

COMMENTARY

COPD and Rural Health: A Dialogue on the National Action Plan

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Chronic obstructive pulmonary disease (COPD) is a complex lung disease characterized by airways inflammation and lung tissue remodeling, leading to loss of small airways and emphysema.¹ It is the fourth leading cause of death in the United States, responsible for more than 150,000 deaths yearly.² More than 15 million people have been diagnosed with COPD and, compared to 4.7% in large metropolitan areas, a staggering 8.2% of those living in rural areas have the disease.² That translates to about 3.5 million people, and it does not include the estimated additional 1 million undiagnosed.^{2,3} Notably, even among never-smokers, rural residence and poverty are risk factors for COPD.⁴ The disease also takes a heavy financial toll: national medical costs associated with COPD are projected to increase from \$32.1 billion in 2010 to \$49 billion in 2020.⁵

To tackle COPD, Congress requested that federal and nonfederal partners develop a plan and identify the specific efforts patients, advocates, health care professionals, educators, payors, researchers, the biomedical industry, and federal agencies must take to change the course of COPD. The COPD National Action Plan (CNAP) was released during the 2017 American Thoracic Society International Conference.⁶ To address COPD in rural populations through the lens of the CNAP, the Health Resources and Services Administration (HRSA) and the National Heart, Lung, and Blood Institute (NHLBI) convened a workshop of rural health representatives and COPD stakeholders in Bethesda, Maryland, on March 19, 2018, to discuss ways to implement each of the 5 goals of the CNAP in rural settings. Below is a summary of the discussions held at the meeting.

Goal 1: Empower People with COPD, Their Families, and Caregivers to Recognize and Reduce the Burden of COPD

Educating patients and their caregivers (usually family members) about COPD is the cornerstone of Goal 1. While patient education generally happens in health care facilities, COPD awareness, diagnosis, and care for rural populations also need to reach locations unique to rural settings. Partnering with national rural-focused entities such as the American Agri-Women (AAW) Association, the National Future Farmers of America Organization, Sigma Alpha (a professional agricultural business sorority), and other members of the Consortium of Collegiate Agricultural Organizations can offer additional opportunities to educate about COPD and its prevention. Recognizing rural heterogeneity, culturally, linguistically, and content-appropriate messages need to be crafted for

each targeted region. To be sustainable, these programs must develop—with adequate regional, state, and national assistance—local champions. Support could come from groups such as the COPD Foundation, the American Lung Association (ALA), AAW, the National Rural Health Association (NRHA), HRSA's Federal Office of Rural Health Policy, the Veteran Administrations' Office of Rural Health, the Centers for Medicare and Medicaid Services, the states' Primary Care Associations (PCAs), the National Association of Rural Health Clinics, and the National Association of Community Health Centers.

Goal 2: Improve the Prevention, Diagnosis, Treatment, and Management of COPD by Improving the Quality of Care Delivered Across the Health Care Continuum

Goal 2 of the CNAP stresses the importance of developing and disseminating patient-centric, clinical practice guidelines that health care professionals can use to deliver COPD care. These will help primary care clinicians who are the providers of care to most people with COPD in rural areas, as these communities often lack pulmonologists.⁷ In rural settings, telehealth, telemedicine, telemonitoring, and telementoring can help relieve isolation, support appropriate education, and assist in patient care. Addressing reimbursement issues to support multidisciplinary team care to incentivize cost-effective interventions, such as pulmonary rehabilitation (PR), is also important. Additional resources available are the pocket guide based on the Global initiative for chronic Obstructive Lung Disease guidelines,⁸ and the COPD Foundation pocket guide and app.⁹ Electronic health records, such as those used in the VA's electronic health record (Vista/CPRS) system, also hold promise.¹⁰ Structured longitudinal telementoring of rural health care professionals, including medical assistants, respiratory therapists, and home health care professionals, could create a virtual "community of practice" that would facilitate COPD team management in rural areas. The strategy of "moving knowledge" instead of "moving patients" has been shown to be effective in managing other chronic diseases in medically underserved areas using the Extension for Community Health Outcomes model for telementoring.^{11,12} Many rural areas have been federally designated as medically underserved in part because primary care there is provided by other health professionals, including nurse practitioners and physician assistants.¹³ Increasing the availability of other professionals, such as respiratory therapists, would provide important services to patients and families affected by COPD such

as training in the use of inhalers,¹⁴ and delivery of PR, which improves patient clinical COPD outcomes but requires continued physical activity after initial program completion.¹⁵ These therapies are underutilized due to insufficient funding, resources, and reimbursement but also lack of awareness and knowledge by health care professionals, payors, and patients,¹⁵ and their delivery is often complicated by the long distances that rural COPD patients must travel to access them.¹⁶ Programs such as the Appalachian Pulmonary Health Project offer an example of successful delivery of a comprehensive outpatient PR in rural settings.¹⁷ PR structures also offer the opportunity to deliver tobacco cessation interventions and pulmonary function testing such as spirometry, which plays a necessary role in the diagnosis and assessment of severity of COPD.¹⁸ Potential alternatives, such as rehabilitation at home or telehealth rehabilitation with remote online supervision, are currently being tested.¹⁹

Goal 3: Collect, Analyze, Report, and Disseminate COPD-Related Public Health Data that Drive Change and Track Progress

