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COMMENTARY

The Need for Community-Based Multimodal Screening for Chronic Disease and Cancer in Rural Kansas

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Abstract: This commentary argues that community-based, multimodal screening is a practical and evidence-aligned response to the disproportionate burden of chronic disease and cancer in rural Kansas, where structural barriers continue to limit access to preventive care. It highlights blood pressure screening as an effective entry point for broader detection of cardiovascular, metabolic, hematologic, and mental health risk, while emphasizing the clinical value of pairing such efforts with laboratory and psychosocial assessment.

Keywords: rural health services, mass screening, chronic disease, hypertension

Introduction

Chronic diseases and cancer remain leading causes of morbidity and mortality in the United States, yet their burden is not evenly distributed. Rural populations experience measurably worse health outcomes than their metropolitan counterparts across virtually every major chronic disease category. Rural Americans are 40% more likely to experience a preventable hospitalization, have a 23% higher all-cause mortality rate, and die at significantly higher rates than urban populations from the five leading causes of death: cardiovascular disease, cancer, chronic lower respiratory disease, stroke, and unintentional injury.[1,2] These disparities are particularly pronounced in states such as Kansas, where large geographic distances, healthcare workforce shortages, and socioeconomic barriers limit access to preventive care.[1] Early detection through screening is one of the most effective tools in reducing disease burden.[3] However, rural populations consistently demonstrate lower rates of preventive service utilization, including cancer screening, compared with urban counterparts.[1] This is not merely a problem of disease prevalence. It is a problem of delayed recognition. Early detection remains one of the most effective strategies for reducing morbidity and mortality from chronic disease and cancer, yet rural populations continue to use preventive services at lower rates than their urban counterparts.[1,3] Community-based screening deserves more serious consideration not as an adjunct to the healthcare system, but as a practical response to its uneven reach.

The State of Rural Health in Kansas

In Kansas, the case for this approach is particularly strong. More than 85% of counties are classified as rural or frontier, and many are federally designated Health Professional Shortage Areas.[4] These conditions translate into long travel distances, reduced specialty access, delayed follow-up, and, in some communities, the erosion or closure of the local hospital itself, contributing to documented rural-urban gaps in preventive service utilization such as cancer screening.[4] In many rural Kansas counties, residents must travel 30 minutes or more — and in western regions often over an hour — to reach specialty care or hospital-based services. County-level evidence further shows that uninsured rates, unemployment, and environmental exposures meaningfully shape cancer prevalence and screening uptake across the United States.[5] In this context, lower screening rates are not simply behavioral, but rather structural. Community health workers and patient

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navigators constitute an important but limited resource in these settings; their availability is constrained by funding and training infrastructure, yet they have demonstrated value in improving outreach, linkage to care, and chronic disease management when integrated into rural prevention programs.

The clinical consequences are already visible. Rural residents are more likely to be diagnosed with cancer at later stages, a pattern consistently associated with worse survival.[6] Thompson et al report that patients from rural areas treated at the University of Kansas Medical Center were more likely to present with colon cancer at a more advanced stage and experienced worse mortality outcomes than their urban counterparts; similar stage-related disparities were observed for breast and bladder cancers[7] State-level surveillance data also demonstrate that Kansas falls short of Healthy People 2030 targets for colorectal and breast cancer screening.[8] These are signals of a prevention infrastructure that is not adequately reaching the populations most at risk. A community-based screening strategy in rural Kansas should therefore be understood as an attempt to align prevention delivery with epidemiologic reality. The question is no longer whether early detection matters, but whether the state is willing to deliver it where need is greatest.

