

West Virginia

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July/August 2013
Vol. 109, No. 4

West Virginia State Medical Association

The Voice of Medicine
in West Virginia



Rural Healthcare Disparities: *Challenges & Solutions*

Special CME Issue

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WVU Healthcare salutes

Larry Rhodes, MD

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Larry Rhodes' calm voice, graying beard, and well-worn cowboy boots are familiar to hundreds of parents in rural West Virginia who have a child with heart disease or a congenital heart defect. Primary care practitioners know him as an unfailing expert for consultative advice.

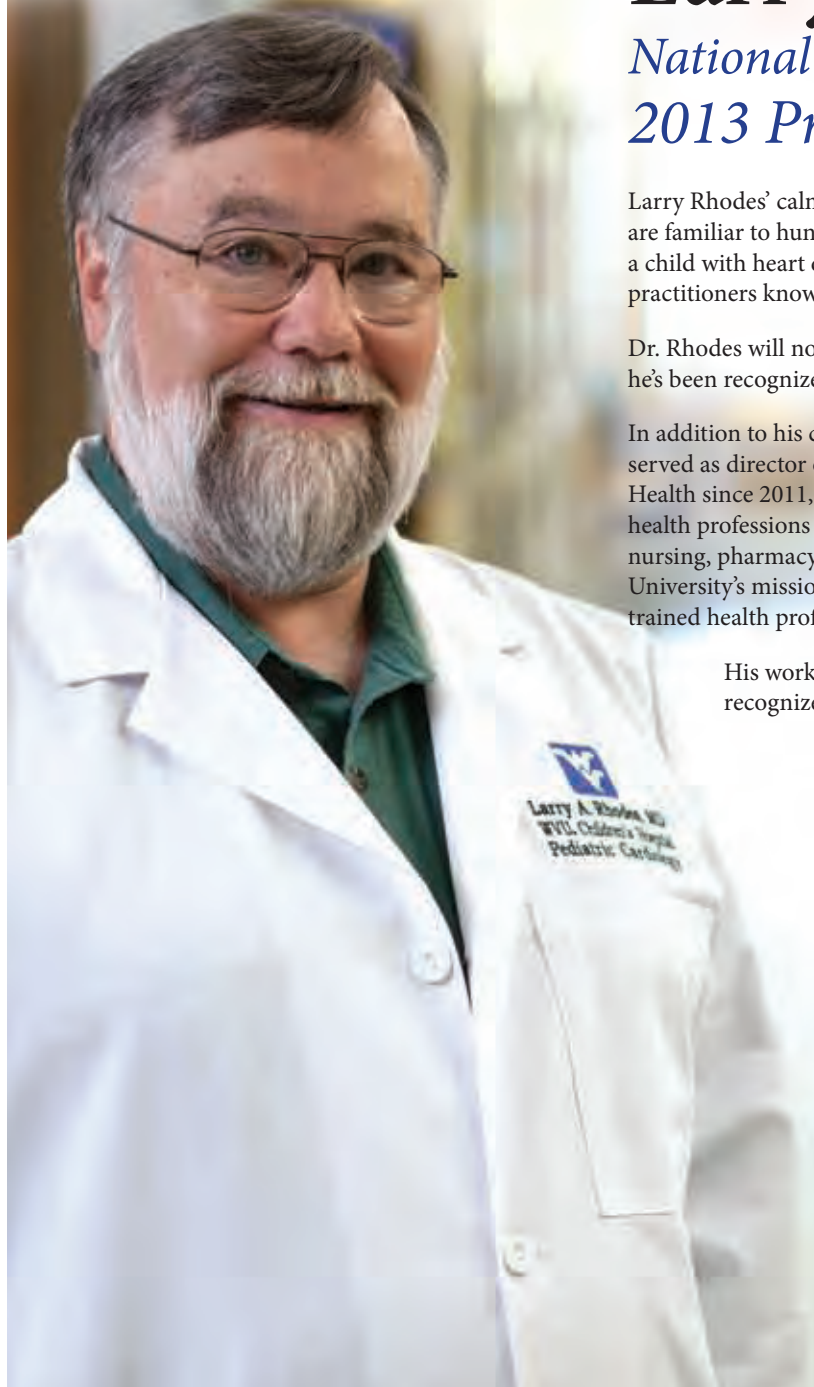
Dr. Rhodes will now be more widely known outside of West Virginia, as he's been recognized as the nation's foremost rural practitioner for 2013.

In addition to his clinical service throughout the state, Dr. Rhodes has served as director of the WVU Institute for Community and Rural Health since 2011, overseeing the rural education programs for all health professions students in WVU's schools of medicine, public health, nursing, pharmacy and dentistry. This service is a crucial part of the University's mission to supply underserved rural communities with well-trained health professionals.

His work is just one of the reasons that WVU is nationally recognized for its commitment to rural medicine.



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About the cover: *Cover design by Angie Lanham.*



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TAKE NOTE: *The beautiful Dolly Sods photo featured on the May/June 2013 cover was taken by Morehead Photography. See their photo galleries at www.moreheadphotography.com.*



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Upcoming Events

August 23-25, 2013

Annual Healthcare Summit

The Greenbrier, White Sulphur Springs, WV

See pages 99 & 100 for more information and a registration form

September 13, 20, 27 & Oct 4, 11, 2013

Certified Medical Coder Class

WVSMA Offices, 2nd Floor Conference Room, Charleston, WV

See page 91 for more information and a registration form

September 20-21, 2013

Appalachian Addiction & Prescription Drug Abuse Conference: A Paradigm for the Epidemic

Embassy Suites, Charleston, WV

Invitation for Submissions to a Vignette Series

Compassion in Medicine

The West Virginia Medical Journal (WVMJ) is soliciting vignettes from West Virginia physicians, who have practiced in the state for at least 10 years. Vignettes should highlight experiences in which their patient care inspired or educated the author in a meaningful way.

Submissions are limited to 700 words. Please accompany your submission with a cover letter, including your name, address, email address, title and employment affiliation and years in practice. Submissions are open to all West Virginia physicians.

Vignettes will be published periodically throughout the year, without specific notice of a scheduled publication date. Please be sure the submission contains no identifiable patient information. **Only one submission per author.**

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President's Message



Improving Access to Healthcare and the Impact of Medical Practice in West Virginia

by Hoyt J. Burdick, MD
WVSMA President
2012-2013

Welcome to this important CME edition of the *West Virginia Medical Journal* dedicated to access to healthcare and improving population health in West Virginia. As physicians, we are both blessed and challenged to treat illness and work to improve health in our great state. Inside you will find insightful and thought-provoking reports of progress on both fronts.

Early in my career, I believed that the most important factor in improving patients' health was the intelligent and compassionate practice of medicine. If physicians could see enough patients, understand their illnesses and prescribe the right treatments, the health of the population would improve. While partially true, and certainly a worthy aspiration for a young physician, the truth became increasingly clear. Access to healthcare, even the very best healthcare, is only part of the solution.

In a landmark health policy article¹ over ten years ago, the authors pointed out that "...some 40 percent of deaths are caused by behavior patterns that could be modified by preventive interventions. It appears, in fact, that a much smaller proportion of preventable mortality in the United States, perhaps 10-15 percent, could be avoided by better availability or quality of medical care. The fact that medical care historically has had limited impact on the health of populations has been known for many years." The authors go on to point

out that the leading determinants of personal health are actually behavioral patterns (40%), genetics (30%), social circumstances (15%), shortfalls in medical care (10%) and environmental exposures (5%).

Shortly after the excitement of the 2012 WVSMA Annual Summit at the Greenbrier, I was contacted by Cecelia Mason of West Virginia public radio requesting an hour long interview regarding the 2011 WV State Snapshot from the National Healthcare Quality Report. I was quite anxious and had no script or any idea of what the next question might be. Near the end of the interview, I was asked a question that led to a long pause. The question was, "Dr. Burdick, if West Virginians have the worst rates of diabetes, obesity, heart disease, stroke and self-reported mental health, shouldn't West Virginia physicians be experts at improving these conditions, and if so, why are these conditions still increasing?". While the answer seemed obvious and the age and social demographics in the report offered multiple "excuses", the challenge for WV physicians became much clearer in my mind. This issue of the *West Virginia Medical Journal* gives me hope that physicians are in a better position to meet that challenge in 2013.

On a personal note, it has been a tremendous honor and pleasure to serve as your President during this past year. Many of you met AMA President, Jeremy Lazarus, MD at

the Annual Summit last year. In his most recent opinion column titled "AMA stands for much more than just one leader"², Dr. Lazarus humbly concluded "...it has never been about me. It is always about the President of the American Medical Association, the organization that is the voice of America's physicians." In much the same manner, I want to thank you for allowing me the opportunity to be your voice. Many thanks also to our Executive Director, Evan Jenkins, and the fine staff of WVSMA.

In conclusion, this issue reminds me of the words of Dr. William Jordan Bates in his Official Call, February 28, 1867, to all members of the legitimate profession in West Virginia, "...it is high time they should begin the noble work of giving life and health to the people, and respectability to themselves."³

Today we carry forth the response to Dr. Bates' official call through the West Virginia State Medical Association, whose purpose includes "...to promote the time honored commitment of the profession to the prevention and cure of disease and in improving the quality of life in the State."⁴

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1. McGinnis, Williams-Russo, Knickman; Health Affairs, vol. 21, no. 2, pp78-93.
2. Lazarus, Jeremy A.; www.amednews.com, May 27, 2013
3. Past Presidents of the WVSMA 1867-1942; Norma Hogshead, Editor, July 1942
4. Constitution and Bylaws of the WVSMA; www.wvsma.org.

A Continuing Education Program

Title: Rural Healthcare Disparities: Challenges & Solutions

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Origination Date: July 1, 2013. Credit certification of this program expires July 1, 2015.

Format: Enduring Material - Journal/Internet delivery of related articles. This special issue is available in print and in pdf format on the WVSMA website: wvsma.org. Participants are required to complete a post-test instrument for credit completion. Approximate course completion time is 9 hours.

Featured Faculty: Faculty information listed with each article.

Course Materials: Related articles, process evaluation, content post-test.