Goal 3 of the CNAP stresses the importance of delivering interventions based on evidence from the regions and populations to be served. Access to timely, comprehensive COPD data is foundational to identifying where to best target resources for rural patients' and health care providers' education, worksite wellness programs, and prevention programs, and to reduce disease burden. Although national COPD data are available, most rural-specific data are not easily accessible at the local level. In addition, because the Centers for Disease Control and Prevention (CDC) does not fund COPD programs, state and local public health departments have no local CDC-generated data to use. An alternative source for gathering COPD data in rural communities is through accountable care organizations (ACOs).^{20,21} Because COPD-related health care costs due to disease flare-ups are very high (e.g., they require more ED visits, hospital admissions, and readmissions), ACOs are demonstrating that it is cost effective to monitor and manage COPD to prevent or minimize acute episodes. The ACO data that are used to monitor COPD care and patients' outcomes could be aggregated to support collaborative efforts in rural communities. Existing annual databases can also provide rural data on COPD. Public access to <http://wonder.cdc.gov> provides annual death certificate information from the National Vital Statistics System, run by the National Center for Health Statistics. County-level prevalence of COPD and other chronic conditions

among annual Medicare fee-for-service enrollees may be accessed at <http://www.cms.gov>. Urban-rural categories data can be analyzed using the Federal Information Processing Specification county code.²² Address locations of providers and specialists who submit Medicare and Medicaid claims may be obtained from the National Provider Identifier Registry (<http://www.cms.gov>). Self-reported doctor-diagnosed COPD, other chronic diseases, risk factors, and sociodemographic characteristics from the annual Behavioral Risk Factor Surveillance System may be obtained at www.cdc.gov/brfss and www.cdc.gov/cdi. To facilitate the analysis and use of these fragmented data sources, it is imperative to continue to create accessible linkages to the rural communities, and a CDC data portal with downloadable county-level COPD data would be useful for promoting rural efforts.

Goal 4: Increase and Sustain Research to Better Understand the Prevention, Pathogenesis, Diagnosis, Treatment, and Management of COPD

Goal 4 of the CNAP aims at fostering all aspects of COPD research. For example, cigarette smoking is a prime target for intervention not only because it is responsible for 75% of COPD cases nationally, but also because it disproportionately impacts rural residents.²³ Less access to public education programs that teach the dangers of smoking and its connection with COPD must be corrected through the implementation of tobacco use prevention and cessation programs.^{24,25} Additionally, up to 25% of patients with COPD report having never smoked,²⁶ and data collected from these individuals identify occupational and environmental exposures such as passive smoke, biomass fuels used for cooking and heating, mining dusts, or agricultural biodusts.²⁶ Research is needed to further clarify the roles of additional agents as possible causes of airflow obstruction and lung tissue damage and to document the effectiveness of exposure reduction strategies in preventing COPD.²⁷⁻²⁹ To this end, the participation of individuals from rural communities in registries and clinical trials conducted in rural settings is key to delivering meaningful results. Research on evidence-based models for preventing, diagnosing, and treating COPD in rural practices can be facilitated, for example, through partnerships between COPD researchers and Primary Care Practice-based Research Networks (PBRNs).³⁰ Currently, 5 PBRNs are participating in the NHLBI-funded CAPTURE COPD study aimed at validating the sensitivity, specificity, and predictive value of a 5-item survey and a peak expiratory flow measurement to identify patients with undiagnosed, clinically significant COPD.³¹

Additional opportunities to facilitate and enhance COPD research in rural settings could stem from public-private partnerships, including those with industry, and the use of different models of diagnostic and therapeutic delivery. Text message-based smoking cessation interventions are effective and can be beneficial for rural residents,³² and telemedicine is an attractive option for providing COPD care to rural patients.³³ PR, including home-based PR, could also be delivered through telehealth.^{19,34} Local health care professionals and national patient advocacy groups could help increase participation of rural residents in research and clinical trials.³⁵

Goal 5: Translate National Policy, Educational, and Program Recommendations into Research and Public Health Care Actions

Goal 5 calls for implementation of the CNAP, including in rural settings, and translating national COPD strategies into state- and community-based initiatives. This requires a multipronged approach and sustained efforts from all interested parties. Federal agencies that provide health care-related grants to states, such as NIH, HRSA, CDC, Patient-Centered Outcomes Research Institute, the Agency for Healthcare Research and Quality, the US Department of Agriculture, and others, must integrate COPD into their programs, and they need to fully engage state governments and agencies in COPD initiatives. In turn, states could be required or incentivized to engage in interagency collaborations to address COPD. Barriers to collaboration need to be removed to facilitate partnerships, including those with drug and device industries. These stipulations must be reflected in funding announcements, along with the economic, cultural, social, geographic, and demographic characteristics of rural communities. Rural patients could be organized around local chapters of national support groups, such as the ALA Better Breathers Clubs, the COPD Foundation State Captains and Harmonicas for Health, and other groups sponsored by existing trusted partners. State and federal health services agencies could educate and engage existing health and social service advocacy organizations (e.g., the NRHA, state rural health associations, state hospital associations, state offices of rural health, PCAs, county medical associations, and Community Action Agencies) to incorporate COPD in their messaging. Medicare Rural Hospital Flexibility grant funding could be leveraged to engage and track patients with COPD. State, local, and tribal health departments and organizations could prioritize COPD education and referrals, and health centers could institute COPD measures in the set collected

by Federally Qualified Health Centers and Rural Health Clinics. Notably, a demonstrated return on investment (ROI) could pave the way for increased job opportunities in rural settings (e.g., for respiratory therapists, nurses, pharmacists, community health workers, physician assistants). Finally, organizations such as the National Governors Association and the National Conference of State Legislatures should recognize the significance of COPD, encourage governors and state legislators to pass legislation that addresses the disease, and ensure that each state has a well-articulated COPD plan that outlines specific strategies, including those addressing workforce shortages.

Conclusion

COPD is a common, underdiagnosed, undertreated, and devastating chronic lung disease prevalently affecting underserved communities such as those of rural America. A concerted effort from all interested parties will make a difference in the lives of people and families affected by COPD and the communities in which they live.

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