of nonmedical sedative-hypnotics and opiates use are reported to be high in both rural and urban areas, these rates are higher for rural women.²⁷ Adjusting for other factors, rural women are 1.74 times more likely to have used nonmedical sedative-hypnotics and opiates.²⁷ Findings around gender differences in substance abuse among rural populations have implications for gender specific substance abuse prevention, treatment, and victim advocacy program design and implementation.

VARIATION BY RURAL REGION

Based on results of a national survey of substance abuse among youth, rural Alaskan youth reported using alcohol more than any other drug, followed by inhalants and cigarettes or marijuana.²⁸ Another large scale study of adolescent youth in rural areas distinguished between living environment and found that high school aged youth living on farms were exposed to greater risk factors for substance abuse than students living in towns.²⁹ These findings suggest that outreach to farm-dwelling youths may be particularly important for interventions seeking to prevent adolescent drug use in rural America.

Nonmedical prescription opioid use has become particularly problematic in rural areas such as Appalachian Kentucky, Virginia, and West Virginia.^{25,30,31}

Within the Appalachian region of the U.S., rural drug users are significantly younger at the onset for use of oxycodone, hydrocodone, benzodiazepines, cocaine, and crack.³² Rural Appalachian drug users also had significantly higher odds of lifetime cocaine and crack use when compared to their urban counterparts in Kentucky.³² Hepatitis C virus (HCV) knowledge is important and could become a growing public health concern among substance abusers.³³ The rate of HCV infections is concerning among rural Appalachian injection drug users and has been linked to posttraumatic stress disorder, cocaine use, and injection of prescription opioids.^{34,35} The impact of HCV status disclosure and standard informational counseling on alcohol use among rural Appalachian drug users is still poorly understood and requires attention by experienced public health experts. A recent study revealed that HCV status disclosure and standard informational counseling alone do not curtail drinking among HCV-positive drug users in these rural settings.³⁵

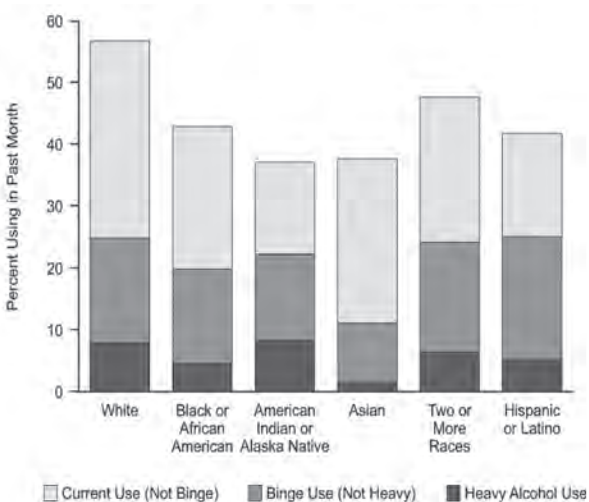
Another recent study of rural Appalachian drug users that focused on gender differences found that more men report the use of alcohol and “street” drugs, including heroin, crack cocaine, methamphetamine, marijuana, and hallucinogens.³⁶ Furthermore, males report the use of alcohol, marijuana, and hallucinogens at a significantly younger age among the rural Appalachian communities. Understanding gender differences in substance use as well as other differences among individuals living in rural Appalachia presents important opportunities to incorporate this knowledge into substance abuse intervention, prevention, and treatment programs and efforts.³⁶

Much research is needed to determine the context of rurality, which contributes to these problematic trends. Variations in rural region and context should include regional culture (e.g., Appalachian and American Indian communities), socioeconomic context,³⁰ age,³² gender,^{2,37} school environment, and more. The following discussion highlights some of these contextual factors that go beyond rural-urban differences and often interact with the urban-rural continuum scale. Access to drug treatment still remains a top priority for public health experts working with rural Appalachian and American Indian communities.³⁷

VARIATIONS BY RACE AND ETHNICITY

Overall, whites are more likely than other racial/ethnic groups to report current use of alcohol (56.7 percent). In a 2009 survey, rates were 47.6 percent for persons self-identifying as two or more races, 42.8 percent for blacks, 41.7 percent for Hispanics, 37.6 percent for Asians, and 37.1 percent for American Indians or Alaska Natives (Fig. 2).¹² A minority in a community, e.g., a white student in a predominately African American rural community, had greater risk for alcohol use and getting drunk.¹⁵

Figure 2. Current, Binge, and Heavy Alcohol Use among Persons Aged 12 or Older, by Race/Ethnicity: 2009



Source:¹²

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

As discussed in earlier sections of this chapter, nonmedical prescription drug usage growth rates are disconcerting for rural regions of the U.S., and these trends represent higher mortality rates and many other health problems. In the United States, rural areas have reported an increase in overdose deaths, secondary to nonmedical use of prescription opioids. However, little is known about the differences in nonmedical use of prescription opioids among urban and rural adults.¹⁶ In a recent study of unintentional prescription opioid related overdose deaths in Utah, the authors conclude that drug overdose is more likely to take place among the middle-aged, Caucasian, non-Hispanic/Latino, less educated, and single adults who reside in rural areas when compared to the general adult population.³⁸ Furthermore, methadone-related overdose deaths

increased in the U.S. by 47 percent from 1999 to 2005.³⁹ A recent study described medical examiner cases of 61 methadone overdose in rural Virginia in 2004 and concluded that the majority of deaths (67 percent) were related to illicit methadone use, rather than prescribed or Opioid Treatment Program (OTP) uses.³⁹ Moreover, of the decedents, only five percent were enrolled in an OTP.³⁹ The source of methadone in the 61 methadone-related overdose deaths was mostly non-prescribed (67 percent), although 28 percent of decedents were prescribed methadone for analgesia. Only five percent of decedents were actively enrolled in an OTP. The majority of deaths were attributed to polysubstance overdose.³⁹ Prescription drugs have replaced heroin and cocaine as the leading drugs involved in fatal drug overdose.⁴⁰

The daily use of marijuana, the illicit use of tranquilizers, and injection drug use also increase the risk of depressive symptoms.⁴¹ Higher odds of depression symptomology among stimulant

“NONMEDICAL PRESCRIPTION DRUG USAGE GROWTH RATES ARE DISCONCERTING FOR RURAL REGIONS OF THE U.S.”

users were linked to white ethnicity, female gender, instability of the living situation, and increased age.⁴¹ These results suggest that a host of drug and nondrug factors need to be considered when addressing depressive symptoms in stimulant users.

Physical victimization and harm seem to be other major public health concerns among rural methamphetamine and cocaine users. As recorded in a recent study, there is a significant relationship between stimulant use and received partner violence among rural substance users (especially Caucasians) and a need for victimization screenings in settings where such individuals seek health care.⁴²

BARRIERS

Several recent studies have contributed to a better understanding of reasons why young adolescents in urban, as well as rural areas, start using alcohol and illicit drugs. These studies have also acknowledged barriers to eliminating these contributing risk factors as intended based on Healthy People 2020 objectives.⁶ Based on a recent study focused on urban-rural differentials of Alabama students' alcohol and marijuana use, Lo et al.⁴³ found that there were significant differences in certain structural factors and in how these factors were associated with

substance abuse. The findings show that students' recent alcohol and marijuana use is associated with characteristics of the environment; a protective school environment seems to effectively reduce alcohol and marijuana use.⁴³

One of the most recognized and expected barriers to lowering the number of substance abuse users in rural America is the lack of access to appropriate treatment and interventions, combined with the lack of resources for substance abuse and mental health services in rural areas.⁴⁴ However, rural residents who abuse drugs have lower substance abuse treatment utilization even when services are available.⁴⁵ A recent study of over 700 rural drug users found that, despite high levels of recent and lifetime self-reported substance use among rural residents who abuse drugs, available treatment services were underutilized.⁴⁵

Another common barrier to alcohol dependency and substance abuse treatment capacity and utilization in rural areas is linked to the level of knowledge that primary care providers (PCPs) in rural practices have to offer drug and alcohol users. Poor provider training related to substance abuse, lack of alcohol screening tools, and lack of referral treatment options were recently identified as barriers in a survey of rural healthcare providers.⁴⁶ Despite awareness that rural adolescent alcohol use is a significant problem, PCPs, adolescents, and parents recognize that screening, brief interventions, and referral to treatment (SBIRT) for adolescent alcohol use in rural PCP settings is highly ineffective.⁴⁶

PROPOSED SOLUTIONS OR INTERVENTIONS

Valuable lessons have been learned from specific and targeted population-focused intervention programs, such as the Adults in the Making (AIM) prevention program targeted towards African American youth and potential alcohol use. Based on a recent long-term efficacy study of the AIM program, facilitating appropriate protective parenting processes and self-regulatory skills during the transition from adolescence to emerging adulthood for rural African Americans can contribute to a self-sustaining decreased interest in alcohol use and a lower likelihood of developing substance use problems.⁴⁷ Access and to and funding for culturally sensitive substance abuse treatment programs for American Indians can also be highly effective.⁴⁸

“RURAL YOUTH (JUNIOR HIGH AND SCHOOL-AGED STUDENTS) ARE AT HIGHER RISK FOR EARLIER ONSET OF ALCOHOL AND DRUG USE.”¹¹

As discussed in earlier sections of this chapter, rural youth (junior high and school-aged students) are at higher risk for earlier

onset of alcohol and drug use. The rates of lifetime and current alcohol, tobacco, and cannabis use were significantly higher among rural youth compared to urban youth in both U.S. and Australia.¹¹ Results from a large scale urban-rural comparative study suggest that there are multiple potential points of intervention to prevent initiation and progression of drug use among rural adolescents, including preventing school dropout, increased parental involvement, and increased access to health, mental health, and substance abuse treatment.¹⁹ These recorded trends and statistics should point public health and health services professionals to focus on the adolescent rural population (junior high and high school age) when designing preventions and education programs around substance abuse in the U.S. Based on empirical evidence, programs that encourage and enable rural adolescence to participate in “pro-social behaviors” have positive health outcomes. A longitudinal study of rural adolescents' pro-social behaviors and substance use demonstrates that youth who frequently exhibit pro-social behaviors, such as volunteering and helping society, are less likely to engage in substance use than those who exhibit relatively low levels of pro-social behaviors.⁴⁹ Intervention programs engaging youth in volunteering, community service, and social activism seem to have great promise in preventing rural youth from licit and illicit drug use.

Results from a national sample of drug related ED visits present us with valuable lessons for substance abuse prevention interventions and programs.²⁴ Interventions and future research should first target nonmedical prescription opioids use in rural areas. This includes children from birth to five years old for unintentional drug-related poisoning, and female ages 12 to 24 years for suicidal drug-related poisoning. Interventions to decrease nonmedical use of prescription drugs are of extreme need in rural America, including efforts to reduce overdose deaths due to nonprescription use of methadone³⁹ and the rate for suicidal poisoning among women in rural areas.²⁴

COMMUNITY MODELS KNOWN TO WORK

Clearfield-Jefferson Drug and Alcohol Commission

The Clearfield-Jefferson Hepatitis C and Substance-Abuse Expansion Project, located in Pennsylvania, aims to increase access to services for those who abuse substances and are at high-risk for developing viral Hepatitis C.⁵⁰ The Clearfield-Jefferson Hepatitis C and Substance-Abuse Expansion Project utilizes the Screening, Brief Intervention, and Referral to Treatment (SBIRT) with primary care model to provide early intervention and treatment services for persons with substance use disorders, and to those who are at risk for developing substance abuse disorders.^{50,51}

SBIRT capitalizes on opportunities for early intervention with at-risk substance users in multiple settings such as hospital emergency rooms, trauma centers, and community settings.⁵¹ This program oversees the development and implementation of a system of services and emphasizes increased awareness of the risks associated with substance abuse. Further, organizations in the Clearfield-Jefferson Hepatitis C and Substance-Abuse Expansion Project promote behavioral change and early Hepatitis C screenings within the local medical community to quickly identify the appropriate level of treatment, if necessary.^{50,51}

Armstrong-Indiana-Clarion Drug and Alcohol Commission

The Nurse Navigator & Recovery Specialist Outreach Program, also located in Pennsylvania, intends to address those with both physical and behavioral health issues, as well as concurrent substance abuse problems by establishing a referral system.⁵² The Nurse Navigator & Recovery Specialist Outreach Program incorporates the Community Health Worker Care Coordinator/Manager Model, which provides case management for individuals who have chronic conditions or need help navigating through the health care system.⁵³ From this model, programs pair a community health worker care coordinator (CHW) with a medical professional who they can call at any time when questions arise.⁵³ Further, CHWs act as a liaison between various health, human, and social services organizations and the substance abuse population.⁵³ The program seeks to enhance rural physical and behavioral health care delivery in a drug and alcohol treatment setting.⁵²

Clients in this program also learn about weight loss, exercise, smoking cessation, and diabetes prevention through wellness classes.⁵²

Indiana Rural Health Association

The Peer-to-Peer Telemedicine Network, located in Indiana, aspires to enhance rural mental access via peer-to-peer telemedicine networks.⁵⁴ Telemedicine is the use of medical information that is exchanged through electronic communications from one site to another.⁵⁵ Telemedicine incorporates a number of applications such as video conferencing, email, smart phones, transmission of images and remote monitoring of vital signs to improve a patient's clinical health status.⁵⁵ Telemedicine can be extremely useful since it can extend care to patients who are located in remote or rural areas. The goal of Peer-to-Peer Telemedicine Network is to increase the number of necessary mental health services for rural community mental health center patients.⁵⁴ The peer-to-peer model along with the Peer-to-Peer Telemedicine Network align core clinical services with reimbursement for mental health services.⁵⁴

SUMMARY AND CONCLUSIONS

Substance abuse in rural areas remains a growing issue in the U.S., and is becoming especially prevalent in Appalachian, American Indian, African American, and adolescent communities. Higher prevalence rates in conjunction with high-risk behavior place rural people at high risk of substance abuse and related issues in comparison to their rural counterparts. Methamphetamine, oxycodone, and prescription drug abuse have also grown within the past ten years. Early prevention and treatment programs and facilities, as well as initiatives to improve access to care, are vital to overcoming these barriers related to substance abuse.

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Suggested Chapter Citation:

Kash BA, McMaughan D, Hutchison L, Tan D. Substance Abuse Trends in Rural America. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:73-82.

HEART DISEASE AND STROKE IN RURAL AMERICA

By Janet Helduser, MA; Yuxian Du, BS; and Jane N. Bolin, PhD, JD, BSN

SCOPE OF THE PROBLEM

- Cardiovascular disease continues to be the leading cause of death for Americans of all age groups.¹
- Although rates of death from heart disease and stroke have declined over the past decade, many of the Healthy People 2010 goals for cardiovascular health were not met.¹
- Heart disease is a particularly ominous threat for older adults, accounting for more than 80 percent of all deaths for people over 65.²
- Stroke is the fourth leading cause of death in the United States and a leading cause of adult disability.^{2,3}
- Increasing blood pressure monitoring and reducing high blood pressure continues to be a priority, as 31 percent of American adults have high blood pressure and the number has remained relatively unchanged since 1999.^{4,5}
- Even though 71 million Americans have high cholesterol, only one out of every three adults with high cholesterol has the condition under control.⁶

From 2000 to 2010, deaths attributed to cardiovascular diseases (CVD) declined significantly; however, one out of every three adult deaths in the United States is still accounted for by CVD.² Heart disease and stroke are the first and fourth leading causes of death, respectively, for adult Americans.^{1,7} Subsequently, the Healthy People 2020 overall goal for heart disease and stroke is to “improve cardiovascular health and quality of life through prevention, detection, and treatment of risk factors for heart attack and stroke; early identification and treatment of heart attacks and strokes; and prevention of repeat cardiovascular events.”⁸ A 2011 policy statement from the American Heart Association (AHA) estimated that CVD will account for more than \$800 billion in annual healthcare-related expenditures by the year 2030.⁹ Disparities in CVD have been reported for gender,¹⁰⁻¹² race/ethnicity,¹²⁻¹⁶ socioeconomic status,¹² and rural/urban residence.^{16,17}

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

Selected Healthy People 2020 objectives, critical to the overall goal of reducing heart disease and stroke, are shown below. All nine of these objectives are equally important for rural Americans, although influencing factors may differ significantly between urban and rural populations.