About the Program and Objectives

The July/August 2013 special issue of the *West Virginia Medical Journal* provides twelve specific topics of particular interest and importance to West Virginians and their physicians. The theme of this issue, "Rural Healthcare Disparities: Challenges & Solutions," is thoroughly explored by the authors through commentary, scientific research and informational articles. Topics include improving patient motivation in primary care; assessing physical activity in rural WV elementary school PE classes; treating patients with disordered eating; expanding models for rural primary care; HIV/AIDS patient migration in north-central WV; the use of telemedicine for ophthalmic screening; prevention strategies for Appalachian women and heart health; inter-hospital transfers for rural hospitals to academic medical centers; bedside ultrasound to improve rural healthcare; promoting skeletal health in WV schools by increasing peak bone mass through exercise; extending the University into the community to address healthcare disparities, and the challenges and solutions of the pregnant, opioid-dependent population. At the conclusion of the Rural Healthcare Disparities: Challenges & Solutions issue, physicians will have an increased awareness and knowledge of the following:

- understand change constructs that can be applied to a variety of healthcare conditions common in rural practice; the role shared decision making plays in the motivation for their patients to successfully navigate treatment.
- understand the amount of moderate to vigorous physical activity rural West Virginia elementary school children are receiving during PE class and identify potential actions to increase moderate to vigorous physical activity among rural West Virginia youth during PE class.
- understand that HIV/AIDS patients rely on federally-funded programs to cover the costs of their medical care, including medications. Follow the research of WVU Positive Health Clinic in order to understand the migration patterns of HIV/AIDS patients in rural areas to identify the imbalance of federal funding under the Ryan White Care Act, to reduce rural health disparities.
- increase the reader's awareness of the prevalence of substance abuse among pregnant women in West Virginia and to identify effective treatment options, and specific barriers to treatment experienced by rural patients.
- increase awareness on the use of clinician-performed bedside ultrasound and its potential to bring more advanced care to rural populations.
- describe several suggested models for addressing rural healthcare needs: (a) the rural interdisciplinary medical home model; (b) the spoke and wheel model; (c) the medical center/community linkages model; (d) the technology-based outreach model; (e) the part-time model and (f) the health education center model to improve rural primary care.
- understand the results of a retrospective, descriptive chart review examining the reasons for and nature of inter-hospital transfers from rural hospitals in the tri-state region of West Virginia, Ohio and Kentucky to a more urban, 303-bed academic medical center in Huntington, West Virginia.
- understand the cost effectiveness of telemedicine screening in a remote, mountainous rural area in southern West Virginia.
- describe the barriers to treatment for patients with eating disorders. Learn innovative approaches that clinicians can use to help better serve these patients, particularly, primary care providers. Understand the importance of collaboration between clinicians and researchers to quantify treatment disparities and advocate for patients at the policy level.
- understand that the physical education mandates in WV schools are currently below thresholds considered by national organizations to promote health. Learn about dynamic, load-bearing exercises and advocacy to increase the quantity of exercise to help lessen our burden of chronic diseases like osteoporosis, obesity and heart disease.
- learn to 1) briefly describe the Cooperative Extension System and WVU Extension Service; 2) list some educational Extension programs that promote healthy behaviors and promote healthcare equity; and 3) discuss the role of Extension educational programs in managing or preventing diabetes in West Virginia.
- understand that the number one killer of women in our region is heart disease. Learn of the barriers to women's heart health in Appalachia and the preventive practices that have been effective in educating and raising awareness of heart disease.

Disclosure

It is the policy of the CAMC Health Education and Research Institute that any faculty (author) who presents a paper for an enduring material designated for AMA Physician's Recognition Award (PRA) Category I or II credit, AANA credit or ACPE credit must disclose any financial interest or other relationship (i.e. grants, research support, consultant, honoraria) that faculty member has with the manufacturer(s) of any commercial product(s) that may be discussed in the educational presentation.

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Behavioral Change in Rural Practice: Improving Patient Motivation in Primary Care

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Abstract

As the disparities in rural healthcare have become better understood, the need to adjust and compensate for these unique challenges becomes a priority. This manuscript suggests three constructs that can be readily integrated into rural care providers' daily work to improve treatment outcomes. Autonomy support, relational support, and competence support are among the motivational constructs discussed with a special consideration for the unique cultural and environmental influences of rural West Virginia residents. The overall objective of this review is to renew the basic tenants of shared decision making as they related to successful behavioral change in primary care.

Introduction

Working with and overcoming the barriers to rural health care success has been an emerging topic in the rural-practice literature. From advancements in telehealth,^{1,2} the role of advocacy,³ and collaborative care,⁴ just to name a few, the agenda of practical solutions to the ever-present barriers of rural health

continues to be a critical issue for state governments. While these efforts in structural improvements to the health care delivery system represent welcomed changes for the future, they continue to remain out of reach for many clinicians who are waiting for the trickledown effect of research-to-practice changes. This article presents a review of how to apply motivational and autonomy processes to bridge the gap between hopeful health care initiatives, and the realities of rural practice today.

Shared decision making and sustained behavioral changes are two areas of care that can be incorporated into existing practices to improve care and ultimately patient outcomes. In order to develop shared decision making, it is incumbent upon providers to work toward increased self motivation in their patients. Harnessing patient motivation creates the desire to embrace the treatment and persist in the agreed upon direction, thus improving care.

Shared Decision Making

The theoretical preference for shared decision making is rooted in it being patient-centered, and more importantly, evidence based.^{5,6,7} This model has been shown to improve patients' involvement in health care decisions and enhance satisfaction with their choices when the

treatment choice involves "patient-sensitive" options.⁶ Specifically, the shared decision making model takes into account a patient's informed values thereby enhancing the quality of the decision made, improves patient satisfaction, and prevents the overuse of options the patient is not likely to embrace.

To illustrate this need, a survey of shared decision making of rural health care clinicians found that 83% cited 'changing lifestyle behaviors' as very difficult, rating this issue the hardest perceived issue to tackle in care.⁸ Furthermore, in this same survey, participants were asked to rate who *should* make clinical decisions, and who *actually* does (choosing between "mostly the clinician," "equally both," "mostly the patient," and "totally the patient"). The results revealed that nearly 70% of clinicians believed medical decisions should be equally decided between the provider and patient, whereas in reality clinicians cited only in about 35% of the cases does this actually happen. Interestingly, 42% of the time the decision was judged to be completely the clinicians'. Clinicians also ranked "time" as the largest barrier (63%) to supporting mutual decision making. This study highlights the differences in clinicians' theoretical preference

Objectives

The overall objective of this manuscript is to introduce three change constructs that can be applied to a variety of healthcare conditions common in rural practice. In addition, this manuscript aims to describe how special features of rural populations can affect these change processes. Readers will also have an increased awareness of the role shared decision making plays in the motivation for their patients to successfully navigate treatment.

for shared decision making versus what happens in real world practice.

As mentioned previously, clinicians value using this model, but have difficulty implementing it with the time constraints of a busy clinical setting.⁸ It seems as if the in-depth relational qualities of shared decision making are at odds with the outcome-orientation of clinical practice. In this outcome-oriented practice style, the motivation to even make a treatment decision becomes a prerequisite for treatment. However, in all likelihood, patients generally have some degree of ambivalence about wanting to adopt a treatment. At the very least, the ambivalence may lie in the fact that they will have to change something about their lifestyle or daily living, which may not seem like a problem until they try. As such, the on-going evaluation of the quality of the patient’s motivation becomes a critical process of treatment preparation, initiation, and maintenance. So, the question becomes how to have this discussion with a patient in a manner that is efficient, while maintaining the patient-centered value?

The Power of Motivation

Cultivating patient motivation creates the desire to embrace the treatment and persist in the agreed upon direction. Consider the constructs of patient motivation and autonomy as the vehicle of shared decision making. Motivation represents the energy and autonomy represents the direction. Energy without direction is like driving around a round-about without seeing an exit. Direction without energy is like a person heading to the beach on an empty tank – he won’t get far on fumes! Motivation and autonomy are both critical parts of the (*lasting*) change process. Moreover, with the pressures of third-party payers to produce

results, motivation and autonomy must be considered early in the treatment decision making process, and for best results, monitored throughout the treatment process.

Specifically, three fundamental needs are described as the basis for autonomous forms of motivation. These include the need for autonomy, the need for competence, and the need for relatedness.⁹ Autonomy details actions that are self-endorsed and volitional rather than controlled or compelled. Competence describes the need to experience confidence and efficacy in one’s capacity. Finally, relatedness refers to the need to feel connected with significant others. In sum, by maximizing the patient’s experience of autonomy, competence, and relatedness in treatment, the behavior change is likely to be more successfully internalized and sustained.^{10, 11}

Autonomy Support

Particularly relevant for the practice of shared decision making

is the issue of autonomy support. Specific behaviors that are associated with autonomy support include offering a meaningful rationale for engaging in behavior, minimizing external controls, providing opportunities for participation and choice, and acknowledging negative feelings associated with engaging in non-intrinsically motivating tasks.^{12, 13, 14} In this type of autonomously supported context, patients are encouraged to base their actions on their own reasons and values. The goal is for patients to “own” the reasons for changing, thereby increasing the likelihood for more autonomy and success at the behavior change. Overall, autonomy support can be summarized as fostering the patient’s voice, initiative and choice.

Autonomy support is especially imperative for rural residents, who typically have a strong sense of self-reliance.¹⁵ Values of independence and individualism have been deeply ingrained into rural Appalachian culture for generations.¹⁶ Encouraging a patient in autonomous decision

CHANGE CONSTRUCTS	EXAMPLE APPLICATIONS FOR RURAL POPULATIONS	
	General Medication Adherence	Weight Loss and Lifestyle Change
Autonomy Support	What reasons do you have for taking or not taking this medication? What are the most important personal benefits you see from taking this medication?	How do you see these lifestyle changes affecting your life? What do you value about becoming healthy?
Relational Support	What role does your family or friends play in your medication use? How might your family or friends help you stay on track?	How might your family or friends help you to reach your weight loss goals? Who will likely provide you with the most support during these difficult times?
Competence Support	What do you think the biggest challenge will be for you to take this medication? What type of information or support would be most helpful to you?	What hurdles do you think will be the hardest for you to overcome? How much confidence do you have in reaching your goals?

making by means of exploring the impact on daily functioning and life satisfaction encourages consideration of core values. Researchers have suggested that practitioners would be best advised to be "...sensitive to the beliefs and attitudes of their clientele, particularly sociocultural characteristics, which might influence engagement of healthy behaviors and service use" (p. 14).¹⁷

Qualitative analysis of rural Appalachian adults suggests that functional capacity to engage in usual activities is one of the most important physical health meanings for this population.¹⁷ An efficient way to incorporate this information might be to ask patients, "What activities in your daily life are becoming more difficult for you to do as a result of this concern?" This question provokes a personal exploration into life satisfaction and core values of independence while maintaining autonomy. It has also been found that older Appalachian adults view health as a highly subjective, multidimensional construct deeply embedded in their everyday experiences.¹⁷ For example, nearly all of the participants had a shared meaning of health as a value. Researchers suggest that practitioners need to be mindful of their own value-based definitions of health given that the definition a patient will ascribe to health is very much dependent on what an individual's culture deems as valuable.¹⁷

Relational Support

Relational support ignites feelings of significance and safety in a patient. Authentic and genuine unconditional positive regard,¹⁸ and involvement,¹⁹ are two significant forms of relational support. A patient receiving adequate relational support would describe a sense of respect, understanding, and care from significant others. This allows

for a secure, trusting environment for internalization change to occur.²⁰

Clinical consideration to a patient's relational support warrants special attention in adults from rural Appalachia. Specifically, the problem of loneliness has been shown to be a significant problem as it is related to emotional support.²¹ Interestingly, while evidence was found that this population may be significantly lonely, by means of scoring high on a loneliness scale, but when asked directly, will not self-identify as lonely. It has been theorized that other forms of social support aside from family may be more important for adults from rural areas.²¹ The stereotypical view that Appalachians live (and are close with) their extended families may not be entirely accurate. Providers should be especially attuned to issues of social support, signs of loneliness and follow the patient's lead as to who is an important social support figure in his or her life.

The topic of relational support in rural Appalachian adults has been explored in several qualitative studies recently. One particular study found a main theme that older adults living in rural areas maintain good health as a means to continue to function independently and maintain social integration.¹⁷ As such, practitioners should consider the positive social consequences for patients undertaking a behavioral change. Furthermore, psychosocial well-being emerged as the most dominant subtheme in this research. The implication for providers is to consider ways to encourage patients' positive self-perceptions, the change process, and their social well-being.²²

Competence Support

In addition to a sense of autonomy, internalization also requires that a patient feels confident, efficacious, and competent to carry out the

change. In other words, once a patient has a high degree of autonomous motivation, then they are most receptive to learning and applying new strategies. Competence support entails affording the patient with the skills and tools for change through inputs, feedback, and structure.²³

When working with patients from a rural area, special considerations must be taken to evaluate the patient's ability to carry out their change strategies. Lack of sidewalks for exercise, limited access to fresh fruits and vegetables, long driving distances to groceries and gyms, and few community social gathering locations are just a few of the many barriers to successful behavior change. Putting thought into the patient's access to resources, and simply asking the patient what is feasibly available to them, may help to efficiently determine what strategies the patient is going to feel confident and capable of implementing.