Blood Pressure Screening as an Entry Point to Risk Identification

Blood pressure screening is an especially compelling anchor for community-based prevention because hypertension is both highly prevalent and highly actionable. As the leading modifiable risk factor for cardiovascular disease, stroke, and chronic kidney disease, hypertension occupies a central place in the prevention of downstream morbidity and premature death.[9] The United States Preventative Services Task Force (USPSTF) assigns adult blood pressure screening a Grade A recommendation, reflecting substantial net benefit and essentially no meaningful harm.[10] Yet a large proportion of hypertensive adults remain unaware of their condition, and awareness gaps are greater in populations with limited primary care engagement, including many rural communities.[11] In Kansas, where rural hypertension burdens exceed national averages, community-based identification has substantial relevance.[4]

The value of blood pressure screening, however, is not confined to diagnosing hypertension alone. A screening encounter can function as a gateway to broader cardiovascular and metabolic risk stratification. Current guideline-based follow-up after elevated blood pressure includes medical history, physical examination, and laboratory evaluation such as complete blood count, electrolytes, creatinine, lipid testing, glucose assessment, urinalysis, and urine albumin-to-creatinine ratio.[12] These studies help define baseline risk, identify end-organ involvement, and support appropriate treatment planning.[12]

These laboratory studies are not advanced here as independent population screening tests but as components of a guideline-informed, multimodal response triggered by detected hypertension in populations with limited routine care access. Glucose and lipid assessment align with USPSTF and ADA recommendations for diabetes and cardiovascular risk stratification, while CBC and CMP elements provide contextual value for identifying co-occurring abnormalities (eg, anemia as a potential signal of occult gastrointestinal pathology) when interpreted alongside other findings.

This broader approach may also improve long-term control. Kteich et al found that patients who underwent more comprehensive baseline assessment demonstrated improved systolic blood pressure control 12 months after diagnosis[13] Their findings suggest that identifying hypertension alongside coexisting metabolic and renal abnormalities may strengthen management by clarifying the patient's full clinical profile.[13] Serum creatinine, LDL cholesterol, sodium, potassium, glucose, electrocardiography, and urine dipstick testing were all capable of revealing clinically important abnormalities that might otherwise have gone undetected.[13] In that sense, blood pressure screening in the community should not be conceived as a narrow vital sign check. It is a strategic point of entry into the early recognition of clustered chronic disease.

Why Multimodal Screening Matters

A central weakness of conventional prevention models is that they often isolate conditions that, in reality, cluster biologically and socially. Rural communities do not experience hypertension, diabetes risk, undiagnosed anemia, dyslipidemia, and untreated psychological distress as separate problems. They present together, reinforce one another, and are often missed together. A stronger screening model acknowledges this interdependence.

The complete blood count offers one such opportunity. Beyond identifying anemia, it may reveal hematologic abnormalities that point toward occult malignancy, inflammatory disease, or infection. Iron deficiency anemia may be the first sign of gastrointestinal blood loss, including colorectal cancer, and abnormalities in leukocyte or platelet indices may represent early signals that warrant further evaluation. When paired with other screening data, the CBC becomes part of a broader detection strategy.

The comprehensive metabolic panel is similarly valuable because it captures information across multiple domains of chronic disease risk. Glucose abnormalities may identify prediabetes or diabetes; creatinine and estimated renal function help characterize kidney health; liver-associated chemistries may raise concern for fatty liver disease, chronic viral hepatitis, or other pathology. The USPSTF recommends screening for prediabetes and type 2 diabetes in adults aged 35 to 70 years who are overweight or obese, and the ADA recommends screening beginning at age 35 regardless of BMI.[14] Lipid screening likewise remains foundational to estimating atherosclerotic cardiovascular risk and guiding primary prevention.[15,16] In a population where access to routine longitudinal care is constrained, these tests provide a practical way to detect silent but clinically consequential disease earlier.

Mental health screening should also be centrally integrated. The PHQ-9 is a brief, validated measure of depressive symptoms that performs well at a threshold score of 10 or greater.[17] Depression is associated with poorer medication adherence, worse chronic disease self-management, and elevated cardiovascular risk.[17,18] In Kansas, where 99 of 105 counties are designated Mental Health Professional Shortage Areas and suicide mortality is higher in frontier and rural regions than the state average, failure to identify mental health burden is not a minor omission.[4]

The GAD-7 is widely used as a brief self-report screening measure with utility for identifying clinically significant anxiety symptoms and related disorders.[18] Anxiety is not only a psychiatric concern, but also physiologically and behaviorally linked to cardiovascular strain, inflammatory dysregulation, insulin resistance, and poorer chronic disease control.[18] When depression and anxiety are screened concurrently with blood pressure, metabolic markers, and lipids, clinicians and public health teams gain a more realistic picture of why risk accumulates and why treatment may fail if the psychosocial burden remains invisible. Positive mental health screens would be managed through structured linkage pathways, including integration with FQHC behavioral health teams, tele-mental health services where available, and established crisis protocols, consistent with collaborative care models shown to improve both psychiatric and chronic disease outcomes when screening is paired with treatment access.