- **HDS-1** (Developmental) Increase overall cardiovascular health in the U.S. population
- **HDS-2** Reduce coronary heart disease deaths
- **HDS-3** Reduce stroke deaths
- **HDS-4** Increase the proportion of adults who have had their blood pressure measured within the preceding two years and can state whether their blood pressure was normal or high
- **HDS-5** Reduce the proportion of persons in the population with hypertension
- **HDS-6** Increase the proportion of adults who have had their blood cholesterol checked within the preceding five years
- **HDS-7** Reduce the proportion of adults with high total blood cholesterol levels
- **HDS-8** Reduce the mean total blood cholesterol levels among adults
- **HDS-10** Increase the proportion of adults with hypertension who meet the recommended guidelines

Confirming the importance of these Healthy People 2020 goals and objectives for heart disease and stroke, the AHA initiated new strategic directions to support its Impact Goal for 2020: “By 2020, to improve the cardiovascular health of all Americans by 20 percent while reducing deaths from cardiovascular diseases and stroke by 20 percent.”¹⁸

SURVEY OUTCOMES

In December 2010, a national web-based survey was launched to determine which Healthy People 2020 objectives were considered to be the top ten priority health issues for rural Americans. More than 1,200 rural stakeholders participated in the survey. Nationwide results were tabulated, and also categorized into United States Census Bureau (USCB) and Department of Health and Human Services (DHHS) regions.¹⁹

The overall percentage of rural stakeholders who identified heart disease and stroke as a top ten priority health issue was 45.3 percent, making it the 6th highest priority for rural Americans. This percentage varied somewhat among USCB regions; that is, 43.5, 47.8, 41.9, and 52.9 percent for the West, Midwest, South, and Northeast regions, respectively. The percentage of respondents in each DHHS region that identified heart disease and stroke as a top ten priority for rural America ranged from 62.5 percent in Region 1 to 39.2 percent in Region 3. Results of the survey provided the basis for the literature reviews comprising volumes one and two of *Rural Healthy People 2020* (RHP2020).

Respondents to the RHP2020 survey also addressed the Healthy People 2020 sub-objectives related to heart disease and stroke. Their perceptions about the importance of these sub-objectives for *rural* Americans were recorded, as well as the feasibility of accomplishing the sub-objectives by 2020. Respondents indicated that a leading concern (53.7 percent) for rural populations, related to heart disease and stroke, was education about prevention through healthier lifestyles. The next two sub-priorities identified

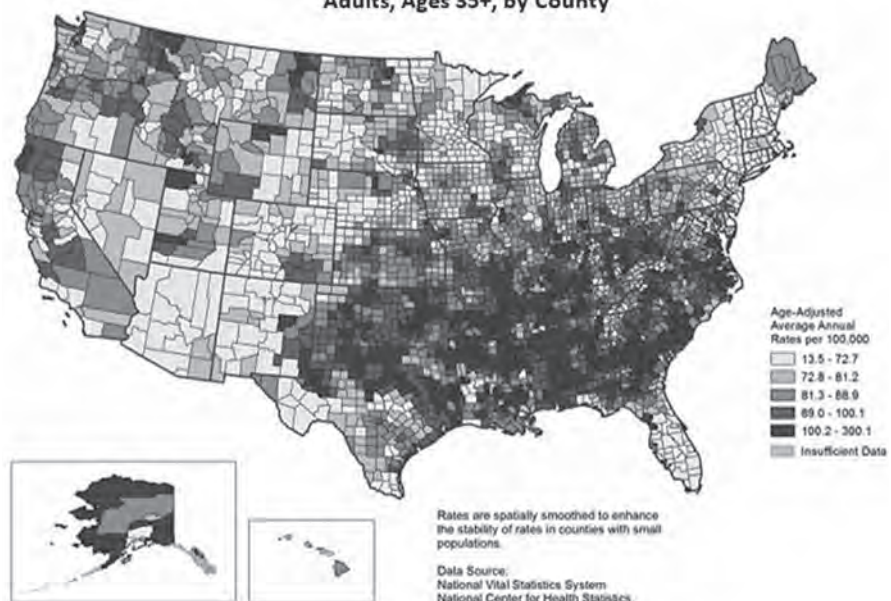
were treatments (8.6 percent) and early detection (6.8 percent). Clearly, the priority concern for heart disease and stroke was prevention, accompanied by better treatment, awareness, and early diagnosis. These results suggest the importance of community education and health promotion interventions for increasing awareness of, and reducing, risk factors for heart disease and stroke, as well as supporting advances in medicine for early diagnosis and effective treatment.

PREVALENCE AND DISPARITIES IN RURAL AREAS

Stroke

Stroke is a major cause of disability²⁰ and the fourth leading cause of adult deaths in the U.S. after heart disease, cancer, and lower respiratory diseases.^{1,3} Annually, approximately 800,000 Americans have a stroke and one American dies from a stroke every four minutes on average.² The estimated negative economic impact of stroke on the U.S. economy, partly a result of lost productivity, has been estimated at more than 73 billion in 2010.¹⁸ This is in addition to the health and financial burdens imposed on individuals and their families, as a result of the stroke event and post-event management. Disparities in the health status of rural adults versus their urban counterparts have been reported for a variety of stroke-related issues, including: access to emergency treatment within the time required to reduce overall stroke morbidity and mortality,²¹ stroke mortality rates,²² acute stroke management,²³ and post-acute stroke rehabilitation therapy.²⁴

Figure 1. Stroke Death Rates, 2008-2010
Adults, Ages 35+, by County



Stroke Mortality and Hospitalizations. **Figure 1** shows areas of the U.S. that see the highest incidence of stroke mortality.²⁵ Commonly referred to as the “Stroke Belt,” high rates of mortality from stroke (at least ten percent higher than the national mean) are seen in a region of 11 southeastern states. According to the USCB, most of these states have a percentage of residents living in rural areas or small towns that is greater than the national percentage of 19.3 percent in 2010.²⁶ Eight southern states in the Stroke Belt (Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee) have an average stroke mortality that is approximately 20 percent higher than the rest of the nation.²² In North Carolina, South Carolina, and Georgia, stroke mortality is reportedly 40 percent higher than in non-Stroke Belt states.²²

Nationally, rural-urban disparities in stroke mortality have been reported. For example, even among the non-Stroke Belt states, rural counties display significantly higher rates of stroke mortality (12 percent increase) compared to urban counties.²⁷ Isolated areas of the western coast of the U.S. and far northern Alaska also have high rates of death from stroke.

Stroke hospitalization rates (**Fig. 2**) reflect similar trends.²⁵ The prevalence of hospitalization for stroke is highest in the Appalachians and southeastern states. In 2004, West Virginia, the second-most rural state in the nation, reported the fourth highest hospitalization rate from stroke.²⁸ Alkadry and Tower (2010), in their study of older adults in West

Virginia, reported that rural older women face higher risk for stroke than their urban counterparts or than rural older men.²⁹

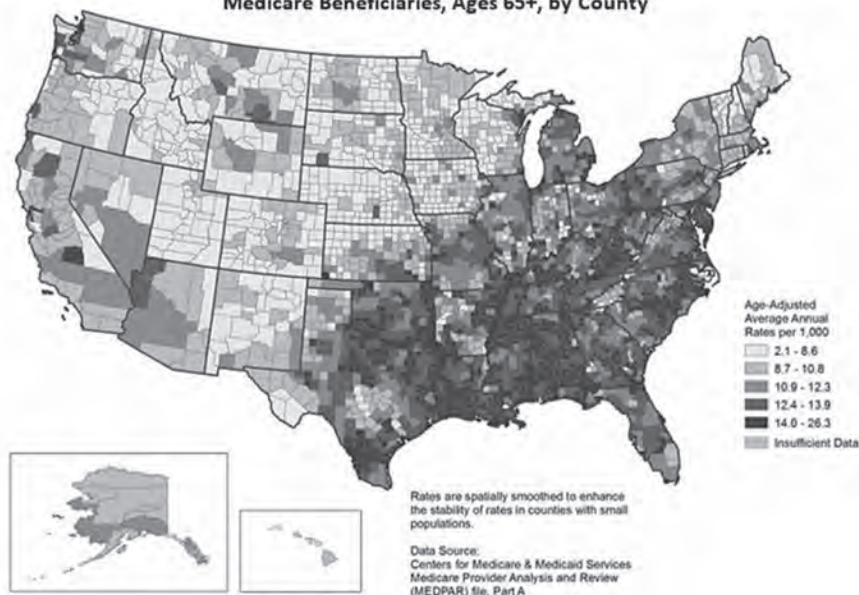
Acute stroke management. There are more than 1000 healthcare facilities in the U.S. that are classified as Primary Stroke Centers (PSCs), as they have an ability to provide a high level of expertise and care to victims of stroke.³⁰ In addition, approximately 60 clinical facilities have received the higher-level Advanced Certification for Comprehensive Stroke Centers (CSCs).³⁰ By and large, these facilities are located in urban areas. Indeed, Albright et al. (2010) reported that at least 50 percent of the U.S. population is not within 60 minutes of a PSC.²³

Rural residents of the U.S. often have reduced access to specialized healthcare services, as might be necessary for adequate management of an acute stroke event. This may be due to geographic barriers, travel distances, or fewer local resources. The advent of telemedicine has, in some areas, presented an opportunity for specialized urban hospitals with PSCs to provide specialized services to smaller, more rural community hospitals. Telemedicine has proven effective in emergency stroke care where rapid examination and expert interpretation is critical.³¹

Many small rural hospitals that provide local residents with emergency and inpatient care are designated as Critical Access Hospitals (CAHs). These CAHs are defined as being more than 35 miles from the nearest hospital (more than 15 miles in areas with only secondary roads) and having fewer than 25 inpatient beds. As of June, 2013, there were more than 1,300 hospitals classified as CAHs.³² In a 2012 study, Lichtman et al. reported that CAHs had somewhat higher 30-day risk-standardized stroke mortality rates, while exhibiting similar risk-standardized re-admission rates for stroke patients.³³ There have been no reported differences between rural and urban dwellers hospitalized for stroke, with regard to medication adherence post-discharge and at one year after stroke.³⁴

Prevention Education. Genetics can play a role in predisposing an individual to risk factors for stroke. However, many health risks for stroke are modifiable,

**Figure 2. Stroke Hospitalization Rates, 2008-2010
Medicare Beneficiaries, Ages 65+, by County**



such as hypertension, obesity, diabetes, high cholesterol, smoking, use of illegal drugs, and excessive alcohol consumption.²² Several of these conditions are more prevalent in rural settings, including diabetes¹⁷ and hypertension.³⁵

Like other adverse health events, likelihood of stroke can be reduced through proper management of these health issues. This requires an increased awareness of stroke risks, signs and symptoms of stroke, and education on stroke prevention. The single most effective prevention therapy for stroke has been blood pressure control. The repositioning of stroke as the fourth, rather than third, leading cause of mortality has been attributed to improvements in the control of hypertension.^{22,36}

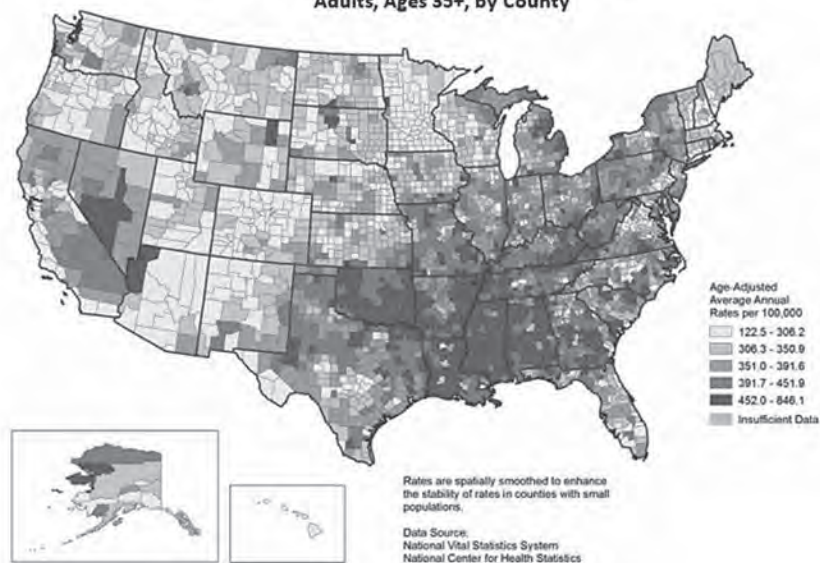
Peer-led self-management education courses, like Stanford University's chronic disease self-management course, have been shown to improve self-reported general health and reduce fatigue, health distress, and hospitalizations.³⁷ But, the geographic remoteness of rural communities can make prevention education challenging, despite the critical need for such services. Schweichert et al. (2011) demonstrated the feasibility of delivering stroke education to an elderly, rural population via telecommunication, thereby reducing the potential impact of distance.³⁸

Post-acute stroke rehabilitation therapy. In addition to increased incidence of and mortality from stroke, rural patients are less likely to receive post-acute stroke rehabilitation than their urban counterparts.²⁴ However, Rodriquez and colleagues (2011) reported no differences in medication adherence among rural and urban dwellers who had been hospitalized for stroke.³⁴

Heart Disease

According to the AHA, diseases of the heart represent about three-fourths of all mortality from cardiovascular diseases.²² The most commonly occurring type of heart disease is coronary heart disease or narrowing of the arteries that supply oxygenated blood to the heart tissue. Morbidity and mortality from coronary heart disease vary based on gender, race/ethnicity, socioeconomics, and

**Figure 3. Heart Disease Death Rates, 2008-2010
Adults, Ages 35+, by County**

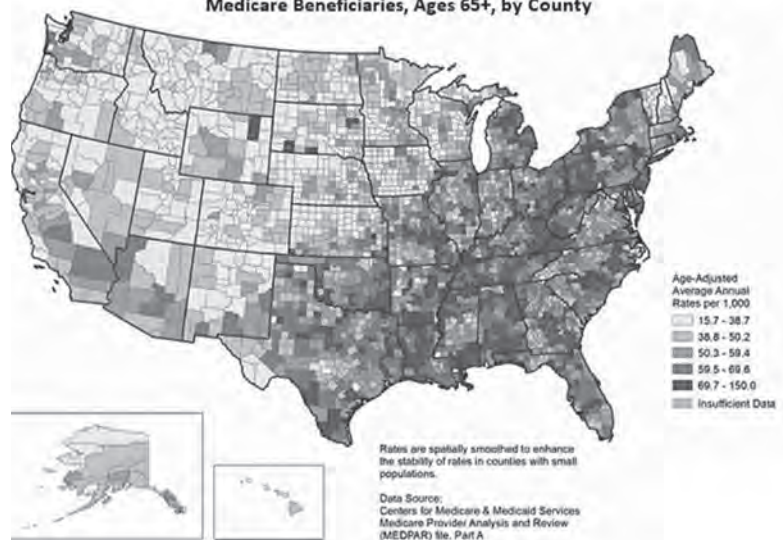


geographic location.³⁹⁻⁴¹ Occupational structure, comprised of workforce, social, and economic indicators, also contributes to coronary heart disease prevalence.⁴⁰ For example, it has been reported that coronary heart disease prevalence and heart attack morbidity are relatively high in Appalachian coal mining regions with reduced socioeconomic status.^{40,42} Rates of cardiovascular disease have also increased among Alaska Natives and American Indians.⁴³