Conclusion

The shared decision making model shows that the product of autonomy, relational, and competency support leads to higher treatment attendance, less dropout, less relapse, and enhanced well-being over the course of treatment. These findings have been documented in a variety of treatment domains, for example, drug and alcohol abuse/dependence,^{24, 25} weight loss and lifestyle change,²⁶ diabetes self-care,²⁷ smoking cessation,¹⁰ general medication adherence,²⁸ as well as countless other treatments that involve a behavioral component.

The provider who approaches decision making from a place of interest and curiosity into the patient's values is likely to achieve better outcomes. An understanding of the three processes discussed may help to minimize frustrations

and spinning wheels during a visit, thus saving time. The future looks hopeful for improvements in the core delivery issues facing rural health care delivery.

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CME POST-TEST

- Motivation constructs discussed in the article include all of the following except:
 - Relational Support
 - Autonomy Support
 - Competency Support
 - Commitment Support
- Patients receiving rural care can be characterized by:
 - Lack of motivation
 - Having a strong sense of independence and individualism
 - Distorted definition of health
 - Lack self-reliance
- Qualitative research suggests rural Appalachian adults tend to value which dimension of health?
 - Functional capacity to engage in usual activities
 - Average BMI maintenance
 - Balanced diet
 - Chronic illness prevention

Assessing Moderate to Vigorous Physical Activity in Rural West Virginia Elementary School Physical Education Classes

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Abstract

BACKGROUND: Physical education (PE) provides a natural opportunity for students to be physically active during the school day; however, the amount and intensity of this activity varies. The

Centers for Disease Control and Prevention recommends that students engage in MVPA for at least 50% of their PE class period. The purpose of the present study was to quantify the amount of MVPA that occurs during elementary school PE.

METHODS: Accelerometer data were collected from 203 students (100 2nd grade; 103 5th grade) in 10 West Virginia elementary schools. At each school, PE teachers identified three 2nd grade classes and three 5th grade classes in which to collect the physical activity data. For each selected class, the teachers identified the first 4 students on their alphabetic roll to wear the accelerometers. PE teachers recorded the date and time of the class and the gender of the students wearing the accelerometers.

RESULTS: Using 5-second epochs and Puyau's cut-offs, results indicated that, on average, students engaged in MVPA for 27% of their PE class. No significant differences were observed in MVPA between 2nd and 5th grade students or between males and females. Male and female students spent equal amounts of PE class in MVPA.

Conclusion: Findings support policy to increase the required minimum amount of MVPA during each PE class.

Introduction

Rural children are at increased risk for overweight and obesity when compared with urban¹ and suburban² children, and are less likely to meet the recommended levels of physical activity (PA).³ PA is an important component for maintaining a

healthy weight among children and adolescents.⁴ Because overweight and obese children will likely maintain their physical inactivity into adulthood⁵, it is imperative that children engage in regular physical activity to aid in the prevention of overweight/obesity, obesity-related chronic diseases^{6,7} and selected cancers.⁸ Researchers have noted that there is "irrefutable evidence of the effectiveness of regular physical activity in primary and secondary prevention of several chronic diseases and premature death".⁹ PE provides a natural opportunity for students to be physically active during the school day; however, the amount and intensity of this activity can widely vary. There are recommendations for PE classes to assist with the attainment of 60 minutes of moderate to vigorous PA (MVPA), such that at least 30 minutes for 3 to 5 days each week and 50% of each PE class be spent in MVPA.¹⁰ Because of the increased risks for obesity and inadequate PA, it is important to focus on the quality of PA within the PE class in rural settings.

Little research has objectively examined MVPA among rural elementary school children during PE class.¹¹ In one study using the well-established System for Observing Fitness Instruction Time (SOFIT),¹² the percentage

Objectives

To understand the amount of moderate to vigorous physical activity rural West Virginia elementary school children are receiving during PE class.

To identify potential actions to increase moderate to vigorous physical activity among rural West Virginia youth during PE class.

of time children in 3rd, 4th, and 5th grades spent in MVPA was examined.¹³ With the average PE lesson length of 33 minutes, results indicated a significantly positive relationship between amount of MVPA and grade, where amount of MVPA ranged from 29.4% (3rd grade) to 42.4% (5th grade).¹³ These results indicate that these children are not meeting the current recommendation of at least 50% of each PE class spent in MVPA.¹⁰

In an effort to improve health and reduce the burden of obesity among children in West Virginia specifically, in 2005 state legislators passed House Bill 2816, the Healthy Lifestyles Act (HLA). The emphasis of the HLA was on obesity reduction through a number of school-based efforts such as mandated physical education (PE) class time. The bill also included nutrition and health education provisions.¹⁴ The data for the current study are part of a larger multi-year effort to evaluate the effectiveness of the HLA.

The purpose of the current study was to objectively quantify the proportion of MVPA obtained during PE class among a group of rural students via an analysis of biometric data collected from accelerometers. Understanding the amount of MVPA that occurs in PE classes has significant curriculum implications for continued efforts to address childhood obesity in West Virginia and other states, particularly in the context of school-based obesity policy.

Methods

Subjects

In conjunction with the Year 3 evaluation of West Virginia's childhood obesity legislation (HLA), accelerometer recordings were obtained from 203 students in a convenience sample of 10 West Virginia elementary schools. These

10 public elementary schools were selected based on the degree of implementation of West Virginia's obesity legislation (HLA). Of the 203 participants, approximately equal numbers of 2nd (n=100) and 5th (n=102) grade students participated; 48% (n=96) of the students were male and 52% (n=105) of the students were female (n=105; gender was not recorded for 2 students).

Instruments

All objective PA data were collected via accelerometers. Accelerometers have been validated for use with children,¹⁵ are widely accepted as a means to obtain objective physical activity measures, and have been suggested to be more accurate than self-report measures,¹⁶ because self-report measures may overestimate PA in children.¹⁷

Procedure

At each school, the research team randomly identified three 2nd grade classes and three 5th grade classes from which to collect the PA data. For each identified class, the teachers selected the first four students on their alphabetic roll to wear the accelerometers for the PE class period. Students wore the accelerometers on their right hip for the duration of the class period. PE teachers recorded the date and time of the class and the gender of the students wearing the accelerometers.

In addition, PE teachers recorded the primary content of class (either PE knowledge or PE motor skills) and if there were any unusual events (such as inclement weather) during the class period. The West Virginia University Institutional Review Board acknowledged this study.

Data Analysis

The accelerometry data were collected in 5-second epochs and categorized using Puyau's cut-offs which have been validated for use with children.¹⁸ Descriptive statistics and independent t-tests were calculated to examine any potential differences by grade, gender, and content (PE knowledge versus PE motor skills). All analyses were computed using Statistical Package for Social Sciences (SPSS) version 19.0.

Results

Descriptive Statistics. The mean duration for PE class was 33 minutes ($SD = 6.63$) as reported by the PE teachers. Finally, PE teachers reported that the majority of the classes focused on PE motor skills (80%); 9% of the classes focused on PE knowledge, and 11% of the classes had a combination of both PE motor skills and PE knowledge.

Main Analyses. Nearly half of PE class time for the 2nd and 5th grade children ($N = 203$) was spent in sedentary time/non-activity (44.5%).

Table 1. Percent of Time Spent in Sedentary, Light, Moderate, Vigorous, and MVPA by Grade.

Level of Activity	Mean 2 nd Grade (SD) (n=100)	Mean 5 th Grade (SD) (n=102)	Sig.
Percent Sedentary	42.1% (17.2%)	46.8% (17.4%)	0.058
Percent Light	29.2% (10.3%)	27.1% (9.4%)	0.112
Percent Moderate	25.7% (10.1%)	22.3% (11.1%)	0.025*
Percent Vigorous	2.9% (4.2%)	3.9% (4.0%)	0.101
Percent MVPA	28.6% (11.2%)	26.2% (12.5%)	0.147

Note: * $p < .05$

Table 2. Percent of Time Spent in Sedentary, Light, Moderate, Vigorous, and MVPA by Gender.

Level of Activity	Females (SD) (n=105)	Males (SD) (n=96)	Sig.
Percent Sedentary	45.3% (17.1%)	43.0% (17.1%)	0.324
Percent Light	27.5% (10.1%)	29.2% (9.3%)	0.212
Percent Moderate	23.7% (10.8%)	24.6% (10.5%)	0.535
Percent Vigorous	3.6% (4.4%)	3.3% (3.9%)	0.652
Percent MVPA	27.2% (11.9%)	27.9% (11.7%)	0.687

Table 3. Percent of Time Spent in Sedentary, Light, Moderate, Vigorous, and MVPA by Class Content.

Level of Activity	Mean Knowledge (n=17)	Mean Motor Skills (n=150)	Sig.
Percent Sedentary	52.7%	43.8%	0.007**
Percent Light	25.9%	28.8%	0.200
Percent Moderate	17.0%	24.4%	<0.001**
Percent Vigorous	4.4%	3.0%	0.139
Percent MVPA	21.4%	27.5%	0.001***

Note: * <.05; **<.01; ***<.001

On average, children spent 28.1% of their PE class time in light PA, 24% of their PE class time in moderate PA, and 3.5% of their PE class time in vigorous PA. These numbers indicated that on average, children engaged in MVPA for 27.5% of their PE class time. No differences in the percent of PE class spent in sedentary, light, moderate, vigorous, or MVPA were detected between the 2nd and 5th grade students (see Table 1 for specifics regarding the amount of time spent in each of the activity categories by grade).

Similarly, no differences were detected in the percent of PE class time spent in the categories of PA between males and females (see Table 2 for specifics regarding the amount of time spent in each of the activity categories by gender).

The majority of PE classes were characterized by teachers as PE motor skills (*n* = 150) rather than PE knowledge (*n* = 17). Sedentary

time was higher in the knowledge-focused PE classes compared with the motor skills-focused PE classes and moderate PA as well as MVPA was higher in the motor skills-focused PE classes compared with the knowledge-focused PE classes (for specifics, please see Table 3).

Discussion

A relative dearth of research is available regarding the amount of PA in which rural children participate during PE class. Because rural children are at an increased risk for overweight/obesity and have been shown to have lower levels of PA compared with their urban and suburban counterparts,^{1,2} it is important to understand the physical activity achieved during PE class among rural youth, and to identify strategies to maximize that time. Findings from this study indicate that the children in this study spent 27.5% of their PE class

time in MVPA, far below what is recommended. Implications for understanding MVPA among rural youth may include curriculum and policy changes to increase MVPA and improve obesity prevention efforts. Future research should examine whether similar populations also engage in relatively low levels of MVPA during PE class.

In contrast to some previous studies that found that males engage in more PA than females across multiple age groups,¹⁶ the current study found no such difference. This finding is supported by other studies which found no gender differences in overall PA during PE class.¹⁹ The findings of gender differences in total PA levels throughout the day and no gender differences during PE class suggests that boys may be more likely to engage in higher levels of PA throughout the day compared with girls, but that PE class allows for equal PA opportunities for both genders, further highlighting the importance of PE class on PA levels for children.

Recommendations for MVPA during PE class is at least 50% of the class time.¹⁰ Unfortunately, this particular group of rural children was found to engage in MVPA at levels far below the recommended amount of at least 50% of the PE class time,¹⁰ as only 27.4% of their class time was spent in MVPA. Spearheaded by NASPE, efforts have been made to increase PE class nationally.²⁰ Although increasing PE is a first step towards increasing MVPA among children, increasing PE time requirements alone may not bring about the desired change for children to meet these current recommendations. It may be that additional efforts to modify and/or strengthen the PE curriculum are needed to enable children to spend adequate time in MVPA during PE class. One means by which to increase PA opportunities for

children is to reduce the current time spent in sedentary/non-activity to increase overall levels of PA. In this particular study, nearly half of PE class time was spent in sedentary/non-activity. Thus, it appears that targeting sedentary/non-activity time to move towards improvements in the amount of MVPA children receive may yield measureable changes.