This is precisely why multimodal screening is more clinically meaningful than one-off testing. Consider a participant in rural Kansas found to have a blood pressure of 160/98 mmHg, fasting glucose of 112 mg/dL, LDL cholesterol of 168 mg/dL, mild normocytic anemia, a PHQ-9 score of 14, and a GAD-7 score of 11. None of these findings should be interpreted in isolation. Together, they suggest substantial near-term cardiovascular risk, likely progression toward metabolic disease, a hematologic abnormality that may warrant evaluation for occult pathology, and untreated psychological distress likely to worsen adherence and physiologic stress. The benefit of community-based screening lies not only in detecting abnormal values, but in revealing clinically important patterns before they culminate in emergency presentation, advanced-stage disease, or preventable hospitalization.

From Episodic Outreach to Public Health Infrastructure

It is of the authors' opinion that the epidemiological burden of chronic disease and cancer in rural Kansas is substantial, the structural barriers to conventional clinic-based prevention are deeply entrenched, and community-based multimodal screening represents the most feasible and evidence-aligned mechanism available to interrupt the current trajectory of preventable morbidity and mortality. The remaining barrier to impact is not uncertainty, rather the absence of coordinated, adequately resourced implementation.

That mechanism should be community-based, multimodal, and intentionally linked to downstream care. Linkage from community screening encounters to confirmatory evaluation and treatment could be facilitated through established partnerships with FQHCs and rural hospitals, using warm handoffs, patient navigation support, scheduled follow-up appointments, and telehealth consultations where in-person specialist access is limited. Community health workers or designated care coordinators could assist with transportation barriers and appointment scheduling to help participants successfully transition from screening to ongoing care. Screening efforts that remain episodic, grant-fragile, or detached

from referral pathways will have limited impact. By contrast, a permanent model embedded in the state's public health architecture could create a repeatable pathway from community encounter to confirmatory evaluation, chronic disease management, cancer workup, and mental health follow-up. Such a model would also generate actionable data on unmet need, regional disease burden, and linkage-to-care performance across rural counties. This is where strategic partnerships become essential. Rural hospitals, FQHCs, county health departments, academic medical centers, legislators, and community stakeholders should not approach screening as a temporary outreach activity. They should approach it as prevention infrastructure. In a state where the mismatch between disease burden and healthcare access is well documented, the case for institutionalizing community screening is strong on both epidemiologic and ethical grounds.

While community-based multimodal screening offers a practical response to access barriers, it is not without limitations. False-positive results can generate anxiety and prompt additional testing; the yield of certain laboratory components (particularly CBC for occult pathology) may be modest in asymptomatic populations; and cost-effectiveness, workforce capacity for confirmatory evaluation, and data privacy protections in non-clinical settings all require local assessment and safeguards. These considerations highlight the importance of embedding screening within systems that include clear triage protocols, defined referral pathways, and ongoing evaluation rather than standalone events.

Conclusion

The burden of chronic disease and cancer in rural Kansas is substantial, the barriers to clinic-centered prevention are deeply entrenched, and the cost of delayed detection is already evident in avoidable morbidity, advanced-stage presentation, and preventable death.[1–8] Community-based multimodal screening is not a speculative intervention. It is a feasible, evidence-aligned response to a longstanding access problem. The remaining question is whether Kansas will continue to rely on a prevention model that underserves its rural communities, or whether it will build one capable of meeting people where they are. The need is clear and the evidence is sufficient. What is now required is coordinated, sustained implementation.

AI Disclosure Statement

No generative AI tools were used to draft, write or edit any portion of this manuscript. All sources were independently identified, verified, and reviewed by the authors, and all data extraction, analysis, interpretation, and conclusions were performed solely by the authors.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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