Figure 3 provides a three-year average (2008-2012) for death from heart disease for Americans over age 35.²⁵ Mortality from heart disease is, generally, highest in southern parts of the U.S., particularly along the flow range of the Mississippi River. Indeed, geographical location and being distant from major cities may have a correlation with high death rates from heart disease;⁴⁴ but, major cities with dense populations are also prone to high rates of mortality due to heart disease. In a European study on social inequality and acute myocardial infarction (AMI), van Oeffelen (2012), reported that the time delay in AMI and hospitalization was related to lower socioeconomic status.⁴⁵ When compared to their urban counterparts, in-hospital mortality was higher for patients with AMI at rural hospitals (8.1 percent versus 5.7 percent, $p < 0.0001$) in a 2010 study by Ambardekar.⁴⁶ However, Abrams (2010) concluded that veterans with rural residence, admitted for AMI care, had similar risk for 30-day mortality as urban veterans.⁴⁷

Hospitalization. During the same 2008-2012 period, similar geographic trends were observed

**Figure 4. Heart Disease Hospitalization Rates, 2008-2010
Medicare Beneficiaries, Ages 65+, by County**



for hospitalization rates from heart disease among Medicare beneficiaries aged 65 and older (**Fig. 4**).²⁵ Hospitalization rates for heart failure among Medicare beneficiaries have been reported to be highest along the lower Mississippi River Valley and the Ohio River Valley, including the Appalachian region.⁴⁴

VARIATIONS BY RACE AND ETHNICITY

Based on previous studies, African American, and to a lesser extent Hispanic populations—two of the most underserved rural populations—have the highest rate of incidence and death from heart disease and stroke.⁴¹ This disparity exists, not only in rural areas, but also in metropolitan areas where racial and ethnic groups may tend to cluster to create urban neighborhoods with a certain set of living conditions. Racial and ethnic disparities in CVD may be influenced by basic health conditions resulting from environmental factors,⁴⁸ the prevalence of related diseases,³⁵ or lack of knowledge and awareness of heart disease and stroke,⁴³ as well as the challenge of access to medical services (i.e., area of residence). In a study by Evans (2010), rural black women were less aware of the influence of unhealthy lifestyle factors, such as inactivity, smoking, and poor diet, on getting coronary heart disease.⁴⁹ A 2013 study of patients with left main coronary artery disease found that African American race and age were significant predictors of adverse cardiac outcomes.⁴¹ Ethnicity-based health disparities in coronary heart disease exist at every socioeconomic level.⁴¹

As mentioned previously, the occurrence of stroke events and stroke mortality has declined overall in

the last decade. The decline in stroke mortality has been observed for both genders and for all age groups and racial/ethnic groups.³⁶ However, racial/ethnic disparities still exist for stroke; the rate of decline is disproportionately slower among Hispanics and African Americans.⁵⁰

The 2010 age-adjusted statistics for stroke mortality, presented by the AHA, indicated that African American men and women are still most at risk, with stroke death rates of 56.6 and 49.6 per 100,000 people, respectively.^{2,51} In a 2013 lecture, Howard reported that the death rate from stroke was three times higher in African Americans than whites.⁵⁰ African American *men* have the highest risk for stroke mortality.² This is true nationwide; African Americans are the only racial group in which urban residency is not

associated with a decrease in stroke mortality.²⁷ They also have a first-ever stroke rate that is almost twice that of whites.⁵¹

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Mortality or morbidity is frequently not caused by one single disease, but rather by multiple dysfunction of important body organs, or a combination of multiple diseases. Patients who experience heart disease or stroke often have other co-morbidities. For example, heart disease is closely linked to cholesterol levels and hypertension.³³ The accumulation of cholesterol and other fatty acids could be the cause, or the result, of overweightness and obesity. Lack of physical activity can contribute significantly to obesity, and therefore to heart disease and stroke. Likewise, hypertension can result in increased blood pressure in the brain and an increased danger of stroke. While stroke is closely related with neurological health, being a stroke victim could also increase the risk of other neuro-system diseases.

Of significant impact on heart disease and stroke in rural America is the rapid increase in the number of people with Type 2 diabetes. The complications from diabetes are numerous, and include the development of cardiovascular disease. A higher prevalence of diabetes has been reported for rural areas compared to urban areas, although different geographic regions of the United States exhibit different burdens of diabetes prevalence.¹⁷

BARRIERS

Access to Specialized or Emergency Care

Cardiovascular diseases are chronic diseases that accompany the patients all the time, and may require periodic emergent care. Because victims of heart disease and stroke often do not recover fully, they may require readmission into healthcare services making access to healthcare resources essential for treatment and for long-term solutions to the problem. Geographic distance to healthcare service centers and access to high-quality, or at least proficient, heart or stroke service centers are important factors in treatment of heart disease. Distance also plays a role in stroke mortality⁵² and in reducing readmissions.⁵³ Rural areas have fewer specialized healthcare centers that can be driven to in less than 30 minutes.

Rural medical centers may also lack specialized physicians and resources. This might be the result of physicians' unwillingness to work in rural areas or lack of medical supplies and equipment in rural areas. Therefore, rural patients may need to be transferred to a higher level of hospital for necessary care. Transfer has been associated with an increased likelihood of in-hospital survival following acute myocardial infarction.⁵⁴

Rural health centers are usually taking care of large geographic areas, and often larger patient populations.³¹ This means that even patients who can get to the healthcare center, regardless of the long driving distance, may still not be able to receive timely care for their heart disease or stroke. As both heart disease and stroke require long term care⁵⁵ and may resist being controlled, the rate of readmission could also be an important factor in determine risk and mortality. Because of long driving distances, and reduced or limited resources, readmission is less feasible in rural areas than urban areas.

Rurality presents additional barriers that may contribute to CVD including social isolation, lack of healthy lifestyle options, and fewer physician visits. This may generally contribute to readmissions, as in the case of older rural veterans with congestive heart failure who were at higher risk for re-admission than their urban counterparts.⁵⁵

Barriers in access to healthcare, by racial and socioeconomic factors, are fully discussed in the 2013 National Healthcare Quality and Disparities Reports from the Agency for Healthcare Research

and Quality. Although rural/urban status is not specifically addressed, it is reported that health disparities are especially significant for minorities and people in poverty who measured worse quality and access for many of the healthcare measures studied.⁵⁶

KNOWN CAUSES OF THE CONDITION

Rural residents are at a higher risk for heart disease and stroke, in part because of a generally older population and an increased prevalence of certain risk factors. Modifiable lifestyle contributors to heart disease and stroke include: physical inactivity, obesity, accumulation of cholesterol, smoking, and secondhand smoke.^{8,57-59} In addition, genetics also plays a role in predisposing some individuals to risk for heart disease and stroke.

Obesity is more common in low-income populations and seen more often in rural populations when compared to urban equivalents.⁶⁰ For poor populations, especially in urban and suburban areas, the food they eat may contribute to obesity, because they may not be able to either find or afford healthy food options. Food options may be limited to inexpensive fast foods which are less diverse in nutrition.⁶¹

Evidence shows that more sedentary lifestyles further promote obesity and a higher risk of heart disease and stroke, although this is not a threat that is limited to rural areas.⁶² Rural residents, however, may not have ready access to a gym, exercise classes, or physical exercise equipment, which may further contribute to overweightness or obesity.

As obesity develops, accumulation of cholesterol is a natural progression.⁶³ Fatty acids accumulate in blood vessels and may form plaques, which take up space in the vessel and inhibit blood flow. Ultimately, obesity can lead to high levels of cholesterol and increased blood pressure, which presents as hypertension.

Another risk factor for heart disease and stroke is smoking.⁵⁹ Smoking, as well as secondhand smoke, significantly influences the normal function of the lungs. When nicotine is brought into the lungs by inhalation, the exchange of gases in the far branches of the bronchi (i.e., alveoli) is restricted and compromised. Reduced oxygenation of the blood can alter the composition of blood and affects many aspects of both breathing and circulation. Contrary to

popular belief, McClure et al. (2011) found that rates of smoking and second-hand smoke were not higher in regions of the U.S. with higher stroke mortality.⁶⁴

PROPOSED SOLUTIONS OR INTERVENTIONS

Based on a review of the literature, solutions or interventions to reduce heart disease and stroke should include the improvement of hospital readiness, early diagnosis, and community education.⁶⁵ A continued increase in the number of PSCs and hospitals with Advanced Certification CSC status, will contribute to improvement in stroke readiness and quality of care.³⁰ Improvement in procedures for laboratory testing, brain imaging, and telemedicine equipment could also be of great help in rural stroke patient care. Telemedicine services, telehealth education, and internet-based communications may contribute as high-tech solutions related to rural accessibility of healthcare services.³⁸ The Veterans Administration, with more than one-third of its veterans living in rural areas, has actively sought to improve access and quality of care for heart disease and stroke through telehealth, as well as mobile and community-based clinics.⁴⁷ However, a 2011 study by Bove et al. reported that augmenting with telemedicine did not enhance a CVD risk improvement program in both urban and rural communities.⁶⁶

Awareness of cardiovascular disease and risk factors can improve the health of individuals and populations. It has been reported that U.S. adults who had lower composite heart attack and stroke knowledge were more likely to be rural dwellers.⁶⁷ Knowledge and prevention education are critical to reduce morbidity and mortality from heart disease and stroke. Coronary artery disease is actually the leading cause of death for women in the United States; however, in a 2012 CDC survey, only 54 percent of women were able to identify heart disease as the number one killer of women.^{68,69} Risk factor screening in the community has also proven successful in rural health improvement.^{48,70,71}

COMMUNITY MODELS KNOWN TO WORK

An array of evidence-based resources is available on the Healthy People 2020 website to assist with the goals established for heart disease and stroke.⁸ These programs target improvements in physical activity, nutrition, weight status, and management of hypertension. Community models, specifically

known to work in rural settings, are found at the Office of Rural Health Policy's Rural Assistance Center.⁷² The following models for practice are examples of programs utilized to address this rural health concern.

HeartNet

HeartNet is a community program aimed at impacting the higher-than-state-average death rates from heart disease and stroke in a five-county region in northeast Michigan. The region consists largely of rural-dwelling and low-income residents. Prominent risk factors in the community include high cholesterol, overweightness and obesity, high blood pressure, and sedentary lifestyles. Specific services to address these risk factors are offered at more than 30 sites including worksites, community organizations, and churches. To promote risk factor control, the program offers comprehensive heart-health screenings, personal wellness and lifestyle assessments based on self-reported questionnaires, and some tailored prevention activities. After three years, the program had served 6,000 individuals and measured success in increasing physical activity, decreasing blood pressure measurements, and reducing cholesterol levels.⁷³

University of Mississippi Medical Center Telehealth Program

Many rural areas in Mississippi lack adequate access to specialty healthcare services such as emergency medicine and stroke neurology. In 2003, the University of Mississippi Medical Center created the Center for Telehealth to deliver healthcare services via rural hospitals and clinics throughout Mississippi.^{74,75} Among the many services provided were cardiology, emergency and trauma care, and stroke treatment. The program has been implemented in over 100 clinical sites, in over half of the state's 82 counties, and has reduced transfers, duplication of tests, and geographic barriers for patients.

HeartBeat Connections™ Program

Heartbeat Connections™, a program of the Heart of New Ulm Project, is an example of the use of preventive education in rural communities.⁷⁶ Using data from electronic health records, the local community health center identifies individuals, ages 40-79, at increased risk for heart disease and sends a registered dietitian or registered nurse to deliver education on lifestyle behavior change and

preventive medication initiation. The Heart of New Ulm Project is an example of improving population health through community education and increased awareness of methods to prevent heart disease.⁷¹

SUMMARY AND CONCLUSION

Disparities in the health status of rural Americans exist for a variety of reasons and disease conditions. For most Americans, heart disease and stroke are among the greatest threats to their lives. This is particularly true for rural Americans, where the presence of risk factors such as obesity, diabetes, hyperlipidemia, and hypertension are sometimes greater than in urban areas. In many parts of the country, the consequences of heart disease and stroke are exacerbated by pre-existing contributing factors such as geographic inaccessibility to health care, lack of specialized health services, and lower socioeconomic status. Racial and ethnic disparities may also be more pronounced in some rural settings. In addition, rural residents may not have as many opportunities to receive essential education on (1) prevention of cardiovascular disease (lifestyle modification or self-management of risk factors) and (2) recognizing the signs and symptoms of heart disease and stroke. Providing rural communities with more accessible healthcare solutions, as well as targeted population-specific prevention education, should be our primary focus to achieve—for rural Americans—the Healthy People 2020 goal of reducing heart disease and stroke.

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Suggested Chapter Citation:

Helduser J, Du Y, Bolin JN. Heart Disease and Stroke in Rural America. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:83-94.

PHYSICAL ACTIVITY IN RURAL AMERICA

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SCOPE OF THE PROBLEM

- More than 80 percent of Americans do not meet the guidelines for both aerobic and resistance exercise.^{1,2}
- More than 80 percent of adolescents do not meet the guidelines for aerobic activity.^{1,2}
- Rural residence is generally associated with lower rates of physical activity than urban or suburban areas.³⁻⁶
- Physical activity can reduce adverse health outcomes, chronic disease, and mortality.^{1,7-9}
- Television viewing and screen time contribute to inadequate physical activity and obesity for all age groups in both rural and urban settings.¹⁰⁻¹³
- Rural residents have unique and often more pronounced barriers to physical activity due to socioeconomic, geographic, and environmental factors.^{3,14,15}

In 2008, the U.S. Department of Health and Human Services released *Physical Activity Guidelines for Americans* to provide a roadmap for participation in physical activity.¹ It had already been well-established that physical activity (i.e., bodily movement of various frequency, duration, and intensity) could contribute to significant health improvements, as well as reduce adverse health outcomes and a variety of chronic diseases.¹⁶ Aerobic exercises, which are activities of longer duration such as walking, cycling, and running, can improve the cardiorespiratory fitness (CRF) of individuals, thereby contributing to their improved stamina, maintenance of a healthy weight, and more efficient metabolism. Resistance exercise, such as lifting weights, can improve muscle tonus, strength, and bone health. The potential health benefits and improved quality of life that can be achieved from adaption of the human body to physical activity occur across all age groups¹ and every racial and ethnic group.¹⁷ However, as a whole, more than 80 percent of Americans do not meet the guidelines for both aerobic and resistance exercise, and more than 80 percent of adolescents do not meet the guidelines for aerobic activity.^{1,2} Furthermore, a 2008 study estimated that physical *inactivity* costs the U.S. healthcare industry \$102 billion annually.⁷

Rurality,^{4,5,15,18-20} African American race,^{19,21-24} Hispanic ethnicity,^{25,26} female gender,^{20,27} and older age^{15,28,29} are factors that have been reported to be

associated with obesity and reduced physical activity. Although there is much diversification in America's rural regions, living in a rural area is thought to provide more of a challenge to physical activity adherence due to factors such as limited resources, increased distance or limited access to facilities, and neighborhood characteristics.^{3,30,31} These and other social, geographic and environmental barriers may impact certain groups of rural dwellers more than other groups (e.g., pre-school children, older adults, minorities, people with disabilities, and people with lower socioeconomic status).³²⁻³⁵ The purpose of this chapter is to provide an overview on the status of physical activity in rural America.