The results from the current study combined with those from Meyer et al.,²¹ as well as a study indicating that rural children engage in less physical activity during PE class than urban children,³ suggest the need for changes in WV PE curriculum implementation and delivery to increase MVPA levels. NASPE's position is to provide quality PE for every child.²² One means by which to do this is through supporting the attainment of the minimum recommended amount of MVPA for each child during PE.

West Virginia was one of the first states to pass legislation focusing on reductions in obesity rates through mandated PE class time. However, this study, to the authors' knowledge, is the first study specifically examining the amount of objectively measured MVPA in PE class after state mandates were enacted. While the mandate was a great first step toward increasing MVPA among children, the results of this indicate that among this group of rural children, very low levels of MVPA are being achieved during PE class, and a large portion of their PE class is spent in sedentary/non-activity time. Additional support for PE teachers may be particularly important in increasing MVPA opportunities for children.

A study found that overall PA levels during PE class were significantly related to the perceived importance of the school physical environment from school districts.²³

Taken together, the study by Davis and colleagues²³ as well as the study by Fein and colleagues²⁴ indicates that school administrator support for PA has an effect on the actual amount of PA in which children engage. Therefore, increased school personnel support may be one means by which to increase MVPA among children. Nonetheless, because of infrequent PA for rural children in general, it is important to maximize the amount of MVPA achieved through PE class.

Limitations

As with all studies, this study is not without limitations. First, these data were collected at one time point, for one PE class period. In order to better gauge the activity of rural children during PE class, future researchers should gather information across several days of PE classes. In addition, because the PE teachers were not blinded to who was wearing the accelerometer, it is impossible to determine whether

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the PE teacher modified their *usual* PE class because of the activity monitoring. Further, the data collection occurred in the spring, near the end of the school year. Thus, it may be important in the future to objectively measure physical activity (via accelerometers) within the PE class setting at multiple time points throughout the school year to more accurately gauge the amount and type of physical activity and to account for known seasonality effects.²¹ The current study also only included rural children enrolled in 2nd and 5th grade. Thus, the results may not be generalizable to other regions or grade levels. Finally, these data were collected as a convenience sample from 10 elementary schools in West Virginia. As only 10 elementary schools are unlikely to be representative of all elementary schools in West Virginia, these results may not be generalizable to other elementary schools in West Virginia.

Conclusions

Although this study has limitations, it is also a first step toward understanding rural children's activities during PE class, particularly in the context of policy, system, and environmental change. This study suggests that

the levels of physical activity need to be considered within policy. Requirements to increase PE time alone may not bring forth the desired benefits. Though West Virginia has engaged in strong policy work to address obesity [HLA; please see Harris et al. (2009)¹⁴ for specifics], it may be that modifications to the policy are necessary to further address the obesity epidemic of West Virginia's children.

In addition to policy implications, these findings also support the need for professional development and training for PE teachers to better encourage MVPA among children. Specifically, certified PE teachers (i.e., PE specialists) are more likely to implement the recommended teaching practices and guidelines, provide high quality PE, and provide children with more MVPA opportunities than non-specialists.²³ Therefore, it is logical that additional training may aid in the increase in MVPA opportunities for these children.

Human Subjects

Approval Statement

The study was acknowledged by the Institutional Review Board at West Virginia University.

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For a complete reference list, please contact the corresponding author.

CME POST-TEST

4. Compared with urban and suburban youth, rural youth are at a(n) _____ risk for the development of obesity.
 - a. Increased
 - b. Decreased
 - c. Are at the same risk
5. True or False: In this study, there were significant differences detected between males and females and the amount they engaged the physical activity intensity categories (i.e., sedentary, light, moderate, vigorous).
 - a. True
 - b. False
6. True or False: In this study, youth did not obtain the recommended amount of moderate to vigorous physical activity during their PE class.
 - a. True
 - b. False

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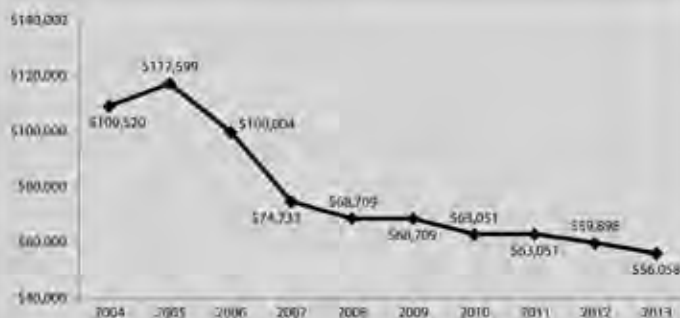
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2013 includes 15% renewal credit and 12% risk management credit

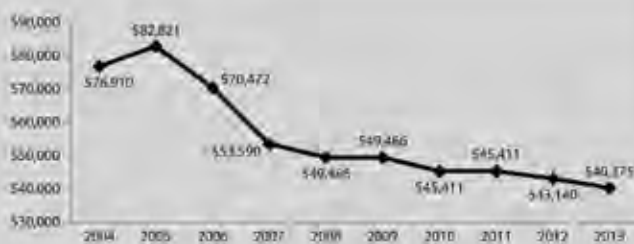


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HIV/AIDS Patient Migration in North-Central West Virginia

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Abstract

Introduction: Many HIV/AIDS patients rely on the Ryan White CARE Act, a federally-funded program to cover the costs of their medical care. The dispersal of this funding is dependent on a complex algorithm, which factors in the number of people that test positive for HIV in each state. However, demographic and migration studies have suggested that HIV/AIDS patients in rural America are first diagnosed in urban areas and then later moved to more rural areas.

Methods: The participant pool was identified from adult patients who have received care from the West Virginia University (WVU) Positive Health Clinic from January 1, 2004 to July 26, 2012 and knew the location where they had initially tested positive for HIV.

Results: The place of initial HIV diagnosis could be determined for 398 out of 433 patients and fewer than half (48%) were initially diagnosed in West Virginia.

Conclusions: Because over half of the patients who are treated at WVU were initially tested outside of West Virginia, this could negatively impact the federal funding opportunities for our state through the Ryan White CARE Act using the current algorithm.

Introduction

The HIV epidemic began in large metropolitan areas, such as New York and San Francisco, and eventually spread to suburban and rural areas. Patient migration patterns are difficult to monitor because the initial location of HIV diagnosis is not typically recorded in personal medical records. Further, there are few published studies pertaining to HIV/AIDS patient migration in America. Demographic factors, such as gender, race, age and method of HIV transmission, appear to be important in understanding relocation and migration patterns. Federal funding under the Ryan White CARE Act (RWCA) was intended to guarantee that HIV/AIDS patients have adequate medical and prescription drug coverage; however, the dispersal of funding is dependent on a complex algorithm, which factors in the number of people that initially test positive for HIV in each state, but does not account

for subsequent patient migration. As a rural state, West Virginia does not qualify for Part A funding, but received over \$3.5 million in federal funding from the RWCA in 2010, a majority of which is determined by the funding algorithm. West Virginia relies heavily on RWCA – Part B, which supports the state’s AIDS Drug Assistance Program (ADAP), community healthcare programs, and health insurance for low-income residents. The WVU Positive Health Clinic is supported by the RWCA – Part C Early Intervention Services, and has provided care to over 450 patients over the past 8 years, from West Virginia, Maryland, Ohio, and Pennsylvania. As this and other rural centers treat patients initially diagnosed in other states and confirmed by the CDC, it is possible that the clinics are not receiving adequate federal funding, commensurate with the number of patients served; the money generally goes to the state of initial diagnosis, usually a metropolitan area. Understanding the migration patterns of HIV/AIDS patients in rural areas can help to identify the imbalances in federal funding, thereby reducing health disparities.

Methods

This study was approved by the Institutional Review Board (IRB) at WVU. A possible participant pool

Objectives

Now that HIV/AIDS has become a “chronic condition”, patients are living for decades following a diagnosis and still require comprehensive treatment including medications and healthcare. Many HIV/AIDS patients rely on federally-funded programs to cover the costs of their medical care, including medications. This research sets out to determine the state/country of initial HIV diagnoses from electronic medical records of past and present patients who have received care at the WVU Positive Health Clinic in order to understand the migration patterns of HIV/AIDS patients in rural areas to identify the imbalance of federal funding under the Ryan White Care Act, to reduce rural health disparities.

Figure 1. Location of Initial HIV Diagnosis (N=398)

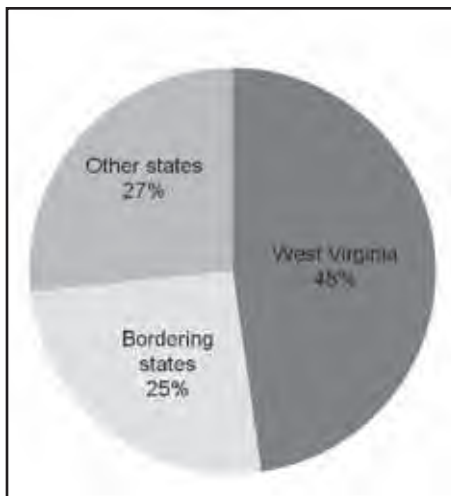


Figure 2. WVU Positive Health Clinic HIV/AIDS Cases by Race (N=398)

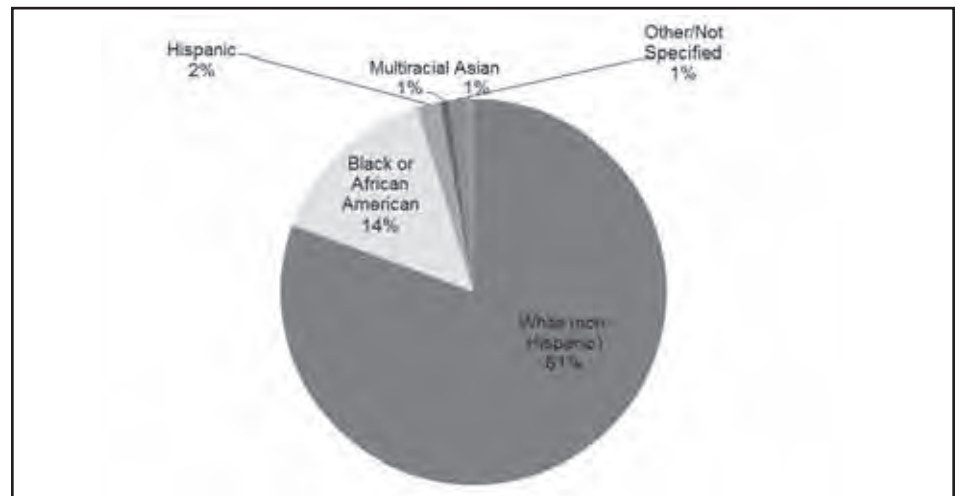


Figure 3. WVU Positive Health Clinic HIV/AIDS Cases by Gender (N=398)

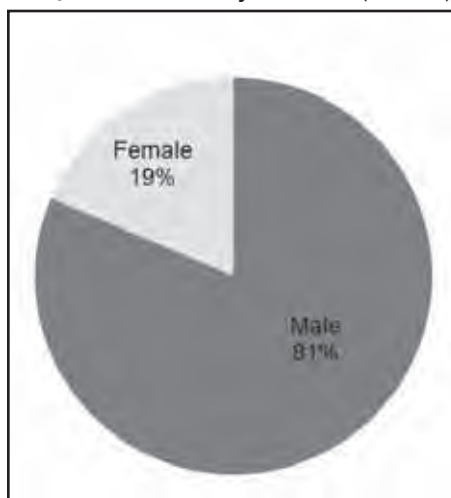
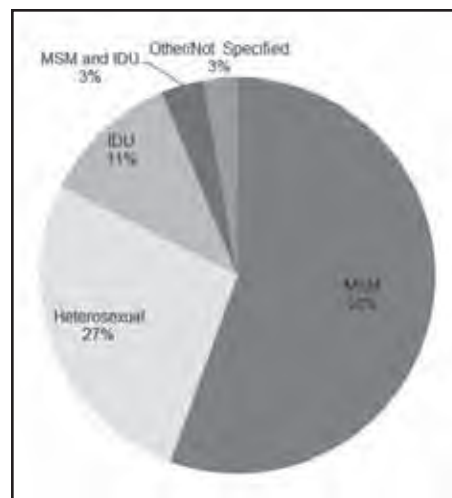


Figure 4. WVU Positive Health Clinic HIV/AIDS Cases by Exposure Category (N=398)



of 433 patients was identified from adult patients who have received care at the WVU Positive Health Clinic from January 1, 2004 to July 26, 2012. This included both current and past patients that knew in which state they had initially tested positive for HIV. Patient demographic data, including age, sex, AIDS-status, race, method of transmission, date of initial diagnosis, and place of initial diagnosis was collected from electronic medical records. Patient identifiers, including names, were not

recorded. From this population, the location of initial diagnosis could be determined for 398 patients. The data were analyzed with basic statistical methods using Microsoft Excel.

Results

The place of initial diagnosis could be determined from 398 out of 433 patient records. A total of 190 (48%) patients were initially diagnosed with HIV in West Virginia (Figure 1). Of the 209 (52%) patients who were initially diagnosed outside of West

Virginia, 102 (25%) were diagnosed in a bordering state (MD, PA, OH, VA). Florida had the highest number of initial positive HIV tests for patients in the study, after West Virginia and its bordering states. A majority of the patients seen at the WVU Positive Health Clinic were white (321, 81%, Figure 2), male (324, 81%, Figure 3), men who have sex with men (MSM) (221, 56%, Figure 4), with an average age of 50 years. Over a quarter of the cases were associated with heterosexual transmission (107, 27%), while intravenous drug use (IDU) accounted for 11% (45). African Americans represented 14% (58) of the patient population. There was a comparable split between patients with HIV (202, 51%) versus patients with CDC-defined AIDS (191, 48%). Three hundred eight (77%) patients were considered “active” and currently received their primary HIV care from WVU.

Discussion

As a chronic condition, HIV/AIDS patients require comprehensive treatment including medications and healthcare for decades following a diagnosis. Many HIV/AIDS patients rely on federally-funded programs to cover the costs of their medical

care, including medications. The largest of these programs, the Ryan White CARE Act was established in 1990 as a “payer of last resort” for patients that can no longer afford their medical expenses. West Virginia, as a rural state, does not even qualify for RWCA Part A, which is funding allocated to metropolitan areas. A majority of patients (52%) who receive care from the WVU Positive Health Clinic had their initial HIV diagnosis in another state. Although West Virginia has a low prevalence of HIV/AIDS (1,543 people), the state’s population parallels national demographics with a majority of the patients being male, white, and MSM. Yet, over 20% of the HIV/AIDS patients in West Virginia are African-American, even though this group represents only 3% of West Virginia’s general population. Currently, young, black, MSM individuals have the highest incidence in HIV transmission nationwide. Early studies were primarily concerned with understanding migration in terms of the spread of the HIV/AIDS epidemic from the metropolitan epicenters of New York and San Francisco into non-urban towns. However, because the epidemic has already reached every state, it has become important to understand why HIV/AIDS patients move following diagnosis.

Family support, vicinity of caregivers, and access to care issues were all cited as important factors for patient relocation, especially to new states. African Americans constituted a larger percentage of HIV/AIDS patients in previous studies that examined HIV/AIDS patient demographics and migration in states other than West Virginia. However, these studies showed that HIV/AIDS patients were more likely to move out-of-state following a positive HIV diagnosis if male, Caucasian, and MSM.^{3,7,9} Thirteen states, including Florida, Ohio, and Virginia had waiting lists for the AIDS Drug

Assistance Program (ADAP), in 2011.¹ West Virginia does not have a waiting list for ADAP, hence this may also be a factor in migration to our state. The RWCA, which provides a majority of the funding for ADAP, allows for HIV/AIDS patients, especially those with limited financial resources, to receive proper medical services and healthcare. For the 2010 fiscal year, 515 HIV/AIDS patients were enrolled in the West Virginia ADAP program, about a third of West Virginia’s total HIV/AIDS population. Unfortunately, HIV/AIDS patients often take up to a year to establish with a primary care physician. Those patients that live in rural areas often have to travel to urban areas to receive proper medical care, which can result in unnecessary cancellations of doctors’ appointments and reduction in continuity of care.

By the late 1980s, the HIV/AIDS epidemic had reached West Virginia and proved to local healthcare providers that this was not just a “city” problem. Michael Patton, a nurse oncologist from the Charleston Area Medical Center (CAMC) wrote an article for the *West Virginia Medical Journal* in 1989 detailing the HIV/AIDS patient situation at CAMC. While there were only 14 patients in his study, that was a significant number for the time (late 1980s) and place (Charleston, WV). Even then, Patton found that a majority of the HIV/AIDS patients were male, Caucasian, MSM, and had acquired the disease outside of WV and later moved back to receive adequate healthcare resources. In the early years of the epidemic, hospitals, especially in rural, resource-poor areas, were concerned with the economic impact of such a perplexing patient population. However, the RWCA was established in 1990 and provided much needed federal support and funding needed to treat these patients.¹

Over 20% of the HIV/AIDS patients in West Virginia are

African-American, even though this group represents only about 3.5% of West Virginia’s general population. In this patient population, only 58 patients (14%) were African-Americans. North-Central West Virginia, specifically Monongalia County where the WVU Positive Health Clinic is primarily located, has the second highest prevalence of HIV/AIDS in the state. Kanawha County (Charleston) has the highest HIV prevalence and twice the African American general population (7.4%) as compared to West Virginia (3.5%). With these differences in patient population demographics, it is especially important to minimize disparities in health care.

Conclusion

Demographic factors, such as gender, race, age and method of HIV transmission, appear to be important in understanding relocation and migration patterns. An extension of this study would include a comprehensive examination of the African American HIV/AIDS population in West Virginia, as well as including the patient populations of Kanawha and Eastern Panhandle Counties and possible reasons that patients move to West Virginia following a positive HIV diagnosis, whether access to care or to be near family and/or a support system. Many HIV/AIDS patients live in resource-poor, rural areas, and healthcare providers need adequate federal funding through the RWCA to continue to dispense proper treatment and medications for these patients. Only 48% of the patients who have received care at the WVU Positive Health Clinic initially tested positive in West Virginia. The present population is predominantly Caucasian, male, MSM, and over 50 years of age. Patient migration into West Virginia following a HIV-positive diagnosis has played a significant part in establishing the current HIV/AIDS

population. Because over half of the patients who are treated at WVU were initially tested outside of West Virginia, this could negatively impact the federal funding opportunities for our state through the RWCA.

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CME POST-TEST

- Where does a majority of West Virginia's funding for HIV/AIDS patient care come from?
 - CDC
 - WHO
 - RWCA – Part A
 - RWCA – Parts B & C
- Over 450 patients have received care from the WVU Positive Health Clinic. What is the most common exposure category of this patient population?
 - IDU
 - MSM
 - Blood transfusions
 - Heterosexual
- What aspect of West Virginia's HIV/AIDS population could negatively impact federal funding we receive from the RWCA?
 - Population demographics
 - Total number of deaths due to HIV/AIDS
 - A majority of patients with initial HIV/AIDS diagnoses from outside of West Virginia
 - Exposure category

Rural Healthcare Disparities: Challenges and Solutions for the Pregnant Opioid-dependent Population

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Abstract

Substance abuse among pregnant women is a significant public health problem affecting both maternal and fetal health. Access to both obstetrical care and substance abuse treatment is a challenge for women in rural West Virginia. A multi-disciplinary collaborative treatment approach for this population is necessary to reach and retain women in treatment. Through such collaboration, a positive impact on access to treatment for women from rural communities and reduced barriers to both prenatal care and substance abuse treatment can be achieved in order to improve outcomes for both mother and infant.

Introduction

The delivery of healthcare in rural settings has historically been

difficult due to a variety of factors. Despite considerable attention to the problem, ongoing challenges such as lack of health care access and health professional shortages have plagued rural areas like West Virginia (WV) for more than a century.^{1,2} It is in more rural states that higher rates of opioid dependence have been noted. From 1999 to 2004, there was a 550% increase in drug overdose deaths in WV, representing the highest increase in any state in the US during that time period.³ Indeed, drug overdose is the leading cause of death for WV adults under the age of 45, with opioids involved in the majority of those deaths.⁴ Despite the significance of the problem, patients with substance abuse disorders often face challenges in attempting to receive treatment including lack of access to care, shortages of health care specialists, lack of insurance coverage and the stigmatization of addiction.⁵ Add to that the fear and shame felt by many women about being pregnant and addicted to drugs, and the barriers to treatment become magnified and too often prohibitive.

The Population: Challenges

Estimating the prevalence of opioid dependence among pregnant women is challenging due to the stigma of addiction, fear of Child Protective Services involvement, and legal implications. Annual national health and medical costs

associated with the treatment of neonates exposed to drugs has been estimated to be 720 million.⁶ Self-report data from the National Survey on Drug Use and Health indicate the incidence of substance abuse among pregnant women to be between 3% and 15%, depending on age group.⁷ Studies examining umbilical cord tissue of patients at high risk for substance abuse have reported a much higher incidence of 32%.⁸ In a 2009 study, one in five anonymous samples of umbilical cord blood collected at eight different medical centers in WV were positive for drugs and/or alcohol; opioids and cannabis were the most common substances identified.⁹

Risks to opioid-dependent women and their babies

Drug specific short- and long-term maternal and newborn effects are challenging to study since poly-substance use is prevalent in this population.¹⁰ However, studies have documented that opioid use during pregnancy is associated with increased rates of preeclampsia, placental insufficiency, premature rupture of membrane, low APGAR scores, and intrauterine meconium passage.¹¹⁻¹² Actively-using pregnant women are also significantly more likely to sustain an abruption or deliver preterm as well as deliver infants with low birth weight and

Objectives

The objectives of this article are to increase the reader's awareness of the prevalence of substance abuse among pregnant women in West Virginia and to identify effective treatment options. The article also explores the specific barriers to treatment experienced by rural patients. A multi-disciplinary integrated treatment approach is presented.

growth restriction compared to their non-using counterparts.¹³ Women who abuse opioids and other drugs also have a higher rate of spontaneous abortion compared to non-drug users.¹⁴ Furthermore, the chronic use of opioids results in irregular menses, which contributes to unwanted and unplanned pregnancy with no antenatal follow-up and continuous drug abuse leading to late diagnosis of obstetric and medical complications.¹⁵

Documented neonatal complications include postnatal growth deficiency, microcephaly, neurobehavioral problems, and sudden infant death syndrome, all of which are associated with increased neonatal mortality in this population.¹⁶ Also, Neonatal Abstinence Syndrome (NAS), which is a regulatory dysfunction of the central and autonomic nervous system in the neonate, may result from gestational exposure to opioids and other substances of abuse leading to significant morbidity and prolonged hospital stay.¹⁷ See table 1 for summary.