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

Healthy People 2020, as summarized on the HealthyPeople.gov website, establishes goals and objectives for physical activity across the lifespan.² For adults, there is an emphasis on eliminating sedentary lifestyles and increasing both aerobic and muscle-strengthening activities. For adolescents and children, there is an emphasis on not only increasing physical activity, but also reducing television viewing and computer usage times. The importance of creating an environment conducive to leisure-time activities, such as bicycle lanes and sidewalks, is also highlighted.

To varying degrees, the following Healthy People 2020 goals are addressed in this chapter:

- **PA-1** Reduce the proportion of adults who engage in no leisure-time physical activity
- **PA-2** Increase the proportion of adults who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity
- **PA-3** Increase the proportion of adolescents who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity
- **PA-4** Increase the proportion of the Nation’s public and private schools that require daily physical education for all students (PA-5 adolescent PE, PA-6 elementary PE, PA-school districts require elementary PE)
- **PA-8** Increase the proportion of children and adolescents who do not exceed recommended limits for screen time
- **PA-10** Increase the number of the Nation’s public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during the summer and other vacations)
- **PA-13** (Developmental) Increase the proportion of trips made by walking
- **PA-14** (Developmental) Increase the proportion of trips made by bicycling
- **PA-15** (Developmental) Increase legislative policies for the built environment that enhance access to and availability of physical activity opportunities

SURVEY OUTCOMES

Physical activity was not among the top ten priorities selected by rural stakeholders when *Rural Healthy People 2010: A Companion Document to Healthy People 2010* was being developed over a decade ago. However, ten years later, when a similar national survey was conducted in 2010, Bolin and colleagues found that rural stakeholders ranked “Physical Activity and Health” as the 7th highest priority for rural Americans.³⁶ More than 1,200 rural

stakeholders participated in the Rural Healthy People 2020 (RHP2020) survey. Nationwide results were tabulated, and also categorized into United States Census Bureau (USCB) and Department of Health and Human Services (DHHS) regions.

The overall percentage of rural stakeholders who identified physical activity as a top ten priority health issue was 44.7 percent, making it the 7th highest priority for rural Americans. This percentage was highest in the USCB Midwest region (48.4 percent) compared to 41.5, 41.4, and 41.2 percent for the South, Northeast, and West regions, respectively. The percentage of respondents in each DHHS region that identified physical activity as a top ten priority for rural America ranged from 59.7 percent in Region 2 to 39.1 percent in Region 6. Additional results of the survey have been presented elsewhere.³⁶

Respondents to the RHP2020 survey also addressed the Healthy People 2020 sub-objectives related to physical activity. Their perceptions about the importance of the sub-objectives for rural Americans were recorded, as well as the feasibility of accomplishing the sub-objectives by 2020. Respondents indicated that the most important physical activity concerns for rural populations were exercise (16.9 percent), followed by sub-objectives related to education and awareness (11.8 percent), as well as the “built” environment (11.8 percent).³⁷

PREVALENCE IN RURAL AREAS

Adults

The ever-increasing urbanization of America means that fewer adult Americans work in farming, agriculture, and other professions that require physical labor. Current technological advances also contribute to Americans working in professions that require less physical labor than in past decades.³⁸ Downward trends in overall physical activity, and increased sedentary time, have been documented.^{39,40} Certain occupations present their own challenges to physical activity and healthy living, and those people employed in sedentary occupations have been reported to be sedentary for approximately 11 hours per day.⁴¹ For example, sedentary and stressful working conditions exist in the trucking industry⁴² and in many offices where administrative work leaves little opportunity for physical activity.⁴³ Indeed, most Americans find that participation in physical activity is something that must be done during non-working “leisure” time. Although exercise was once a part of everyday employment and occupation, or

home and domestic activity, today we must make a conscientious effort to be physically active.

Whether living in a rural or urban environment, the majority of Americans participate in far less physical activity than is optimal—falling short of the current recommendations. Rural Americans are even less likely to engage in recommended levels of physical activity than their urban counterparts. According to Trost and colleagues (2002), rural residence is negatively associated with adult physical activity.⁶ This finding was substantiated by studies that reported a higher prevalence of inactivity and obesity in rural areas, compared to urban and suburban.^{5,15} In 2003, Wilcox et al. cited studies in which women living in rural areas, and African American women, had lower rates of physical activity participation than those in urban areas.²⁹

Approximately 60 million people, almost 20 percent of the U.S. population, live in rural areas.⁴⁴ In general, these rural adult Americans have higher rates of chronic diseases than their urban counterparts. Both obesity and sedentary living (highly interrelated in both rural and urban dwellers) are major factors in this disparity.¹⁸ In a review of data from the 2005-2008 National Health and Nutrition Examination Survey (NHANES), the prevalence of obesity in rural adults was reported to be significantly higher than for urban-dwelling adults, 39.6 percent and 33.4 percent, respectively.¹⁸

Older Adults

Fifty-one percent of older U.S. adults (>65 years) were classified as physically active using the 2008 guidelines; whereas, only 39 percent were considered physically active using Healthy People 2010 standards.¹⁹ A Healthy People 2020 objective for older adults includes “increasing the proportion of older adults with reduced physical or cognitive function who engage in light, moderate, or vigorous leisure-time physical activity.”⁴⁵ Studies report that rural older adults are less likely than their urban counterparts to achieve the national recommended levels of physical activity,¹⁵ and that rural older adults have unique challenges to physical activity.²⁹

Rural women, especially those in the southern states, are reported to be more sedentary than urban women;²⁷ rural *older* women are even more likely to be inactive.²⁹ Lower rates of physical activity and increased obesity have been reported for rural older adults in California,²⁸ where a reported one in five rural elders did not participate in even moderate physical activity.

Not only does this have serious implications for the prevalence of obesity in rural areas, but for the prevalence of falls among older adults. Previous research has shown that increased physical activity among older persons leads to decreases in the risk of recurrent falling,⁴⁶ and that fear of falling is a barrier to physical activity in older adults.⁴⁷ For example, Chen and Janke (2012) found that older persons who employed gardening as a form of physical activity experienced fewer falls than older non-gardeners.⁴⁸

Children and Adolescents

Inadequate physical activity is one of six health risk behaviors of adolescents that contribute to death, disability, and social problems for youth and adults.⁴⁹ Increased media technology has contributed to reduced physical activity for all ages; but, this is particularly true for television viewing among children and adolescents, where watching television potentially replaces time that could be spent in physical activity.¹¹ Many studies have linked television viewing time to obesity—not only because of reduced physical activity, but also because of increased caloric intake caused by “mindless eating” and prompted by food marketing and advertising on television.^{10,13}

Which has been more causal in child and adolescent obesity over the past decade: increased caloric intake, decreased physical activity, or both, due to increased screen time? A 2014 meta-analysis by Liao et al. suggested that the single most important factor may be screen usage time.¹² However, conflicting reports abound and are best summarized in a 2011 review by Bleich and colleagues,⁵⁰ although none of the 26 studies examined considered rural-urban residence as a factor.

Disparities exist for children and television viewing time. It has been reported that African American and Hispanic children spend more time watching television than their Caucasian counterparts.^{10,51,52}

Studies comparing physical activity in rural versus urban youth offer contradictory results. Physical activity has been reported to be higher for rural youth,^{53,54} higher for urban youth,⁵⁵ and no different between the two groups.⁵⁶ Body mass index, a measure of obesity, is generally reported to be higher in rural compared to urban youth,^{53,56} although some studies have shown no difference.⁵⁵ These varying results are usually explained by socioeconomic or environmental factors.^{15,57} Currently, rural-dwelling children are more likely to be overweight or obese than those in metropolitan areas.⁵⁸⁻⁶⁰

Bradley and colleagues (2013) reviewed 13 studies on the relationship between physical inactivity and academic achievement in youth. They reported that more than two-thirds of the studies found an inverse relationship between physical inactivity and academic achievement.⁴⁹ Furthermore, four studies showed no negative impact on standardized test scores when additional instruction time was spent in physical education.⁴⁹ Moderate to vigorous physical activity has been positively associated with higher grade point average⁶¹ and higher SAT scores.⁷

Built Environment

Participation in physical activity is not just a matter of biological factors, social determinants, and personal choice. Much discussion on inadequate physical activity, especially its causality in obesity, has centered on the “built” environment. By definition, this includes characteristics of one’s surroundings, such as sidewalks, parks, riding trails, recreational facilities, street lights and safe neighborhoods. In a 2012 review of the literature on physical activity and the built environment, Ferdinand and colleagues reported that 173 of the 194 studies examined reported a beneficial relationship between the built environment and physical activity;⁶² however, studies with objective measures of physical activity were less likely to find a direct relationship.

Research has shown that the environmental correlates to physical activity differ significantly between rural and urban areas.^{15,27} In a 2006 study, Boehmer and colleagues described the environmental characteristics of rural communities that impede physical activity and healthy nutrition.³ Most notably, 43 percent of their subjects reported feeling unsafe from traffic while walking or biking. This finding was more prevalent in rural communities than in urban, likely due to fewer sidewalks. The study, in agreement with others,^{63,64} also reported that further distance to recreational facilities was associated with increased odds of obesity and inactivity.

In a California study, only one in four adolescents reported access to a safe park.⁶⁵ Access was positively associated with regular physical activity for adolescents in urban areas, but not for those in rural areas.⁶⁵ Investigators studying the potential link between the presence of neighborhood parks and physical activity, did not find an association between parks and youth meeting minimum physical activity guidelines.⁵⁴ They reported that just 48.3 percent of urban youth in their study had achieved the minimum

physical activity requirements, compared to 55.7 percent in isolated rural areas.⁵⁴

VARIATIONS BY RURAL REGION

Our physical environment, both natural and man-made, varies greatly across the 50 states, contributing to regional differences in the physical activity levels of Americans. In the broadest generalization, the percent of U.S. residents living in rural areas is greater in the South and Midwest. Rural residence, especially in the southern states, has been associated with low levels of physical activity.^{4,19} Mier and colleagues (2013) reported that the physical activity of children living in colonias, which are impoverished neighborhoods along the Texas-Mexico border, was significantly influenced by neighborhood characteristics. The Hispanic youth in her study, eight to 13 years of age, cited litter, speeding cars, unleashed dogs and unlit streets as deterrents to physical activity.⁶⁶

The Appalachian states also have a disproportionate burden of low physical activity. North Carolina, with the second most rural population in the U.S., has reported one of the highest rates of obesity in school-age children.⁶⁷ In a survey on extracurricular sports and facilities at North Carolina schools, it was reported that rural schools had far fewer facilities and sports programs than urban schools. (Two-thirds of the rural schools had no extracurricular physical activity programs other than interschool sports.⁶⁷) Also in North Carolina, Jilcott and colleagues reported that physical activity was positively associated with a natural amenities scale, which is a “measure of the physical characteristics of a county area that enhance the location as a place to live.”⁶⁸ However, no rural-urban comparisons were made.⁶⁹ Swanson et al (2012) reported that Kentucky residents, particularly in the Appalachian region, had significantly lower physical activity levels compared to the national average.⁷⁰

In Minnesota and North Dakota, a study reported that women were more likely than men to be inactive or have low levels of physical activity.²⁰

VARIATIONS BY RACE AND ETHNICITY

Although a significant percentage of Americans are physically inactive,^{1,71} an even higher percentage of African Americans have not met the recommended guidelines for physical activity.⁷² In a 2008 Centers for Disease Control (CDC) report, whites were more likely than African Americans (67.5 percent

versus 56.5 percent) to meet the recommendations for physical activity as outlined in the *2008 Physical Activity Guidelines for Americans*.¹⁹ This is particularly true for aerobic exercise to enhance CRF.²¹⁻²³ While CRF is lower in African Americans overall, the difference in CRF levels between Caucasian and African American women is even more pronounced.²¹⁻²³

Native American populations, representing a diverse range of cultures, traditions, lifestyles, and habitats, have also demonstrated low levels of adherence to physical activity guidelines.⁷³ Both Native Americans and Alaskan natives, despite increases in sedentary behavior,⁷³ have shown lower rates of hypertension compared to the general population.⁷⁴

According to the NHANES 2009-2010 data, non-Hispanic African American women (82 percent) and Hispanic women (76 percent) have a higher obesity prevalence compared to non-Hispanic white women (64 percent).²⁶ Non-Hispanic African American women also have lower CRF levels than Mexican-American and non-Hispanic white women.²⁴ Among boys and men, Hispanics have an obesity prevalence rate higher than their non-Hispanic peers.^{25,26}

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

There is strong evidence that regular physical activity decreases risk for overall mortality.¹ Cardiorespiratory fitness, especially, is related to decreases in all-cause mortality, but particularly mortality due to cardiovascular diseases.²³ A positive relationship between CRF and leisure-time physical activity exists for both men and women.²⁴

A sedentary lifestyle is linked to a myriad of chronic ailments⁷⁻⁹ including obesity,⁷⁵ diabetes,^{72,76} heart disease,⁷⁷ osteoporosis,⁹ and hypertension.⁹ Even cancer-related mortalities have been investigated as potentially reduced due to physical activity.⁷⁸

America's obesity epidemic has highlighted the need for healthier nutrition and physical activity habits. Obesity is often a precursor to diabetes and heart disease, which are both more prevalent among rural adults.⁵⁸ Adults in non-metro areas report higher rates of hypertension, heart disease and stroke, than those in metropolitan areas. In general, persons living in rural areas have higher rates of mortality, chronic disease, and disability than their urban counterparts.⁷⁹

Healthy eating habits and physical activity combined can create an essential base for good overall health.

For the average rural American, increasing time being physically active will lead to enhanced aerobic fitness, and improved muscular strength and flexibility. The benefits of participation in physical activity greatly outweigh the risks. The most common risk is injury to the musculoskeletal system. However, most of these injuries are not life-threatening and many could have been prevented with more regularity in exercise training (i.e., conditioning) and/or stretching and flexibility exercises. Everyone who exercises should have a physical exam first and a discussion with their doctor before starting an exercise program. One goal of Healthy People 2020 is to increase the proportion of physician office visits that include counseling or education related to physical activity.²

BARRIERS

The role of physical activity in providing health benefits is important for all Americans. However, some barriers to physical activity may be more pronounced for rural Americans, and may require different strategies and interventions. As stated previously, social, geographic and environmental barriers may impact particular groups of rural dwellers more than others. For example, environmental barriers to physical activity for disabled Americans³⁴ could be exacerbated in rural environments.

A review of the literature around barriers to physical activity for African Americans concluded that targeted interventions may need to address specific individual, social, and environmental barriers,⁸⁰ such as child care, social networks, and unsafe parks or neighborhoods. Inequalities in access to facilities may contribute to ethnic disparities in physical activity.³³ A 2012 study conducted by the Tuskegee Institute broadly concluded that barriers to physical activity among low-income African Americans included dysfunctional built environments, limited familiarity with neighborhoods, and fear of crime.⁸¹ For rural older African Americans in the study, home ownership was positively associated with leisure-time physical activity.⁸¹ Addressing barriers for Hispanics, Mier and colleagues (2010) reported that culturally sensitive interventions should include use of bilingual, literacy-appropriate materials and social or family-based components.⁸²

Barnridge reported that a significant barrier to physical activity for rural-dwelling residents is adapting evidence to fit rural areas, as much of the research on environmental and policy interventions

has been conducted in urban and suburban areas.⁸³ For people living in rural America, reducing barriers may require different strategies and interventions than the approaches that have worked in the urban setting.