Table 1. Maternal and Neonatal Complications of Opioid Abuse in Pregnancy

Preeclampsia ^{11,12}
Spontaneous abortion ^{11,12,14}
Postpartum hemorrhage ^{10,11,21}
Placental insufficiency ^{10,11,21}
Premature rupture of membranes ¹¹
Intrauterine growth retardation ²²
Still Birth ²³
Preterm birth and low birth weight ^{24,25}
Low APGAR Score ^{23,26}
Intrauterine passage of meconium ²³
Neonatal abstinence syndrome ²⁷⁻²⁹

Pharmacologic Treatment options –methadone vs. buprenorphine

A discussion regarding treatment of opioid dependence during pregnancy should be prefaced by an examination of the risks and benefits. Pregnant, opioid-dependent patients present for care from early first trimester to late third trimester. These patients are often highly motivated to discontinue all drug use, and detoxification is possible but requires a great deal of coordination between addiction experts and the obstetrical team. Detoxification should occur in the second trimester in an inpatient setting so the fetus can be monitored. While there is no absolute contraindication to detoxification at any stage, it should be reserved for the highly motivated patient who understands the risks and benefits of detox vs. other forms of treatment. Inpatient level of care stays can be lengthy, and may not be covered by medical insurance which often leads to difficult decisions for the patient regarding finances, care of dependent children and loved ones at home as well as employment. In addition, risk of relapse remains high after detoxification.¹⁸

Discussions regarding maintenance therapy options during pregnancy should be included. This involves use of medication over the course of the pregnancy to treat opioid dependence. Historically, methadone maintenance has been the standard of care. Accumulating evidence from recent studies indicates that opioid-dependent patients may also be treated with buprenorphine.^{19,20} Amendments to the Controlled Substance Act (CSA) by way of the Drug Addiction Treatment Act of 2000 allow physicians to apply for a waiver to prescribe buprenorphine or buprenorphine/naloxone to treat opioid dependence from an

outpatient office based setting. Buprenorphine is currently preferred to buprenorphine/naloxone in the treatment of pregnant women due to concerns regarding the unknown risks of naloxone.²¹ Infants born to mothers on buprenorphine have been shown to experience less severe NAS and significantly shorter hospital stays.²²

Barriers to treatment

For the pregnant woman who is drug dependent there are multiple barriers to treatment which fall into two primary categories: societal stigma and lack of resources. The first is common to all addicted pregnant women in every community, but often those women from rural communities, living below the poverty line and on Medicaid come under closer scrutiny. Often initial responses to pregnant addicts fall along a punitive spectrum from criminal prosecution of manslaughter or assault to the enforcement of child abuse/neglect laws.²³ One of the many implications of a punitive approach includes a hesitance among pregnant women to seek prenatal care or to self-disclose addiction to their obstetrician. This hesitation further delays prenatal care and substance abuse treatment, driving up the overall cost of obstetrical, postpartum and neonatal treatment.

The other impediment to treatment is lack of resources. This impediment is multifaceted and includes lack of health insurance, transportation, and childcare as well as a paucity of treatment services. In WV, those most commonly affected by these impediments also reside in rural communities. The number of adults in WV aged 18 – 64 years without health insurance rose from 15.5% in 2010 to 17.1% in 2012; a rate of roughly one in six.²⁴ This is a humanitarian/public health issue, an economic issue and a political

Table 2. Treatment Available for Pregnant Women in WV

A.C.T., Fairmont, WV	Short term residential without buprenorphine or methadone, pregnant women	Insurance, Medicare, Medicaid, Self-Pay
CAMC Family Resource Center, Women and Children’s Hospital, Charleston, WV	Outpatient prenatal and postpartum treatment of addiction in pregnancy	Insurance, Medicare, Medicaid, Self Pay
Chestnut Ridge Center Morgantown, WV	Outpatient, IOP, Buprenorphine tx, inpatient stabilization & detox, outpatient specialty groups for addicted pregnant women, Dual Diagnosis	Insurance, Medicare, Medicaid, Self Pay
Maternal Addiction and Recovery Clinic Huntington, WV	Pregnant women with addiction, Buprenorphine tx	Insurance, Medicare, Medicaid, Self Pay
FMRS Health Systems Beckley, WV	Substance Abuse treatment, Drug and Alcohol detox, Transitional Housing, Outpatient, Short-term Residential	Medicare, Medicaid, Self Pay, Sliding Scale Fee
New Beginnings, Fairmont WV	Long term residential without buprenorphine or methadone, pregnant women	Insurance, Medicare, Medicaid, Self Pay
Renaissance Place, Huntington, WV	Outpatient, Dual Diagnosis, residential, pregnant women, court appointed patients	Medicare, Medicaid, Self Pay, Sliding Scale Fee
Turning Point, Beckley WV	90 day residential; allows buprenorphine/methadone; pregnant women	Insurance, Medicare, Medicaid, Self Pay
Westbrook Health Services Parkersburg, WV	Outpatient, Dual Diagnosis, pregnant women, DUI, Court Appointed patients	Medicare, Medicaid, Insurance, Self Pay
Methadone Treatment		
Beckley Treatment Center Beckley, WV	Drug & Alcohol detox, Methadone maintenance & detox, Buprenorphine outpatient, Dual Diagnosis, pregnant women	Self pay
Charleston Treatment Center Charleston, WV	Methadone maintenance & detox, Buprenorphine outpatient, pregnant women	Self pay
Clarksburg Treatment Center Clarksburg, WV	Drug & alcohol detox, Methadone maintenance & detox, Buprenorphine outpatient, pregnant women	Self Pay
Huntington Treatment Center Huntington, WV	Methadone Maintenance & Detox, Buprenorphine, Outpatient, Dual Diagnosis & Pregnant Women	Self Pay
Martinsburg Institute Martinsburg, WV	Drug & Alcohol detox, Methadone maintenance & detox, Buprenorphine outpatient, pregnant women	Self Pay
Parkersburg Treatment Center Parkersburg, WV	Drug & alcohol detox, Methadone maintenance & detox, Buprenorphine outpatient, pregnant women	Self pay
Valley Alliance Treatment Services, Morgantown, WV	Methadone maintenance & detox, Buprenorphine outpatient, HIV/AIDS, pregnant women	Self Pay
Wheeling Treatment Center Wheeling, WV	Drug & Alcohol detox, Methadone maintenance & detox, outpatient, pregnant women	Self Pay

issue. Each year, approximately 70,000 women go without prenatal care in the US.²⁵ Women who benefit from expansion of access to prenatal care have been shown to deliver significantly fewer low birth weight babies compared to their counterparts, and each dollar spent on prenatal care will save a state between \$2.57 and \$3.38 in future

health care costs.^{26,27} Thus, investing in access to health care coverage is cost-effective in the long-term.

In WV, there is a paucity of substance abuse treatment providers willing to treat pregnant women. There are approximately 9 programs in WV that specifically target the pregnant addicted population. Many women in outpatient treatment with

buprenorphine/naloxone report they are required to sign a contract that discharges them from treatment should they become pregnant while taking the medication. There are 8 methadone clinics located in most of the larger cities throughout WV. These clinics typically treat pregnant women but are federally-regulated, for-profit programs that do not accept Medicaid or private insurance making the cost of treatment prohibitive. Furthermore, methadone clinics also require daily visits for the purposes of dosing medication which limits accessibility for many rural patients due to lack of transportation and childcare. A non-exhaustive list of treatment resources is shown in Table 2.

Four factors contribute to the shortage of treatment options for pregnant women struggling with addiction. First, few incentives exist to provide treatment for this population because individuals struggling with addiction are often deceptive and noncompliant and therefore both costly and time consuming. Second, addicted women are more likely to have complications throughout pregnancy.^{13,14} This can dissuade obstetricians and addiction treatment practitioners from treating these women due to legal liability. Neonatologists are also likely to fear legal liability because of risks involved with weaning neonates from substances the mother was consuming during pregnancy. Third, this population is at higher risk for contracting HIV and Hepatitis C.²⁸ Some practitioners may wish to avoid treating HIV and Hepatitis C positive patients. Finally, pregnant addicts have complex medical, mental health and psychosocial needs.^{23,29} With funding already meager for addiction treatment, it becomes difficult for treatment programs and

practitioners to justify expanding their care for this special population.

Integrated Treatment Approach

Given this context, we have begun to develop a comprehensive, integrated approach to the treatment of opioid-dependent pregnant women at Chestnut Ridge Center at West Virginia University Hospital in Morgantown over the last two years. Collaboration with the Departments of Obstetrics, Pediatrics and the Neonatal Intensive Care Unit (NICU) has been essential. This collaboration has involved the ongoing communication of professional, clinical and systems knowledge. It is through this collaboration that we are positively impacting barriers to treatment such as societal stigma and lack of resources for women from rural communities. We are achieving this by treating approximately 35

pregnant patients at any one time in our substance abuse programs, the majority in all pregnancy groups. We also accept Medicaid as a payer source and arrange for Medicaid transportation where possible to help with transportation issues often faced by my rural patients. In addition we are working to reduce stigma with interdisciplinary education of medical staff. Child care remains an issue we continue to struggle with.

To date we have treated over 100 patients using this model, taking a harm-reduction approach in the treatment of opioid-dependent pregnant women with the use of the medication buprenorphine. The goal of harm reduction is to reduce the negative impact of substance use on a person's life without having total abstinence as the goal.³⁰ Medication assisted therapy with

Buprenorphine or methadone fits with this model in that the patient is not completely substance free because they are still taking a medication. Neither methadone nor buprenorphine is FDA approved for the treatment of opioid dependence in pregnancy, though both have been shown to be clinically safe and effective. We have enhanced medication assisted therapy by including psychosocial interventions (e.g., cognitive behavioral therapy, twelve-step meetings, individual therapy, and pregnancy specific educational sessions). Additionally, we ensure that all pregnant patients are enrolled in prenatal care upon entering addiction treatment.

One of the most salient factors in treating pregnant women is the importance of retention in treatment for the duration of pregnancy and

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following delivery as reduced relapse rates are associated with longer treatment duration and medication compliance.^{31,32} Treatment with buprenorphine/naloxone has been shown to decrease relapse and increase retention in treatment.^{31,33-35}

Neonatal Abstinence Syndrome (NAS)

One concern of opioid-dependent pregnant patients choosing maintenance therapy is that their infants may go through withdrawal following birth. Neonatal abstinence syndrome (NAS), the term used to describe this phenomenon, does occur among actively addicted, opioid-dependent patients as well as those being treated with methadone or buprenorphine. Symptoms of NAS can include hyperirritability, dysfunction in the autonomic nervous system, gastrointestinal tract and respiratory system. If severe and left untreated it can lead to serious illness and death.³⁶ Studies have shown that anywhere from 20 – 73% of opioid-exposed neonates will require medication intervention for the syndrome.^{37-40,41,42,43}

Recent studies indicate the risk of withdrawal is less among infants born to mothers being treated with buprenorphine compared to their counterparts taking methadone or using opioids “off the street”.^{20,39,40 43} Higher rates of NAS are associated with the concurrent use of nicotine, benzodiazepines and cocaine.^{38,44-46,47} NAS is most commonly treated with morphine, which attenuates the symptoms, and is slowly tapered.¹⁷

Discussion

Though treating addiction and delivering obstetric care to opioid-dependent, pregnant women is challenging in any setting, the health-disparity risk factors experienced by rural WV women only increase the challenge. The West Virginia Perinatal Partnership reports that in WV, 15 counties have no prenatal

care or delivery facilities. There are also limited treatment resources for pregnant women seeking addictions treatment. We in the health care community need to develop greater access and multi-disciplinary comprehensive treatment options where a team of health care providers can deliver care that addresses not only the patient’s addiction treatment needs, but also her obstetric needs and eventually the neonatal needs of her infant. Addiction is a chronic medical disease of the brain which is why detoxification interventions alone are generally ineffective. While neonatal abstinence syndrome is a threat to all infants born to opioid-dependent women, providing maintenance treatment, especially with buprenorphine, appears to be the safest way in which to monitor and manage opioid dependence for both mother and infant and the more likely way to ensure retention in both prenatal and substance abuse care. Accurate diagnosis and treatment of concomitant psychiatric comorbidities improves treatment outcomes as well.^{48,49} Pregnant women with co-occurring psychiatric symptoms often endorse more severe substance abuse symptoms.⁵⁰

Conclusion

For the past decade WV has experienced an epidemic of opioid dependence that unfortunately has included a significant number of expectant mothers. The enormity of this problem has provided the impetus for health care providers from the fields of addiction medicine, obstetrics and neonatology to begin to collaborate in ways that attempt to comprehensively address this issue. Among the many challenges we face will be a requirement for multi-disciplinary continuing education around substance dependence and pregnancy, expansion of treatment service availability into regional comprehensive treatment programs, and research that

focuses on developing outcomes based on best practices.