KNOWN CAUSES OF THE PROBLEM

Heredity does play a role in propensity for voluntary exercise and how the body responds to exercise training.^{84,85} However, the genetic architecture may be influenced by many factors, including gender, age, diet, and body composition.⁸⁴ So, even if an individual has a high genetic predisposition to participate in exercise, external factors (lifestyle, social determinants, and environment) may influence initiating or sustaining physical activity. In a 2008 report, Duncan et al. examined the heritability of physical activity participation in U.S. adult twins and concluded that environmental factors were the greatest influencer of participation.⁸⁶

SOLUTIONS OR INTERVENTIONS FEASIBLE IN RURAL AREAS

The effectiveness of physical activity interventions in rural communities is no doubt influenced by the challenges of rural dwelling.¹⁴ In the last few decades, much has been accomplished related to general health promotion through education. There is a continued need, however, for education about the benefits of physical activity and the risks of remaining sedentary, particularly as it relates to one's risk for chronic disease—arguably the nation's predominate public health challenge.

Educational programs on the importance of being physically active have been presented effectively in many settings, including community centers, schools, worksites, healthcare facilities, and churches. Promoting physical activity means encouraging people to make physical activity a part of their daily lives. Initiatives to make parks, sidewalks, and streets safe and accessible encourage outdoor physical activity for all ages. Organized fitness programs, group exercise, play behavior, and sports leagues may offer the necessary social support and positive encouragement that many people need to improve and retain their physical fitness levels.⁸⁴

Strategies and interventions for improving physical activity in rural populations should be targeted to individuals, communities, or populations, and must address cultural issues.^{82,87,88} The important thing is to make physical activity a priority and to remove

the challenges and barriers that keep many from participating. A “life course” approach to chronic disease prevention through obesity and physical activity interventions, suggests that interventions may work best when started at the youngest possible age.⁸⁹ Recommended levels of physical activity should be established in early childhood when possible⁹⁰ to avoid adult obesity later.

Perhaps the most important factor, in the success of targeted physical activity interventions, is the readiness of individuals to change from less active sedentary behaviors. Multiple theories on behavior change exist, but all agree that modifying health behaviors generally takes up to six months. A standardized approach (i.e., toolkit) has been developed for adapting physical activity and obesity behavior-change interventions for underserved populations.⁹¹

Walking is an exercise that can be maintained by large numbers of people, as it requires no special skills, costs, or facilities.⁹² It is both a mode of transportation and a form of exercise. Laine and colleagues report that walking and biking appear to increase physical activity the most cost-effectively.⁹³ Walking has been encouraged as an optimal form of exercise for rural older adults and those with diabetes.⁷²

Television viewing and increased media technology has contributed to reduced physical activity for all age groups. Children who have televisions in their bedrooms are at increased risk for obesity.⁵¹ A 2012 review of the literature concluded that successful interventions for reducing television and screen usage time in children less than 12 years of age, was use of electronic monitors (parental controls), and clinic-based counseling.¹³

COMMUNITY MODELS KNOWN TO WORK

Evidence-based strategies for increasing physical activity, developed by the Task Force on Community Preventive Services,⁹⁴ have been in place for more than a decade. Many of these interventions are untested, or their results undocumented, in rural communities.⁸³ Examples of physical activity interventions that have worked in rural settings include the programs listed below. The federal Office of Rural Health Policy's Rural Assistance Center also offers information on strategies that have been successful in rural settings.⁹⁵

Walk Across Texas!

Since 1996, thousands of people have participated in Walk Across Texas! It began with the goal of establishing physical exercise as a life-long habit. Adults and children alike have participated in the program. Participants join teams for social support, and plot their miles walked on a map of Texas with the goal of walking enough combined miles to cross the state or reach a destination city of their choice. Walk Across Texas! is a best practice physical activity program as described by the CDC at <http://www.thecommunityguide.org/>.⁹⁶ It has also been recognized, in 2006, by the Texas Department of State Health Services.

Active for Life®

Active for Life® was one of six programs in an Active Living series that delivered evidence-based physical activity programs to large numbers of mid-life and older adults.⁹⁷ Funding for the program comes from the Robert Wood Johnson Foundation, in collaboration with dozens of other partnering organizations. Active for Life® promotes integration of physical activity into daily routines through *Active Choices* and *Active Living Every Day*. An environmental assessment instrument, Rural Active Living Assessment (RALA), was developed specifically to measure the “activity-friendliness” of rural communities.⁹⁸

SUMMARY AND CONCLUSION

Physical inactivity is a public health dilemma contributing to an increased national burden of obesity and chronic disease. These problems can be addressed through elimination of risk factors, including a lack of regular physical activity. Promoting exercise participation and more active leisure time in rural populations will require strategies that consider personal, economic, cultural, social, and environmental factors. Nationally, healthcare providers should integrate exercise promotion into all patient interactions. Community and state efforts to advocate for physical activity and effect important policy changes must consider the unique challenges faced by rural populations.

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Suggested Chapter Citation:

Helduser JW, Ferdinand AO, Bolin JN. Physical Activity in Rural America. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:95-106.

OLDER ADULTS

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SCOPE OF THE PROBLEM

- Rural older adults are a rapidly growing population, and rural areas will experience a dramatic rise in older adults in forthcoming years.
- The majority of older adults have at least one chronic condition, but many have comorbid conditions that compound the effects of their chronic diseases.
- Evidence-based programs are effective for improving health-related outcomes among older adults.
- Policy makers and researchers must find ways to deliver the most appropriate evidence-based strategies to improve health among this rapidly growing population.

DEMOGRAPHIC PROFILE

Growth of the Aging Population in Rural Areas

The large American cohort known as the “Baby Boomers” began reaching their sixty-fifth birthdays soon after 2010.¹ Aging among the Baby Boomer generation has translated into a greying of rural America, which is projected to continue in forthcoming decades. For example, nearly one in five older adults lived in rural (non-metropolitan areas) areas in 2011,² and the population aged 55 to 75 living in rural communities is expected to increase by 30 percent by 2020 (from 2010).³ This also translates into a nearly two-fold increase in the numbers of individuals aged 55 to 75 living in rural areas and small towns (i.e. from 8.6 to 14.2 million between 2000 and 2020).³ Thus, the timely focus on this rapidly aging rural population is of great interest to policy makers seeking to ensure that appropriate resources are available for this group.

Aging Minority and Ethnic Populations

The American population is becoming more diverse in terms of race and ethnicity, including the growing older adult subgroup. Non-Hispanic White adults have the highest proportion of older adults (16.7 percent), but the percentages of minority and ethnic older adults have been increasing over the past decade.² In 2011, ethnic and racial minorities comprised approximately one-fifth of older adults.² Among these groups, Asian and Pacific Islanders (9.8 percent) represented the highest percentage of older adults, which was followed by African Americans

(9.2 percent), American Indian and Alaska Natives (8.4 percent), and Hispanics (5.7 percent).² The distribution of rural racial and ethnic minorities varies by region, with particular regions being home to higher concentrations of certain racial/ethnic subgroups.^{4,5} For example, almost 50 percent of rural Black individuals reside in South Carolina, North Carolina, Georgia, and Mississippi.⁴ The majority of rural Hispanic individuals were in the South and West.⁴ The majority of American Indian and Alaska Native individuals were in Alaska, North Carolina, Oklahoma, Arizona, and New Mexico.⁴

Poverty

Despite greater financial security experienced by today’s older Americans, disparities still exist based on geographic residence and minority status. In 2011, 8.7 percent (3.6 million) of older adults had incomes below the federal poverty level.² Older adults in rural areas have lower incomes^{6,7} and higher poverty rates than those residing in urban and metropolitan areas.² Areas characterized by high proportions of ethnic and racial minority populations (i.e. Black, Hispanic, and American Indian and Alaska Native) are also likely to have higher rates of poverty, which indicates a compounding effect of poverty and racial/ethnic status.⁴

HEALTH AND THE AGING POPULATION

Chronic Disease and Self-Management

Millions of Americans are affected by chronic conditions.⁸ Individuals with chronic conditions,

especially those with multiple chronic conditions, experience challenges in self-management and preventive care, which may lead to complications with chronic disease (i.e. activity limitations and a higher risk of disability).⁸ Among the older adult population, upwards of 91 percent have at least one chronic condition, while 73 percent have two or more chronic conditions.⁸ In 2030, the number of adults with chronic conditions is expected to reach 171 million, which is a dramatic rise from 125 million in 2000, leading to more older adults with chronic conditions.⁸ With a growing older adult population comes concerns about ways to better manage and influence risk factors for chronic conditions (e.g. increasing preventive screenings) and offset poorer outcomes that can degrade population health and inflate healthcare costs (e.g. hospitalizations).

National statistics indicate the disadvantages seen in rural populations. Among Medicare beneficiaries, the rates of colorectal cancer screening were lower in rural areas as compared to urban areas.⁹ Rural older adults with Alzheimer's were more likely to experience ambulatory care-sensitive hospitalizations than their urban counterparts.¹⁰ Rural-residing older adults also experienced more barriers related to the receipt of timely/effective ambulatory care.¹⁰ In addition, individuals living in the rural South (versus the urban South) had higher rates of coronary heart disease mortality.^{5,11}

Rural older adults with diabetes faced a lack of preventive health equipment (e.g. specialty sock and home exercise equipment) that would enable them to better perform diabetes self-management activities.¹² In addition, rural minority (particularly Native American) older adults were at risk from poor glycemic control and by extension at increased risk for complications related to diabetes.¹³ Again, rural older adults have disproportionately higher rates of chronic conditions and disease risk factors relative to those in urban areas. What is less known is the supply of programs that have been shown to lessen the burden of chronic disease in rural areas. This is an area that should be targeted for further study.

Physical Activity and Healthy Eating

Despite the importance of physical activity and healthy eating for successful aging, rural residents are less likely to engage in these health promoting behaviors. Rural older adults have been shown to be less likely to meet the recommended physical activity guidelines when compared to their urban peers.¹⁴ Furthermore, rural minority elders may have

limited physical activity, and a large proportion may not engage in any physical activity at all.^{15,16} Rural adult females (aged 40 and older) were more likely to be sedentary than their urban counterparts and also less likely to report “sidewalks, streetlights,” “access to facilities,” and “frequently seeing others exercise in their neighborhood.”^{17(p.667)} However, growing recognition of the importance of physical activity is seen in the almost two-fold increase (from 2000 to 2010) in rates of older adults who reported being told by their physician that they need to exercise.¹⁶

A study of older (age 65-93) rural adults reported that most failed to meet the recommended nutrition guidelines based on the food guide pyramid.¹⁸ Another study of older rural adults identified high levels of obesity and overweight among participants, and most of these adults had inadequate dietary intake (i.e. low folate, magnesium, and Vitamin E) and were at nutritional risk.¹⁹ Results from a nationally representative study confirm these findings in that older rural adults fail to meet recommendations for daily fruit and vegetable consumption.²⁰

Depression

Approximately 20 percent of older adults reported having at least one day in the past month where their mental health was not good.¹⁶ Rural older adults and those soon to be older (60 and older) have identified “transportation difficulties, limited health care supply, lack of quality health care, social isolation, and financial constraints” as barriers to accessing health care.^{21(p.206)} Depression rates among adults were higher in rural areas when compared to urban areas.²² Additionally, suicide rates in rural areas have been shown to be higher than rates in urban areas.²³ More recent evidence suggests that mental health service utilization (i.e. treatment) was lower among rural (versus urban) adults.²⁴ In 2010, a small qualitative study of rural older adults in Wyoming indicated that social and physician support and the presence of community gatekeepers were facilitating factors in decisions to seek treatment for depression.²⁵ Home-delivered cognitive-behavior therapy was identified as a successful treatment for older rural “hard-to-reach” participants of a randomized controlled experiment in Alabama.^{26(p.310)}

HEALTHY PEOPLE 2020 OBJECTIVES

Select Healthy People 2020 objectives related to older adults are summarized in the following sections. Commentary about the special vulnerability

of older adults living in rural (non-metropolitan) areas is provided.

Health Services

There are many different designations used to describe various US counties and areas (e.g. Health Professional Shortage Areas (HPSA), Frontier, or Medically Underserved Areas [MUA]) and are based on differing criteria, which may influence the designation.²⁷ Approximately two-thirds of rural areas are designated as a HPSA.²⁸ HPSA designations provide an overview of available resources at the county level based on geography, population, and facilities.²⁹ In 2005, 77 percent of rural counties were classified as a primary care HPSA,³⁰ and primary care physicians were completely absent from 165 of the total 2,050 rural counties.³⁰ Gaps in the availability of primary care physicians³¹ and dentists³² put residents of rural areas at greater risk of having barriers to health care access.

Growth of the aging population gives rise to the need for general internists and primary care physicians. Evidence has shown that efforts to recruit and retain physicians to primary care can be successful (e.g. rural clinical rotations, rural training experiences), but more efforts are needed to meet the growing need of physicians in rural areas.^{33,34} Even so, an assessment of retention duration among primary care physicians identified that rural areas, regardless of HPSA status, face similarly low retention because of inadequate recruitment efforts.³⁵ Thus, the need to identify ways to recruit and to retain primary care physicians to rural areas is an essential contemporary policy consideration and will grow in importance as Baby Boomers require more health care services.

OBJECTIVE: *OA-7 Increase the proportion of the health care workforce with geriatric certification*

The health care workforce mirrors the aging of Baby Boomers in that the aging workforce and increasing retirement rates are creating a shortage of medical professionals certified in geriatric medicine.^{36,37} Studies indicate that better outcomes are achieved when older adults are treated by health care professionals certified in geriatric medicine.^{38,39} Additionally, demands for geriatric psychiatry have been increasing and will continue to do so. Excluding dementia, the rate of psychiatric disorders among older adults is projected to be approximately 21 percent,⁴⁰ translating to 15 million individuals with a need for geriatric psychiatry by 2030.^{40,41}

Health Care Utilization

The utilization of health care services among older adults is of particular interest to researchers and policy makers throughout the US. The following sections highlight primary conditions seen in healthcare settings.

Pressure Ulcers

OBJECTIVE: *OA-10 Reduce the rate of pressure ulcer-related hospitalizations among older adults*

Pressure ulcers are a generally preventable occurrence, which result from prolonged pressure on skin, bone, and soft tissue. Certain subgroups such as older adults or individuals with dementia, diabetes, or stroke are at greater risk for pressure ulcers.⁴² Hospitalizations due to pressure ulcers are typically costlier and have longer durations than hospitalizations for other reasons (averaging an extra eight to nine days hospitalized), which results in substantial additional medical costs (between \$6,755 and \$10,430 on average).⁴³ Hospitalizations due to pressure ulcers are also more likely to result in discharge to a long-term care facility or death.⁴² While pressure sores are of concern to older adults, they are potentially of special concern among rural residents where there is less access to health services.²⁸

Falls Risk

OBJECTIVE: *OA-11 Reduce the rate of emergency department (ED) visits due to falls among older adults*

Approximately one in three older adults (65 and older) fall each year.⁴⁴ Falls may result in death or serious injury and cost billions of dollars annually.⁴⁵⁻⁴⁸ Non-fatal fall-related hospitalizations are expected to cost the US \$30 billion in 2020,^{45,48} up from \$19 billion in 2000.⁴⁶ Thus, the burden of falls among older adults across the US is a large and growing issue. Rural older adults generally have higher fall-related risk than those in urban and suburban areas, and they may be at increased risk of falls compared to their urban counterparts because of environmental factors associated with safe walking (e.g. paved and well-lighted sidewalks).⁴⁹

In Texas alone, the cost of fall-related hospitalizations in 2007 was \$1.89 billion among those aged 50 and older.⁵⁰ The cost of fall-related hospitalization increased to over \$3.1 billion in 2011 for those 50 and over residing in Texas.⁵¹ In Texas,

the average cost of a fall-related hospitalization was lower in rural areas among those aged 50 and older.⁵¹ While the cost to treat a fall may be lower among rural areas, more research is needed across larger areas to assess the generalizability of these findings.