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For a complete reference list, please contact the corresponding author.

CME POST-TEST

10. The primary barriers to both substance abuse treatment and prenatal care for pregnant women are:
 - a. Transportation
 - b. Lack of insurance
 - c. Limited access to health care providers
 - d. All of the above
11. The two most commonly abused substances other than nicotine among pregnant women in WV are:
 - a. Alcohol and cannabis
 - b. Amphetamines and cocaine
 - c. Opioids and cannabis
 - d. Bath salts and opioids
12. Research indicates the incidence of NAS requiring treatment among opioid-exposed neonates is:
 - a. 20-73%
 - b. 90%
 - c. 40-85%
 - d. 50%

Bedside Ultrasound: Advanced Technology to Improve Rural Healthcare

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Introduction

Many of the tools used by physicians at the bedside today rely on vintage technology. Items such as the otoscope, reflex hammer, and stethoscope have been in use since the 19th century or longer. Advances in cross-sectional medical imaging have revolutionized our diagnostic

capabilities, but at significant cost to society.¹ Bedside clinician-performed ultrasonography brings advanced imaging to the bedside at a relatively low cost without the dangers of ionizing radiation.² It has been shown to improve diagnostic accuracy, improve patient outcomes, and allow safer, more successful procedures. There is evidence that bedside ultrasound has great utility in resource-limited environments and could translate well to improving healthcare for rural populations where access to more advanced medical care is oftentimes limited.³⁻⁸ Now is the time to make bedside ultrasound a common tool in the “black bags” of physicians everywhere, especially in rural areas.

Ultrasound is second only to plain-film X-ray as the most utilized imaging modality on earth.⁹ Growth in ultrasound use by non-radiologists has outpaced radiologist performed ultrasound in the last decade and the trend is sure to continue with increased education and accessibility of portable ultrasound devices.¹⁰ Advances in ultrasound technology have allowed the development of portable and even hand-held ultrasound units with excellent image quality. First utilized for medical purposes in the 1940s and 50s, ultrasound has been widely applied by multiple specialties to image nearly every body system.

Many residency programs already have requirements for training with ultrasound, including

Family Medicine, General Surgery, Obstetrics/Gynecology, and Emergency Medicine.^{11,12} Some medical schools have had success incorporating bedside ultrasound into their curricula where it has been positively received by medical students and has enhanced their diagnostic abilities.¹³⁻¹⁵

Beyond undergraduate and graduate medical education, there is additional need to provide education to practicing physicians that were not formally taught to use ultrasound during post-graduate training. Although ultrasound is widely utilized in academic centers and has an accepted role in the standard practice of emergency medicine, the technology has been slower to reach smaller, rural emergency departments.^{16,17} In a recent informal survey of rural West Virginia Emergency Departments, many EDs reported a desire for further education and training in emergency ultrasound and some EDs had either just recently obtained or still did not have bedside ultrasound capabilities (J. Minardi, MD, unpublished data, October 2012). For the clinician wanting to better understand the use of ultrasound in clinical medicine, there are some basic concepts that must be understood prior to clinical application that will be reviewed below.

What is Ultrasound?

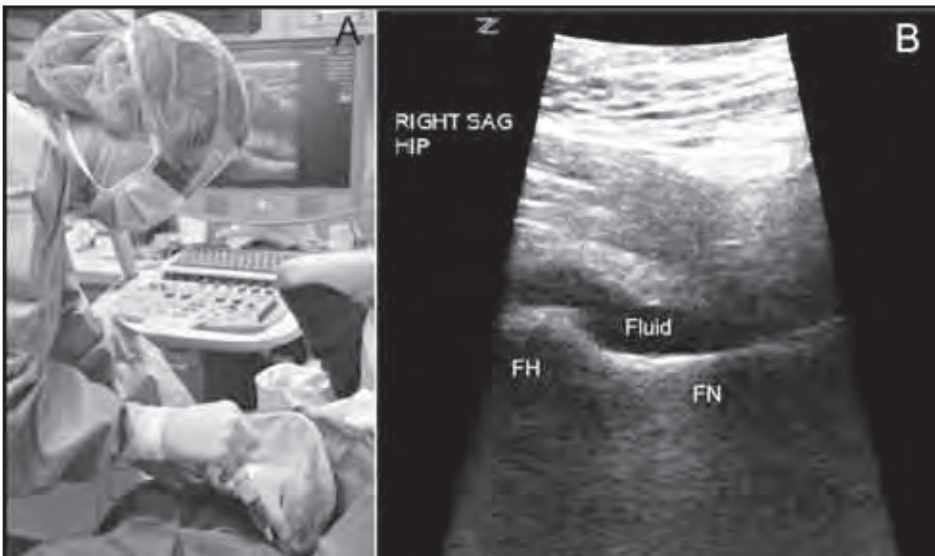
Ultrasound is sound at a frequency range above that which is perceptible

Objectives

The objective of this paper is to increase awareness on the use of clinician-performed bedside ultrasound and its potential to bring more advanced care to the rural population. The authors hope readers will gain additional knowledge on the wide applicability of ultrasound to many organ systems and its potential to decrease resource use and complications of procedures. The authors further hope that readers will become interested in seeking further education in the use of bedside ultrasound at a personal and wider level, including continuing, graduate, and undergraduate medical education.

Table 1. Uses and Diagnoses for Various Ultrasound Applications

Ultrasound Application	Select Uses and Diagnoses
Critically Ill	FAST, RUSH, dyspnea, chest pain, hemodynamics
Procedures	Vascular access, pericardiocentesis, thoracentesis, paracentesis, arthrocentesis, biopsies, regional anesthesia, abscess drainage, therapeutic injections
Ocular	Retinal detachment, vitreous detachment, vitreous hemorrhage, optic nerve edema, lens dislocation, trauma
Head and Neck	Elevated intracranial pressure, sinusitis, trauma, soft tissue infections, thyroid pathology, laryngeal pathology
Skin and Soft Tissue	Infections/abscesses, foreign bodies
Pulmonary	Pneumothorax, pleural effusions, pulmonary edema, pneumonia, trauma
Cardiac	Pericardial effusion, LV failure, RV strain, aortic dissection, ischemia, trauma, valvular pathology, hemodynamics
Abdominal	Biliary pathology, intestinal pathology, hernias, pancreatic pathology, trauma
Pelvic/GU	Renal/bladder pathology, OB/GYN, prostate, scrotal pathology
Vascular	Thrombosis, dissection, aneurysm, atherosclerotic disease, trauma
Extremities	Skin and soft tissue infections, tendon and ligamentous pathology, trauma, other bony lesions

Figure 1. A. A physician performing ultrasound guided hip arthrocentesis. B. An ultrasound image of a hip effusion. FH-femoral head, FN-femoral neck.

to the human ear, generally higher than 20,000 Hz (20 KHz). Diagnostic ultrasound is generated when an electrical voltage is applied to specially designed crystals that are housed in the ultrasound transducer. When the voltage is applied, these crystals vibrate generating ultrasound waves in a phenomenon known as the *piezoelectric* effect. The sound waves are transmitted into tissue and then reflected back to the transducer. Upon their return the ultrasound waves cause the crystals to vibrate once more generating another electrical signal. The intensity and timing of the reflected sound is interpreted into the image on the screen. Most diagnostic ultrasound for external uses operates at frequencies in the range of 2-15 megahertz (MHz). Higher frequencies allow better detail resolution, but do not penetrate tissue deeply, whereas lower frequencies are more useful for imaging deeper structures, but with decreased image resolution. Transducers for general abdominal, thoracic, or cardiac use are typically in the range of 2-6 MHz, with transducers for vascular access or other more superficial applications in the range of 8-15 MHz.¹⁸

Bio-effects

Ultrasound is a source of energy and does affect cells, generally causing vibration resulting in heat and potential bubble formation. At the intensities used in diagnostic ultrasound, these effects are clinically insignificant. It is theorized that certain tissues, such as those of an early developing fetus would be most susceptible to harm from these effects. It is important to recognize, however, that harm has **NOT** been associated with the energy levels used in diagnostic ultrasound. Because of its safety, ultrasound has been the preferred imaging modality in obstetrics for decades.¹⁸

What are the advantages to ultrasound?

As stated above, ultrasound is relatively inexpensive and newer technology has made it very portable

Figure 2. A. A laptop sized portable ultrasound system. B. Differing ultrasound transducers from left to right, a 7 MHz endocavitary transducer, a 3 MHz small curvilinear transducer, a 5 MHz wide curvilinear transducer. C. Handheld ultrasound machine.



and easy to use. Ultrasound does not use ionizing radiation and there are no reported harmful effects of diagnostic ultrasound. Ultrasound is able to deliver real-time, dynamic imaging of most body systems. The dynamic aspects of ultrasound imaging have made it particularly useful to image moving anatomical structures, such as the heart, as well as for procedural and musculoskeletal applications.^{19,20}

What are the disadvantages to ultrasound?

Ultrasound, like all forms of sound, is dependent on a medium to propagate the energy. Certain tissues such as most solid organs and other liquid-density structures propagate ultrasound very well. However, ultrasound is limited in its ability to image air-filled organs, such as the lungs and intestines. Similarly, bone generates strong reflections of ultrasound which limits its utility in bony imaging. However, even with these limitations, techniques have been developed that allow clinicians to use ultrasound in the care of pulmonary, gastrointestinal, and orthopedic conditions. The greatest challenge to ultrasound is its reliance on a skilled operator. Consistently acquiring high quality images is one of the most important,

yet difficult-to-master skills for the clinician without prior residency or fellowship training. Existing continuing medical education (CME) courses are an excellent start, but without continued practice and support, some physicians find maintaining adequate skills difficult. It is for this reason that coordinated efforts are needed to improve and support ultrasound training and infrastructure across the continuum of medical education and practice.¹⁹⁻²¹

Can non-imaging specialists adequately perform and interpret ultrasound?

For the clinician that is performing ultrasound at the bedside, it is important to have a specific, answerable, typically binary clinical question in mind. For example, in the setting of trauma: "Is there blood in the abdomen?" In the setting of a patient with a positive pregnancy test and there is clinical concern for the presence of an ectopic pregnancy: "Is there an intra-uterine pregnancy?" Within this framework, trained clinicians perform very well. Multiple studies comparing trained emergency physicians to imaging specialists have demonstrated a high degree of accuracy for applications from limited echocardiography,²² to abdominal,^{23,24} pelvic,²⁵ vascular,^{26,27} and other applications. The data support that physicians with brief ultrasound education (as little as 10 minutes of training for some applications) can acquire skills to quickly and accurately diagnose forthright an array of pathology at the bedside with more accuracy than physical exam and less reliance on specialized imaging services that may be more expensive or not immediately available.²⁸

Discussion

In what applications is bedside ultrasound most useful?