Caregivers

OBJECTIVE: *OA-9 (Developmental) Reduce the proportion of unpaid caregivers of older adults who report an unmet need for caregiver support services*

Rural caregivers and patients tend to use more informal support than those in urban areas.⁵² The average informal (e.g. unpaid)⁵³ caregiver devotes 26 hours a week to caring for older persons.⁵² Informal or unpaid⁵³ caregivers have experienced a shift in the complexity of care required, due in part, to the rise in complexity of chronic and long-term care.⁵⁴ In addition, the progressive nature of chronic conditions (i.e. Parkinson's disease) has been shown to add to the caregivers' burden.⁵⁵ Increased levels of training and support for caregivers have been proposed as ways to improve patient outcomes and reduce the occurrence of preventable re-hospitalizations.^{54,56}

Predictors of increased caregiver burden include isolation, Activities of Daily Living (ADL), and perceived social support.^{55,57} Additionally, transportation issues (e.g. long travel time and distance to hospitals and physicians' offices) have been documented for some rural caregivers.⁵⁸ Stress, burden (e.g. fatigue and sleep disturbances), and poor health status have been documented among rural older caregivers and shown to be inter-correlated.⁵⁸ Higher strain among this caregiving subgroup was also associated with higher mortality.⁵⁹ When compared to the general population, more rural caregivers report poor or fair health status than do their urban counterparts.⁶⁰ Rural caregivers have less access to formal supports as compared to urban caregivers.^{56,61,62} In addition, the increased reporting of burden level associated with caregiving was associated with less healthy behaviors on the part of the caregiver.^{61,63} Higher levels of assistance with Instrumental Activities of Daily Living (IADLs) by caregivers has also been shown to increase stress and burden levels among caregivers of frail older adults.⁶⁴ Conversely, having access to resources (e.g. higher income, not having limitations with ADLs) has been associated with better mental and physical health among caregivers.⁶⁵

PROPOSED SOLUTIONS OR INTERVENTIONS

OBJECTIVE: *OA-3 (Developmental) Increase the proportion of older adults with one or more chronic health conditions who report confidence in managing their conditions*

OBJECTIVE: *OA-4 Increase the proportion of older adults who receive Diabetes Self-Management Benefits*

OBJECTIVE: *OA-5 Reduce the proportion of older adults who have moderate to severe functional limitations*

OBJECTIVE: *OA-6 Increase the proportion of older adults with reduced physical or cognitive function who engage in light, moderate, or vigorous leisure-time physical activities*

Evidence-Based Disease Prevention Programs

There are several evidence-based programs available for older adults in community settings that address these objectives. Evidence-based programs are offered throughout the US and are listed on the National Council on Aging's web resource.⁶⁶ We highlight only a few programs here, but more resources can be obtained by contacting a local Area Agency on Aging or online community resources. In particular, the National Aging and Disability Information and Referral/Assistance Support Center is composed of several state and local agencies to provide information about aging services and serves as a resource for assistance and referrals.⁶⁷ Selected evidence-based programs delivered in the community are highlighted in the proceeding section.

The Chronic Disease Self-Management Program (CDSMP) is an evidence-based program targeting older adults with chronic conditions. CDSMP has found success among the older adult population where it has been related to improvements in health-related outcomes (i.e. delayed onset of illness, improved disease management, reduced hospitalization).⁶⁸⁻⁷¹ In addition, CDSMP has been implemented in areas with gaps in the availability of health care services, specifically areas with a higher presence of ethnic minorities (i.e. Hispanic older adults).⁷²

A Matter of Balance/Voluntary Lay Leader (AMOB/VLL) is an evidence-based program intended to reduce fall-related risk factors among older adults.⁷³⁻⁷⁶ AMOB/VLL has been successfully delivered to older

rural minority participants, highlighting its potential to be more widely disseminated in rural areas.⁷⁷ Already, research has shown success in the delivery of evidence-based fall prevention programs in rural areas.^{77,78} Rural/urban comparisons of the delivery of fall prevention programs suggest that even though rural older adults may enter and exit programs with poorer health outcomes, the gains in falls efficacy and other outcomes were greater than those reported by urban older adults.⁷⁸ This suggests the need for these resources in rural communities and their potential to reduce fall-related risks among rural-residing older adults. The benefits of this program among older adults include improved cognitive outcomes (lower fear of falling, better long-term social functioning) and physical functioning (improved mobility).^{73,79-81}

EnhanceFitness (EF) is an evidence-based program that engages older adult participants in physical activities that are appropriate for their level of physical functioning.^{77,75} EF has been associated with improved cognitive outcomes (depression⁸²) and health care costs (lower health care costs when compared to the control group⁸³).

The Diabetes Self-Management Program (DSMP) is an evidence-based program shown to improve health-related outcomes (such as self-efficacy and depression, healthy eating, and communication with physicians) among individuals with diabetes.⁸⁴ DSMP participants are exposed to several self-management topics (e.g. nutrition, medication management, exercise).⁸⁵

There are potential solutions from both practice and policy perspectives concerning issues surrounding rural caregiving. For example, the provision of clearly understood and relevant information upon discharge is needed to address issues related to poor health literacy among rural patients and caregivers regarding transitions of care settings.⁸⁶ Also, there is a demand for scales and instruments to validly and reliably measure burden and strain for caregivers providing services for specific diseases (i.e. stroke).^{87,88} Similarly, it is important to identify and address factors that predict patient placement in nursing homes due to caregivers being overwhelmed (i.e. caregivers' health, need for skilled care, and level of task demand for caregivers).⁸⁹ Respite care has been used as a means of providing relief to caregivers.^{90,91} Adult day care and home health services are useful to provide respite support for family caregivers.⁹² Finally, identifying the effectiveness of providing financial (public funds) and other support to models & evidence-based

programs that work (e.g. Program of All-Inclusive Care for the Elderly [PACE]) for family members providing care is another area in need of study concerning feasible solutions.⁹³ The findings from the PACE program have shown to be effective in improving the health of caregivers and patients and as a means of providing culturally appropriate care.⁹³ The Resources for Enhancing Alzheimer's Caregiver Health (REACH II) is another program that has been successful at improving outcomes (e.g. improvements with regard to caregiver burden) among caregivers as well.⁹⁴

Built Environment

The growing population of aging adults is likely to benefit from environments that are walkable. Older adults tend to choose walking over other physical activities. Walking is related to reduced cardiovascular disease risk and other chronic conditions.^{95,96} Walking is the most consistently supported health behavior that has a correlational association with the neighborhood built environment.⁹⁷⁻⁹⁹ Older adults are less able to negotiate challenging (e.g. less walkable) environmental conditions; therefore, providing a supportive environment, particularly around their home neighborhood where they spend the majority of their time, is especially important to promote walking.

There are general characteristics of communities that may promote walking. For example, including safety (low crime, traffic, and falls),^{100,101} access to utilitarian (e.g. grocery stores) and recreational (e.g. parks) destinations,^{102,103} adequate pedestrian infrastructure (e.g. sidewalks),^{97,104} and visual quality (attractive scenery or landscape)^{97,105,106} are shown to be effective in promoting walking across different community settings and population groups. A literature review identified aesthetics, crime safety, recreational facilities, trails, parks, and walkable destinations as significant correlates of physical activity among rural adults.¹⁰⁷ Rural communities present several additional challenges to older adults. Rural communities often lack walkable destinations, especially utilitarian land uses such as retail stores and services.^{108,109} Rural communities also present more physical barriers to walking and physical activity, such as inadequate lighting, lack of sidewalks, poor walking surfaces, and no benches or places to rest.^{17,108,109} While most evidence focuses on the direct link between the built environment and walking/physical activity, some recent information focuses on the indirect roles of the neighborhood

environment.¹¹⁰ This recent information indicated walkability influenced physical activity through self-efficacy and social support, and access to healthy food in the neighborhood influenced eating habits via self-efficacy.¹¹⁰

Built environmental strategies to promote walking and physical activity among rural older adults may involve removing the reported physical barriers, while providing supportive facilities such as parks, trails, and walkable destinations.¹¹¹ Also, improving safety and comfort by providing adequate lighting, sidewalks, benches, and smooth walking surfaces may be of benefit to rural residents. More work is needed to investigate both the direct and indirect role of the built environment related to a wider range of health outcomes.¹¹²

SUMMARY AND CONCLUSION

The addition of “older adults” as a focused population in the Healthy People 2020 goals and objectives highlights the national attention being given to this growing population. This review demonstrates the need to consider rural older adults as a priority population for study both now and in the future. Demographic changes including growth among older populations¹¹³ and the oldest old^{7(p358)} in rural areas are changing the rural landscape. This is coupled with the already present disparities facing rural areas including medical professional shortages (e.g. shortages of primary care physicians and pharmacists)^{114,115,116} and high presence of adverse health outcomes (e.g. high levels of disability and disease).^{117,118,119} This underscores the importance of focused attention in this population.

Efforts are needed to consistently monitor health-related trends among this population over time to improve health outcomes among rural older adults. For example, monitoring the reach of evidence-based programs delivered in rural areas is needed to better understand whether these resources are available to rural older adults and being accessed by those who need them. Further, there is a great need to understand the array of implications for persons with multiple risk factors (e.g. older, minority, with comorbid disease status) in rural areas especially as this population grows into the oldest old age group. Policy makers are tasked with finding ways to improve the health of this vulnerable population while simultaneously increasing access to high-quality, cost-effective health-related services (e.g. evidence-based programs). Finally, with the passing of the Affordable Care Act (2010), there is increased

attention on prevention efforts, which may hold benefits for older adults.¹²⁰ More research is needed to prospectively measure the effects of this legislation among older adults.

ACKNOWLEDGEMENT

The authors wish to gratefully acknowledge Suzanne M. Swierc, MPH, for her contributions to copy editing.

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Suggested Chapter Citation:

Towne SD Jr, Smith ML, Pulczinski J, Lee C, Ory MG. Older Adults. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:107-118.

MATERNAL AND CHILD HEALTH IN RURAL UNITED STATES: UPDATES AND CHALLENGES

By Darcy McMaughan, PhD; Bethany DeSalvo, PhD; and Liza Creel, MPH

SCOPE OF THE PROBLEM

- Maternal, infant, and child health was identified as the ninth most significant rural health priority by over one-third (37 percent) of respondents to the Rural Healthy People 2020 national survey.¹
- In Department of Health and Human Services Region IX (Southwest U.S.), maternal, infant, and child health was ranked as the fourth overall most important rural health priority.
- Infant mortality rates are highest in highly rural southeastern states, with rates of more than eight deaths per 1000 births in the largely rural states of Mississippi and Alabama.²
- In the preceding decade, there was some progress made towards meeting Healthy People 2020 infant mortality rate objectives (healthy weight, prenatal smoking, prenatal substance exposure); however, there was no improvement in binge drinking, illicit drug use, or birth defects. Negative progress was noted for Cesarean births, low birth weight deliveries, and preterm births.³
- Respondents to the Rural Healthy People 2020 survey included special concerns for maternal, infant, and child health, in particular noting that access to care for women and children in rural communities is particularly neglected; that there is little, if any, access to family planning, prenatal care, well-child exams, or immunizations.¹

Ensuring maternal, infant, and child health has been a Healthy People goal from the beginning and is an important public health goal, as the well-being of mothers and children impacts both the health of future generations and the emergence of future public health problems. The health of the next generation predicts the future challenges for public health systems, as well as challenges to our society and local communities. Preventing unhealthy pregnancy outcomes allows for decreasing rates of disability and death, and provides for a population of healthier adults.

Exploring maternal, infant, and child health from a public health perspective involves determining the effect of health conditions, behaviors, and systems on health and health-related quality of life of women and children.⁴ Many factors affect pregnancy, child birth, and maternal, infant, and child health-related outcomes, including preconception health status, access to health care, poverty, chronic stress, and racial/ethnic health disparities.⁴ Rural Health People 2020 adds a dimension of place, specifically rural residence, on health status to the evolving discussion of how to improve the well-being of mothers and children in the United States.

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

Following a life course perspective on maternal and child health, this review addresses the following two Leading Health Indicators included under Maternal, Infant, and Child Health in Healthy People 2020:

- **MICH-8** Reduce low birth weight (LBW) and very low birth weight (VLBW)
- **MICH-9.1** Reduce total preterm births [included in 2010]

Understanding early life adverse events, such as preterm birth and low birth weight, can assist us in improving the health and wellness of future generations.

Low birth weight is defined as birth weight of less than 2,500 grams, or five pounds and eight ounces. Low birth weight has two causes – the infant is born too small due to intrauterine growth restriction, or the infant is born at a low gestational age. The latter is described as preterm birth (PTB), which is any birth before 37 weeks gestation. Both are important predictors of infant mortality. Infant mortality is

defined as the number of infant deaths per 1,000 live births, and can be further delineated into neonatal mortality (deaths in the first 27 days of life per 1,000 live births) and postneonatal mortality (deaths from 28 to 364 days per 1,000 live births minus neonatal deaths).⁵ Very rural geographic areas and urban centers with concomitant poverty and unemployment have the highest rates of infant mortality.⁵

In the United States, maternal, infant, and child health rates still lag behind other developed countries, despite advanced medical technologies. These poor rankings result from a large portion of the population lacking access to healthcare services. Lack of access to health services is pronounced among women living in rural areas.⁶ Rural places are more likely to be low resource areas and report lower employment, educational attainment rates, older housing, higher poverty and are also likely to have fewer healthcare services.⁷ These attributes put rural women at greater risk of experiencing negative health outcomes related to lack of prenatal care. These problems can be especially pronounced for women who are Hispanic or Black.⁸

MATERNAL, INFANT, AND CHILD HEALTH IDENTIFIED AS PRIORITY ISSUE BY PEOPLE LIVING IN RURAL AREAS

Among rural respondents to the Rural Healthy People 2020 (RHP2020) national survey, maternal, infant and child health, was identified as a top ten priority for state and local stakeholders, with respondents from the Southwest (California, Arizona, New Mexico, etc) selecting MICH as the fourth highest priority. Across the entire United States, more than one-third of respondents listed MICH as a top ten priority (37 percent), with respondents in the Northeast (39 percent) and the South (38 percent) having the highest rate of selecting MICH as a top ten priority.

PREVALENCE AND DISPARITIES IN RURAL AREAS

Parsing out the effects of rural residence on the prevalence of adverse health events and disparities among rural pregnant women and rural infants and children is made difficult by inconsistent definitions of rurality. This paper uses rural as defined by each cited research article – generalizations are cumbersome due to disparate definitions of rural. Readers should refer to source articles for specific definitions of rural.

About 600,000 births (15 percent of the estimated four million total births) in the United States occur in rural hospitals.^{9, 10} Almost six million women reside in rural counties that lack an obstetrician.⁶ The mothers of children born in rural regions tend to be younger, and are more likely to be unmarried or have an unintended pregnancy, compared to women living in non-rural regions.¹¹ When rural mothers are older, the infants they deliver are at an increased risk of perinatal death compared to older urban mothers.¹² Rural women are also more likely to be obese at delivery.¹³ However, both normal weight and overweight rural women are more likely to experience inadequate weight gain during pregnancy than urban women.¹³

Women living in very rural areas also deliver more low birth weight and pre-term birth children than women living in non-rural or more densely populated rural areas.¹⁴⁻¹⁷ This may be explained, partially, by the relatively greater increase in “non-indicated labor induction” among women birthing in rural hospitals compared to women birthing in non-rural hospitals.¹⁰

VARIATION BY RURAL REGION

Rates of LBW and PTB differ by geographic region. Nationally, PTB rates were steadily increasing, prompting a PTB-targeted initiative in 2006. Since 2006, PTB has decreased, except in the most rural areas.¹⁶ Rurality is typically considered protective (or, at least non-detrimental) against adverse birth outcomes compared to living in urban areas.^{16, 18, 19} However, on the continuum of rurality, babies born in more rural counties tend to be smaller (both in weight and height) and born earlier than other babies.¹⁴ These very rural babies also more likely to require care in the neonatal intensive care unit.¹⁴

Neonatal and post-neonatal mortality can be higher in rural areas compared to urban areas. However, like other adverse outcomes such as LBW and PTB, a closer inspection of rural designations reveals a more complex relationship between rurality and mortality. Nonmetropolitan areas adjacent to urban centers show infant mortality outcomes as good as, and sometimes better, than urban areas.²⁰ Very rural areas (nonmetropolitan areas not adjacent to urban centers) have higher post-neonatal mortality rates than rural and urban areas.^{20, 21}

VARIATION BY RACE AND ETHNICITY

Racial and ethnic disparities in PTB and LBW rates and childhood health outcomes exist in the United States.²²⁻²⁶ In general, Hispanics of Mexican descent

and foreign-born Hispanics have lower rates of LBW compared to any other group.²⁷ While disparities between PTB rates for Blacks and whites are decreasing, and there is an overall trend towards a reduction in the number of PTBs, the PTB rate for Black women is still higher (17.5 percent) than the rate for white women (11.1 percent).⁵ Rural Black women insured through Medicaid have a higher risk of potentially avoidable, in-hospital maternity complications,²⁸ and LBW infants of Black women were more likely to die than LBW infants of white women.^{29, 30} Likewise, American Indians and Alaskan Natives (both rural and non-rural) have twice the infant mortality rate of whites.³¹

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Preterm births and LBW are the first and second leading causes of infant mortality, infant morbidity, and childhood morbidity across populations.^{24, 32} Preterm infants and LBW infants are at a heightened risk of lifelong disabilities.³³⁻³⁵ Both PTB and LBW are associated with bronchopulmonary dysplasia, a multisystem disorder with multiply morbidities and the most common infant respiratory disease.³⁶

BARRIERS

In the past, rural women may have experienced inadequate prenatal care.^{8, 18} However, recent studies suggest that disparities in prenatal care between rural and urban areas have diminished. Epstein, et al. (2009) found no difference in late initiation of prenatal care or barriers to prenatal care between women living in different geographic areas (small rural, large rural, urban) in Oregon in 2003.¹¹ If disparities in prenatal care do exist between rural and urban areas, they might not be related to disparities in maternal and child outcomes. Hillemeier and her colleagues (2007) found that rural residence (in this instance, the two most rural categories) significantly predicted PTB and LBW after controlling for prenatal care and availability of physicians, suggesting that access to care alone does not explain rural maternal and child health disparities.³⁷ These disparities may be more directly related to poverty than access to care.⁵ However, in general, birth outside of a Level III hospital might be associated with an increased risk of death for very PTB and very LBW infants.³⁸

KNOWN CAUSES OF THE CONDITION

Higher rates of LBW and PTB in very rural areas may be explained (at least partially) by per capita

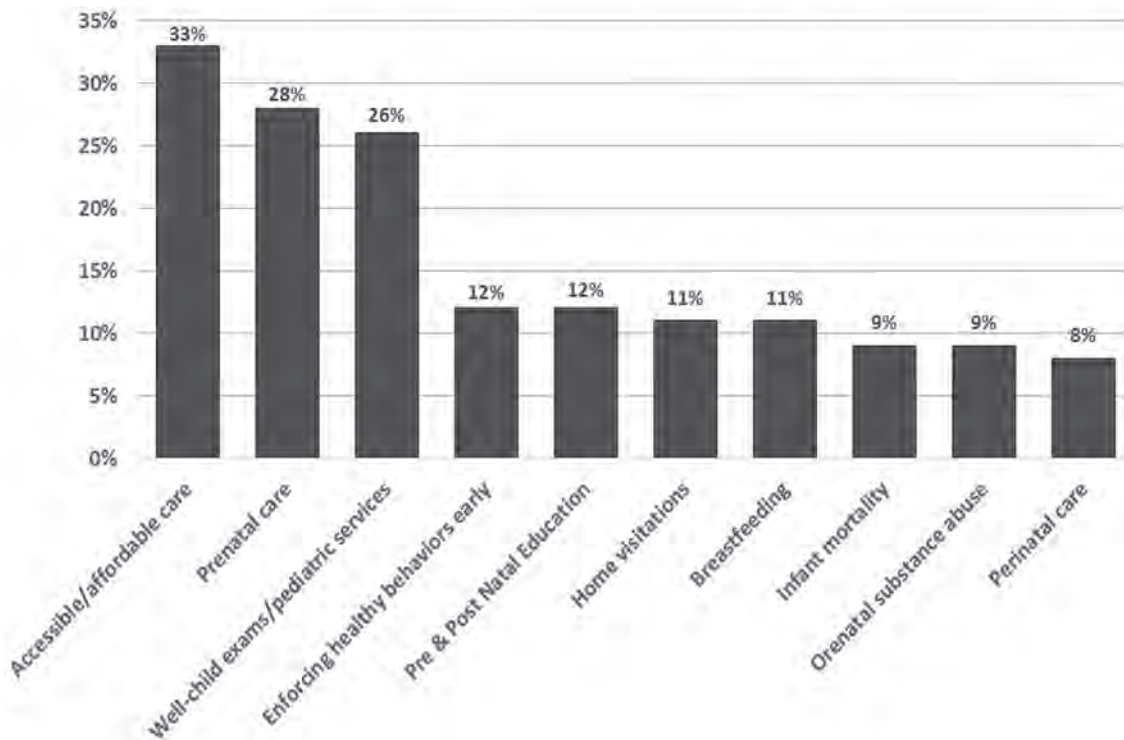
income, poverty rates, and unemployment rates, all of which are associated with rurality.¹⁴ Rural women are also more likely to smoke during pregnancy.^{11, 14} The national average for smoking during pregnancy is 12.6 percent. In a study of rural Appalachian women, 24.7 percent self-identified, at the time of delivery, as a smoker.¹⁴ Pregnant women living in rural areas may face barriers to substance abuse treatment, including smoking cessation programs.³⁹ This is problematic, as smoking during pregnancy is still associated with PTB, LBW, and preterm-related deaths, even though prenatal smoking has declined in recent years.⁴⁰

PROPOSED SOLUTIONS OR INTERVENTIONS

Respondents to the RHP2020 survey identified several subpriorities for maternal and child health (**Fig. 1**). The health of mothers, infants, and children is closely tied to access to health care, the overall number one national rural health priority. Closely linked to access is prenatal and pediatric care, well-child exams, and education for healthy infant development, such as breast feeding and avoidance of alcohol, tobacco, and drugs (**Fig. 1**). As such, programs targeting perinatal access to health care are suggested. The **Antenatal & Neonatal Guidelines, Education and Learning System (ANGELS)** in Arkansas was developed to address low birth weight among rural Arkansas infants.^{41, 42} The ANGELS program provides a wide array of health services (many using a telemedicine model) for pregnant women and infants living in rural Arkansas, and has been shown to reduce infant mortality and increase access to care.⁴³⁻⁴⁵ The **Healthy Families Arkansas (HFA)** program is based on the Healthy Families America model,⁴⁶ and focuses on individualized care management and home visits to bring prenatal checkups and educational services (among other offerings) to women living in rural Arkansas. Similarly, **Best Babies**, a program for rural women in Georgia that are at high risk for poor birth outcomes, provides focused medical care management, home visits, child care, and transportation.⁴⁷

Future initiatives should focus preventative initiatives to reduce LBW and PTB on remaining disparities known to adversely affect birth-related outcomes. Given the relatively high rates of tobacco use during pregnancy among rural women, substance abuse treatment programs targeting tobacco cessation among rural women of reproductive age should be encouraged.¹¹ Tobacco cessation programs currently in use could be tailored for use in rural settings. The

Figure 1. Maternal and Child Health Subpriorities Identified by Rural Stakeholders (n=93)⁵⁷



American Cancer Society's **Quit for Life** program, for example, is a web-and-phone based intervention for tobacco cessation.⁴⁸ The distance education/telehealth format could be utilized to reach women living in isolated rural areas. Tobacco cessation programs could also be folded into existing prenatal substance abuse programs, such as The Brazos Valley Council on Alcohol and Substance Abuse (BVCASA) Baby Luv program.⁴⁹ Prenatal substance abuse is a maternal and child health priority (**Fig. 1**), and is also associated with poor maternal and infant outcomes. The BVCASA offers substance abuse interventions (for both prevention of substance abuse and treatment of substance abuse) in a seven-county area in central Texas. All BVCASA programs are approved by the Substance Abuse and Mental Health Services Association and the Texas Department of State Health Services. Rural pregnant and postpartum women can attend Baby Luv, an education and support program consisting of case management, a parenting class, and social activities centered around preventing substance abuse and facilitating healthy parenting practices.

Nutrition counseling combined with programs that decrease food insecurity might also prove beneficial for rural mothers and their children, as rural moms are more likely to experience both obesity and inadequate weight gain during pregnancy,¹³ both of which are associated with PTB.⁵⁰⁻⁵¹ Inadequate

weight gain is also associated with LBW infants.⁵⁰ Nutrition assistance programs like the Supplemental Nutrition Assistance Program (SNAP) and Women, Infant, and Children (WIC) have been shown to reduce the likelihood of LBW.⁵² Targeted programs to increase SNAP and WIC utilization in rural communities could address inadequate weight gain among rural mothers. Other consideration might include farm-to-family programs like the Farm Fresh Rhode Island Food Hub⁵³ and the Healthy Foods Healthy Families program,⁵⁴ which promote linking producers of fruits and vegetables and nutritional counseling with food insecure populations.

Once an infant is born early or with low birth weight, interventions should focus on reducing the risk of mortality and morbidity. Kangaroo mother care (KMC), which consists of skin-to-skin contact between infant and caregiver, frequent or exclusive breastfeeding, and early hospital discharge, is associated with favorable outcomes (such as reduced morbidity, reduced mortality, and increased growth) among LBW infants.⁵⁵ This program of care began in Bogota, Colombia, in the 1970s in an effort to provide care to preterm infants in hospitals faced with incubator shortages, and is now widely used in developing countries.⁵⁶

SUMMARY AND CONCLUSIONS

Maternal, infant, and child health are among the top priorities for people living in rural places. Rural women face limited access to prenatal care and higher rates of preterm and low birth weight deliveries. Smoking while pregnant, less-than-optimal pregnancy weight (on either ends of the scale), and poverty may contribute to poorer rural maternal, infant, and child health outcomes. Suggested interventions should encourage smoking cessation, nutrition, and low-resource care alternatives for vulnerable infants.

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Suggested Chapter Citation:

McMaughan D, DeSalvo B, Creel L. Maternal and Child Health in Rural United States: Updates and Challenges. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: The Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:119-125.

TOBACCO USE IN RURAL AMERICA

By Karen W. Geletko, MPH, and Gail Bellamy, PhD

SCOPE OF THE PROBLEM

- Tobacco use is more prevalent in rural areas than non-rural areas among adults and adolescents.¹⁻⁷
- Smokeless tobacco use is particularly high among rural populations.^{1,5,7-9}
- More than twenty-seven percent of rural pregnant women smoke throughout their pregnancy versus 11.2 percent of urban.
- Rural populations are at disproportionate risk for tobacco-related morbidity and mortality due to both their own tobacco use and exposure to secondhand smoke.^{9,10}
- The percent of children living in the same household as a smoker is higher in rural areas than urban.
- Rural populations are more likely to be exposed to, and less likely to receive, adequate protection from secondhand smoke.^{9,11}
- Current cigarette smoking and smokeless tobacco use among adults and adolescents is higher in the Midwest and the South than the West and Northeast.¹
- Tobacco producing states with the highest rate of tobacco production have lower rates of smoking cessation.¹²

Although rural communities have seen slight decreases over the past decade in tobacco use prevalence, they have not seen the significant decrease experienced in urban communities.^{1,3,13} From 2004 to 2012, cigarette and cigar smoking among all age groups decreased, with the largest decreases seen among youth (**Table 1**). Cigarette smoking among youth declined from 15.6 percent in 2004 to nine percent in 2012 and cigar smoking decreased from 5.8 percent in 2004 to 3.8 percent in 2012. There has also been a slight decrease from 2004 to 2012 among youth who use smokeless tobacco (5.2 percent to 4.4 percent). However, smokeless tobacco use among adults increased from 5.9 percent in 2004 to 7.3 percent in 2012.

Tobacco use remains higher in rural compared to non-rural areas among both adults and adolescents.^{1-7,9} Rural residents are more likely to be lifetime and current smokers and users of smokeless tobacco.⁹ Rural smokers tend to smoke more cigarettes per day than non-rural smokers.¹⁴ In 2012, the rate of current cigarette use among persons 12 or older was 27.4 percent in rural areas compared to 19.9 percent and 23.2 percent in

Table 1. Tobacco use among all ages, youth, and adults in 2004 and 2012.

All Tobacco		
	2004	2012
All Ages	33.7	33.5
Youth	19.3	12.4
Adult	35.4	35.6
Cigarettes		
	2004	2012
All Ages	28.4	27.4
Youth	15.6	9.0
Adult	29.9	29.2
Smokeless		
	2004	2012
All Ages	5.8	7.1
Youth	5.2	4.4
Adult	5.9	7.3
Cigars		
	2004	2012
All Ages	5.4	4.6
Youth	5.8	3.8
Adult	5.3	4.6

large metropolitan and small metropolitan areas, respectively.¹ Smokeless tobacco use is higher among rural populations, with males being far more likely than females to use smokeless tobacco.^{1,5,7-9} Current smokeless tobacco use in 2012 among persons 12 or older was 7.1 percent in rural areas compared to 2.1 percent and 3.9 percent in large metropolitan and small metropolitan areas, respectively.¹

HEALTHY PEOPLE 2020 GOALS AND OBJECTIVES

The primary goal of Healthy People 2020 is to reduce illness, disability, and death related to tobacco use and secondhand smoke exposure. There are 30 objectives organized within three key areas: tobacco use prevalence, healthy systems changes, and social and environmental changes. For the purpose of this chapter, the authors have focused on those objectives that have the greatest impact on rural communities. Therefore, this chapter addresses the following Healthy People 2020 objectives:

Tobacco Use Prevalence

- **TU-1** Reduce tobacco use by adults
- **TU-2** Reduce tobacco use by adolescents
- **TU-4** Increase smoking cessation attempts by adult smokers
- **TU-5** Increase recent smoking cessation success by adult smokers
- **TU-6** Increase smoking cessation during pregnancy

Healthy Systems Change

- **TU-9** Increase tobacco screening in health care settings
- **TU-10** Increase tobacco cessation counseling in health care settings

Social and Environmental Changes

- **TU-11** Reduce the proportion of nonsmokers exposed to secondhand smoke
- **TU-12** Increase the proportion of persons covered by indoor worksite policies that prohibit smoking

- **TU-13** Establish laws on smoke-free indoor air that prohibit smoking in public places and worksites

TU-1 Reduce tobacco use by adults

In 2012, the rate of current tobacco use among adults 18 and older was 35.6 percent in nonmetropolitan areas compared to 25.4 percent and 30.4 percent in large metropolitan and small metropolitan areas, respectively.¹ Rates of current cigarette and smokeless tobacco use are also higher in nonmetropolitan areas (29.2 percent; 7.3 percent) than in large metropolitan (21.5 percent; 2.2 percent) and small metropolitan areas (24.9 percent; 4.0 percent).¹ However, current rates of cigar use are lower in nonmetropolitan areas (4.6 percent) compared to large metropolitan (5.3 percent) and small metropolitan (6.2 percent) areas.¹

TU-2 Reduce tobacco use by adolescents

Rural adolescents have higher rates of tobacco use compared to their non-rural counterparts.^{1,5-7} In 2012, the rate of current tobacco use among adolescents aged 12-17 was 12.4 percent in nonmetropolitan areas compared to 7.2 percent and 9.3 percent in large metropolitan and small metropolitan areas, respectively.¹ Similarly, the rate of current cigarette use among adolescents in nonmetropolitan areas is 9 percent, whereas rates in metropolitan areas are 5.6 percent (large metropolitan) and 7.1 percent (small metropolitan).¹ Rates of current smokeless tobacco and cigar use are also higher among adolescents in nonmetropolitan areas (4.4 percent; 3.8 percent) than in large metropolitan (1.2 percent; 2.1 percent) and small metropolitan areas (2.4 percent; 2.9 percent).¹ Furthermore, research indicates that rural youth tend to initiate tobacco use at an earlier age compared to their urban counterparts and, therefore, are more nicotine dependent, making cessation more difficult.^{15,16} Rural youth tobacco users may be at an increased risk for mental health problems, such as anxiety and depression, because smoking and mental health issues tend to co-occur among this population.¹⁵

TU-4 Increase smoking cessation attempts by adult smokers

TU-5 Increase recent smoking cessation success by adult smokers

Behavioral and pharmacological treatments are well-received and effective among rural smokers,

especially when cost-related barriers are removed.¹⁷⁻¹⁹ Rural tobacco users are interested in cessation and using pharmacotherapy for assistance in their quit attempts, however, many believe lack of access to health care coupled with the cost of treatment make quitting unfeasible.¹⁷ Quit rates are about the same across socioeconomic status; however, poorer smokers appear to start smoking again six months after the program ends.²

TU-6 Increase smoking cessation during pregnancy

Pregnant women in rural communities are almost three times more likely to smoke compared to their urban counterparts (27.4 percent vs. 11.2 percent).² Even when sociodemographic factors are accounted for, rural women are still two times more likely to smoke while pregnant than urban women.² Furthermore, rural pregnant women smoked at approximately the same rate as nonpregnant urban women.²

TU-9 Increase tobacco screening in health care settings

TU-10 Increase tobacco cessation counseling in health care settings

Rural health care providers are not consistently assisting and referring their smoking patients to cessation services or resources and are doing so less than urban physicians. Smoking cessation counseling is considered the “gold standard” for healthcare prevention imparted by healthcare providers,²⁰ as even brief physician intervention can be effective in helping a patient decide to quit. Provider intervention is vital to rural smokers who have limited access to cessation resources. However, even with provider intervention, rural tobacco users often report frustration that physicians fail to provide specific assistance, such as offering the patient solutions and resources for quitting.¹⁷

TU-11 Reduce the proportion of nonsmokers exposed to secondhand smoke

TU-12 Increase the proportion of persons covered by indoor worksite policies that prohibit smoking

TU-13 Establish laws on smoke-free indoor air that prohibit smoking in public places and worksites

Rural populations are disproportionately affected by secondhand smoke. The percentage of children living in the same household as a smoker is higher in rural areas (33.1 percent in large rural areas and 35 percent in small rural areas) compared to urban areas (24.4 percent).²¹ Persons living in rural areas are more likely to report that someone had smoked in their presence during the past seven days both at home and at work.⁹ This is due in part to fewer and less comprehensive restrictions on smoking in public places in rural areas.^{9,11} According to a 2006 study of school health policies and programs, 64 percent of schools had a tobacco free environment, however rural, small, and poorer schools were least likely to have policies in place.²² Despite findings that there are fewer smoke-free laws and voluntary restrictions in rural areas, a study by Rayens et al.^{9,23} indicates that levels of support for clean-air policies are actually higher in rural communities, suggesting policy makers should consider implementing comprehensive tobacco ban legislation in rural areas, as they may be more acceptable and feasible than expected.

RHP2020 SURVEY OUTCOMES

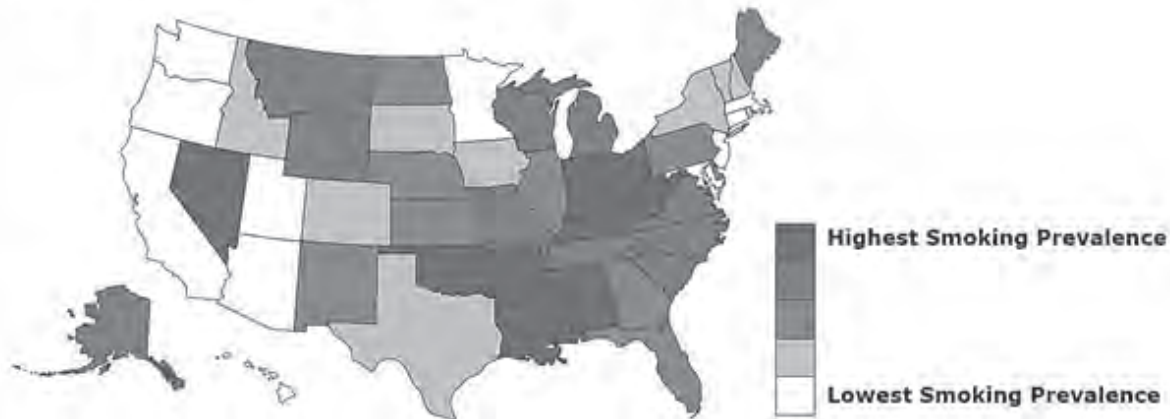
A total of 429 respondents to the national Rural Healthy People 2020 survey identified “tobacco use” as a top priority with an overall assignment of 10th most important rural priority. Of these, 161 respondents offered specific sub-recommendations, including focusing more on education and prevention (36 percent), improving funding for smoking cessation (22 percent), work on educating young age groups (ten percent), stricter smoking ordinances and smoke-free areas (nine percent), stricter penalties and higher taxes.

VARIATION BY RURAL REGION

Smoking among adults, age 18 and older, increases with rurality, but there is variability across census regions, with the highest rates in nonmetropolitan counties in the South, followed by the Northeast, Midwest, and West.²⁴ Among adolescents that smoked in the past month, the percent increased with rurality in all regions except the West. Across regions, adolescent smoking was greatest overall in nonmetropolitan counties with a city of fewer than 10,000 residents. Among regions, smoking was highest in the Midwest, followed by the Northeast, South, and West.

Figure 1 shows the prevalence of adult smoking by state. States with the highest rate of tobacco

Figure 1. Adult Smoking Prevalence



Source: Behavioral Risk Factor Surveillance Survey 2010, U.S. Department of Health and Human Services

production (NC, KY, TN, SC, VA, GA and TN) have lower rates of smoking cessation.¹² Similarly, none of these states has comprehensive smokefree air laws (Fig. 2).² As noted by Gonzalez et al.,²⁵ the existence of strong smoke-free laws may not extend beyond large urban centers and therefore have minimal impact on non-metro communities.

VARIATIONS BY RACE AND ETHNICITY

Racial and ethnic differences in tobacco use in rural communities are similar to differences observed nationally, as the prevalence of current smoking is highest among Native Americans and lowest among Asians.³ Close to half (45.2 percent) of Native Americans living in rural areas are regular tobacco users.^{2,3} A study examining tobacco use among the rural elderly, found that smokeless tobacco use and use of more than one product was highest among Native Americans, and that African Americans were less likely to be current cigarette smokers compared to Native Americans and whites.²⁶

Rural African Americans and Hispanics are less likely to take up smoking when young and are also more likely to live in homes where smoking is not allowed by anyone.²⁷ A study by Osypuk et al.²⁸ analyzed national data, the Current Population Survey Tobacco Use Supplement, from 1995-1996. This study is unique in that it incorporated “place” (i.e., state) into the analysis and found that six states in the Southeast had lower smoking rates among black females compared to the national mean, and that rural states in the Northwest and Midwest had lower smoking rates for white women than the national mean. Another study found that African Americans living in the stroke belt (NC, SC, GA AL, MS, TN, AR, LA) and stroke buckle (coastal plain region of NC, SC, and GA) are less likely to be current smokers than those in the non-belt (the rest of the country).²⁹ African Americans in the stroke buckle are also less likely to be exposed to secondhand smoke compared with those in other regions.²⁹

Figure 2. Strength of Smokefree Air



Source: State Legislated Actions on Tobacco Issues 2012, American Lung Association

Among adolescents, African Americans used significantly less tobacco over the previous 12 months than Caucasians.³⁰ They also perceive tobacco as significantly more wrong to use, but less harmful, compared to white students.³⁰ A study by Gibbons et al.³¹ found that both availability and use of tobacco was lower among African Americans in rural areas than in urban areas.

IMPACT ON MORTALITY, MORBIDITY, AND OTHER HEALTH PROBLEMS

Tobacco use is significantly associated with the four main preventable causes of death in the United States: cancer, heart disease, cardiovascular disease, and pulmonary disease. Rural populations are already significantly disadvantaged by lack of access to health care generally, but when combined with tobacco addiction, rural populations significantly increase their risk for chronic conditions. (See other chapters for disease-specific discussions on rural populations.) In addition to being at a greater risk for tobacco-related morbidity and mortality due to their own tobacco use, rural populations are also disproportionately affected by secondhand smoke.^{9,10}

BARRIERS

Poverty and low educational attainment are traditionally associated with higher rates of smoking and are more prevalent in rural communities.^{3,32} Rurality also strongly predicts limited access to health care resources such as providers and health insurance coverage, and longer distances to receive care, placing additional burdens on rural populations.^{17,32,33} Many rural residents report a lack of financial resources and/or health insurance as barriers to visiting their physician and, therefore, reserve such visits for emergency situations or serious medical care.^{17,33} For those who have health insurance, cost is still cited as a barrier for going to their physician specifically for smoking cessation.¹⁷ Furthermore, there is a lack of knowledge among rural tobacco users regarding availability of cessation resources in addition to the lack of finances and insurance needed to acquire these resources.³⁴

Life hardships and living in highly stressful environments make smoking cessation difficult for rural tobacco users, as there is a general belief that smoking helps in coping with stress. This is often cited as a reason for both continued smoking and relapsing after an attempt to quit among smokers.¹⁷ Reluctance of rural community leaders to adopt smoking restrictions provides a barrier to cessation

attempts, as it normalizes smoking.^{11,17} Furthermore, rural populations are not exposed to as many counter-marketing messages proven to be effective in discouraging tobacco use and encouraging cessation in urban populations, because major media markets are based in metropolitan areas.² Additional barriers to tobacco prevention and cessation in rural communities include targeted marketing by tobacco companies^{32,35} and the fact that tobacco growing contributes to the economy of many rural communities.³⁶

PROPOSED SOLUTIONS OR INTERVENTIONS

Many of the recommendations in the *Clinical Practice Guidelines for Treating Tobacco Use and Dependence*³⁷ such as practitioner intervention, pharmacotherapy, and behavioral counseling are feasible and effective in rural communities. Increasing physician intervention and involvement is vital to rural smokers who have limited access to smoking cessation resources.¹⁷ The *Clinical Practice Guidelines* state that physician advice as brief as three minutes can significantly impact one's willingness to quit and this holds true for rural smokers who express a desire for their physicians to talk to them about their smoking and to facilitate cessation.¹⁷ Unfortunately, one study of rural tobacco users found that while practitioners will talk to their patients and encourage them to quit, they often fail to go to the next step in offering the patient solutions and resources for quitting.¹⁷ Increasing rural practitioner awareness of local cessation resources and referrals for their patients, and increasing smoking cessation media materials and community-based outreach campaigns will facilitate cessation efforts.³⁸

Rural smokers are willing to utilize pharmacotherapy and smoking cessation counseling if the cost barrier is removed.^{17,18} Therefore, being able to offer free or reduced cost pharmacotherapy in rural areas is likely to increase cessation.¹⁸ One possible solution is to create subsidies to cover the cost of evidence-based programs, counseling, and pharmacotherapy for low-income individuals in areas where excise taxes on tobacco are increased.³ Telephone counseling, Internet or email-based programs, smartphone apps, and state *Quitlines* are useful in increasing access to cessation services in rural areas, because they eliminate access issues such as transportation difficulties in addition to being cost effective cessation interventions.^{39,40}

Policy interventions, although more difficult to implement, are also effective interventions in rural communities. Comprehensive smoke-free laws and ordinances are effective in facilitating cessation and reducing exposure to secondhand smoke. A study by Mueilenberg et al.²⁷ indicates that smoke-free policies may be a valuable tool to help adolescent smokers cut down. As mentioned previously, select studies suggest that rural residents may be supportive of smoke-free laws and ordinances.^{9,23} Additionally, increasing access to health services, including increasing the number of rural residents covered by health insurance^{3,17} provides a solution to tobacco disparities in rural communities.

COMMUNITY MODELS KNOWN TO WORK

- After hearing from concerned citizens in Ringgold County, Iowa, decision makers in several county communities adopted tobacco-free park policies. Coalition partners launched a media campaign to encourage tobacco cessation among women of reproductive age. Local health care providers were trained on how to work with their patients to encourage tobacco cessation and make referrals to more intensive cessation services. <http://www.cdc.gov/nccdphp/dch/programs/CommunitiesPuttingPreventiontoWork/communities/profiles.htm>
- At Northwestern Medical Center in St. Albans, Vermont all hospital employees are responsible for enforcing the hospital's smoke-free campus policy. Neither patients nor staff are allowed to smoke anywhere on the hospital's campus and smoke breaks are prohibited. Patients who smoke are offered nicotine replacement therapy and bedside coaching to help with their efforts to quit. Additionally, an employee wellness program was created to support hospital staff who want to quit smoking and provides free smoking cessation medication and cash rewards for meeting milestones over the course of each person's quit process.
- The Arts Café in Moose Lake, Minnesota was once the smokiest restaurant in town until the owner decided to make her restaurant smoke-free and to provide an example for other businesses in tiny Moose Lake. The café enjoyed some of its most profitable years ever after adopting the ordinance and more importantly, prompted a chain reaction that led to the county becoming smoke-free.
- McDowell County, located in southwestern West Virginia, had high rates of tobacco use. This was facilitated by a lack of prevention and cessation services in the area, and a deeply-entrenched rural culture that viewed sports and hunting as synonymous with smokeless tobacco use. The Southern Coalfields Regional Tobacco Prevention Network Office (SCRTPNO), a community-based regional prevention coalition, decided to address this problem in 2008 by implementing Spit It Out-West Virginia. Spit It Out was a community-based, culturally appropriate tobacco prevention and cessation program. It was funded with a two-year grant from Legacy, a non-profit public health organization. <http://www.raconline.org/success/project-examples/634>

SUMMARY AND CONCLUSIONS

The nation and rural America have made improvements in preventing use of tobacco products and in tobacco cessation. However, the disparity between rural and urban tobacco use, lifetime and current, continues to exist. Recent legislation, including the implementation of the Affordable Care Act can provide a mechanism to address some of the challenges rural smokers have in accessing smoking cessation programs. Recent research looking at tobacco control policies and at media advocacy suggest that these might prove to be even more effective to prevent tobacco use and harm from second hand smoke.

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Suggested Chapter Citation:

Geletko KW, Bellamy G. Tobacco Use in Rural America. In: Bolin JN, Bellamy G, Ferdinand AO, et al. eds. *Rural Healthy People 2020*. Vol. 1. College Station, TX: Texas A&M University Health Science Center, School of Public Health, Southwest Rural Health Research Center; 2015:127-134.

RURAL HEALTHY PEOPLE 2020

VOLUME TWO

Rural Healthy People 2020, Volume 2, is a collection of literature reviews on rural health priorities numbers 11 through 20, resulting from the national survey of rural stakeholders.

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