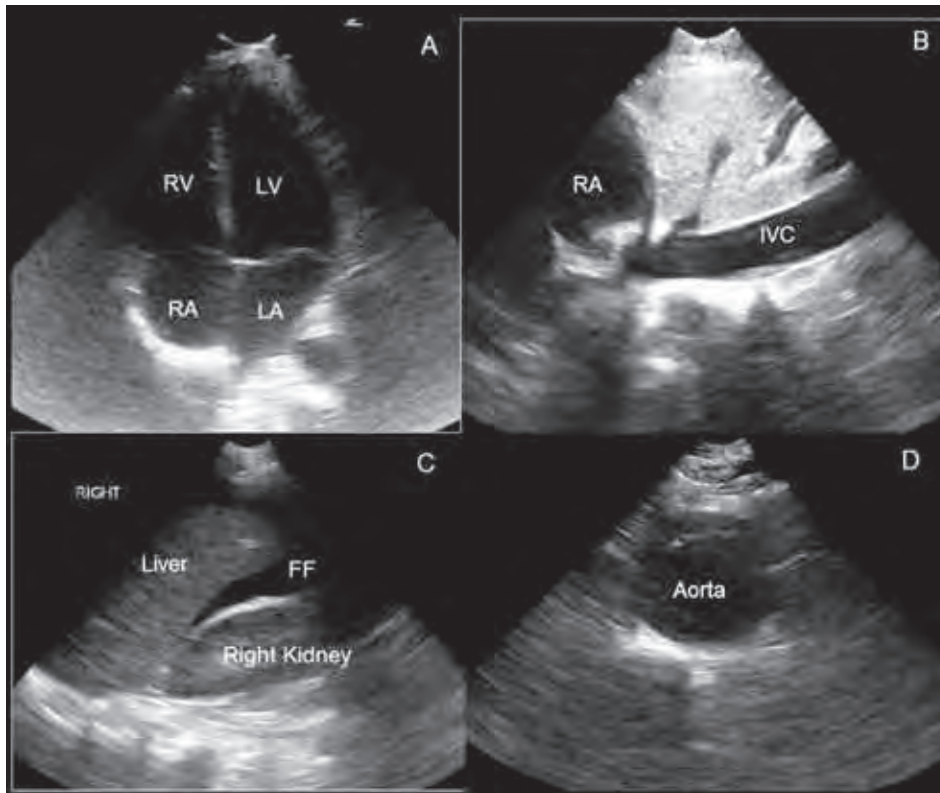
Critically Ill

In patients presenting with undifferentiated shock, bedside

ultrasound can help make immediate diagnoses and direct immediate decision-making.^{29,30} The Focused Assessment with Sonography in Trauma (FAST) exam, which examines the heart for hemopericardium and the abdomen for hemoperitoneum is now standard teaching in advanced trauma life support (ATLS) as it may quickly localize bleeding and direct life-saving intervention.³¹ The FAST exam has been shown to reduce time to the operating room (OR) in trauma patients and decrease the need for CT scans.³²⁻³⁴ In patients with atraumatic hypotension bedside ultrasound is used to examine the heart, inferior vena cava, chest, and abdomen for clues as to the etiology of shock.³⁵ Examination of the heart may reveal evidence of left ventricular failure, suggesting cardiogenic shock. A dilated, hypokinetic right ventricle may point to a massive pulmonary embolism. Significant pericardial effusion would suggest cardiac tamponade. A flattened inferior vena cava (IVC) with significant respiratory variation is consistent with hypovolemia. An aortic aneurysm may suggest ruptured abdominal aortic aneurysm (AAA), while fluid in the abdomen may represent hemorrhage. Lack of pleural sliding in the lungs indicates pneumothorax, and sonographic B-lines can help diagnose pulmonary edema. Ultrasound protocols, such as the RUSH (Rapid Ultrasound in SHock) have been developed to examine the heart, inferior vena cava, lungs, and abdomen in a systematic manner to help the clinician shorten their differential diagnosis and direct immediate management.^{29,30,36}

In the intensive care unit, an ultrasound protocol helps to alter diagnoses and influence management when performed on newly admitted patients.³⁷ Further, ultrasound is being used in operating rooms and intensive care units to monitor hemodynamics traditionally evaluated by more invasive means, such as pulmonary artery catheters.³⁸⁻⁴⁰ Ultrasound

Figure 3. A. An apical 4-chamber view of the heart. RV-right ventricle, LV-left ventricle, RA-right atrium, LA-left atrium. B. A long axis view of the inferior vena cava (IVC) can be useful as a noninvasive estimate of central venous pressure. C. Morrison's pouch shows free fluid (FF) which is indicative of intra-abdominal hemorrhage in the setting of trauma. D. A cross-sectional view of an abdominal aortic aneurysm may pinpoint the etiology of shock.



may help differentiate cardiac from pulmonary causes of acute dyspnea at the time of initial encounter, immediately directing critical therapy and evaluation.⁴¹ Ultrasound also allows more definitive exploration of the differential diagnosis of acute chest pain, helping make treatment decisions with more confidence.⁴²

Procedures

Bedside ultrasound allows real-time visualization of anatomy prior to and during medical instrumentation. Ultrasound-guided techniques for vascular access have demonstrated improved success rates and fewer complications.⁴³ In fact, the Agency for Healthcare Research and Quality (AHRQ) recommends the use of ultrasound as a standard tool for obtaining central venous access.^{44,45} Ultrasound is also being used to guide a multitude

of other procedures, including pericardiocentesis, thoracentesis, paracentesis, arthrocentesis,^{46,47} therapeutic injections,^{48,49} and more.^{20,21,50-54} For these procedures, ultrasound guidance has inherent benefits over traditional, landmark based techniques and may allow more advanced procedural intervention to be safely performed in resource limited rural practice sites.

Less Emergent Conditions

Clinicians using ultrasound can accurately make important diagnoses at the time of the initial history and physical examination, significantly reducing resource utilization while also focusing subsequent evaluation and treatment. In gallbladder disease, diagnosis can be made rapidly and accurately, decreasing length of stay in the emergency department

and potentially decreasing office visits in the primary care setting.²³

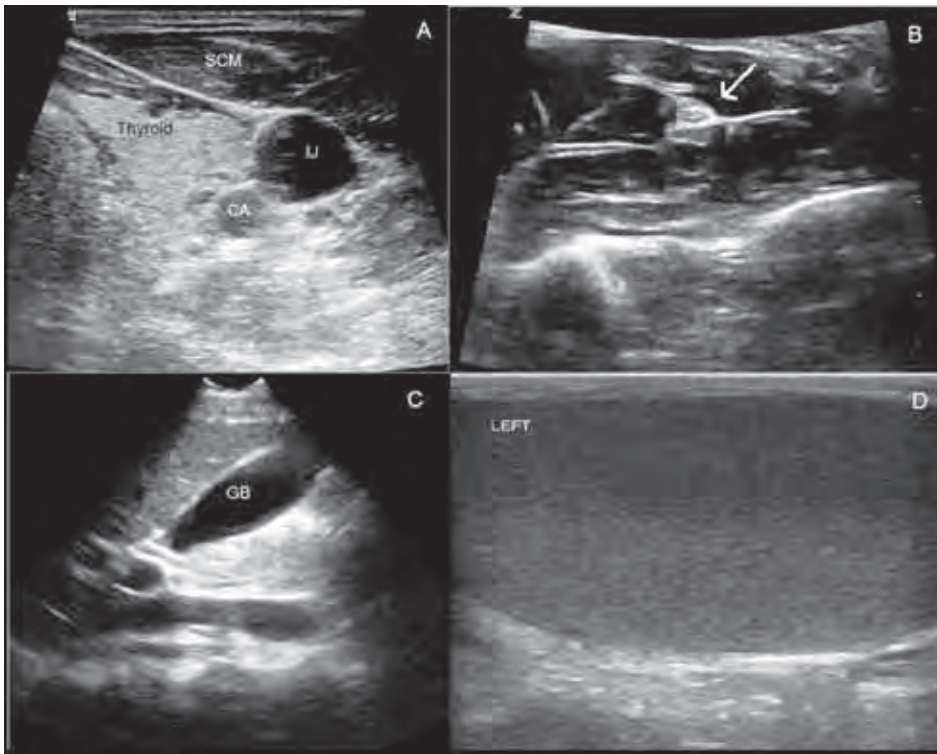
For patients with suspected DVT, the diagnosis can be made or excluded when traditional imaging resources are not available.²⁷ For soft tissue infections, ultrasound changes the plan up to 50% of the time, suggesting the need for incision and drainage when necessary and decreasing non-therapeutic incision and drainage.⁵⁵⁻⁵⁸ Patients with symptomatic ureterolithiasis can frequently be managed more efficiently and with less reliance on CT scans. Rural primary care physicians can rapidly and efficiently screen for abdominal aortic aneurysm in a single office visit without need for referral.⁵⁹ With experience, providers may be able to diagnose conditions of adnexal and testicular torsion in minutes leading to more rapid definitive intervention.^{60,61}

Other conditions of the genitourinary tract may also be diagnosed more accurately using ultrasound as an adjunct to a careful history and physical exam.^{19,20} Musculoskeletal conditions, such as inflammation or injuries to ligaments and tendons may be accurately diagnosed and monitored as part of routine clinical care.⁶² Fractures may be seen with bedside ultrasound, which can also be used to guide closed reduction.⁶³ Additional information to diagnose ocular pathology can be obtained with the use of bedside ultrasound.²⁰ Multiple pulmonary conditions from pneumothorax, to pleural effusion and pneumonia may be seen with bedside ultrasound as well.^{64,65} In short, bedside ultrasound adds incredibly useful information for improving/optimizing patient care that is not typically available by history and physical examination.

Challenges

As stated above, effective use of ultrasound relies on the skill of the operator. For this reason, initial training and ongoing quality assurance (QA) is recommended for clinicians utilizing diagnostic

Figure 4. A. The right internal jugular (IJ) can be directly visualized to assist in cannulation. CA-carotid artery, SCM-sternocleidomastoid. **B.** The median nerve (arrow) can be visualized to guide regional anesthesia. **C.** The gallbladder (GB) can be immediately visualized assisting diagnosis. **D.** Imaging of the testical can provide immediate diagnostic information.



ultrasound.⁶⁶ Ongoing QA requires an investment in infrastructure to manage stored images, interpretations and provide oversight. Startup costs from equipment, training, and data management can be considerable. Although increasing competition should reduce costs, simple, handheld ultrasound devices may be purchased for approximately \$5000.00, with more comprehensive systems quickly reaching upwards of \$60K. These costs may be prohibitive for struggling rural practices. Further, although proper use of ultrasound may improve patient care, costs could potentially increase if imaging is not applied appropriately. There is good data demonstrating improvements in diagnoses and decreased complications with proper use of bedside ultrasound which should decrease malpractice risk, but more study is needed in this area. There is also a need for large scale studies evaluating



Dr. Kerri Donahue
Pulmonary Medicine

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meaningful patient outcomes and impact on the health care system.

Conclusions

Bedside ultrasound is an excellent clinical tool that can improve patient care while allowing more effective use of medical resources. Its low cost, safety, accessibility, and broad applicability make it an ideal modality to improve the care delivered in resource-limited rural clinics and emergency departments where it can add critical information to the history and physical examination, improve diagnostic accuracy and efficiency, and assist in safer, more effective procedures.

We strongly believe that education of clinicians in the skilled use of ultrasound must continue to expand. This must start with the widespread incorporation of ultrasound education to the current generation of medical students, while residency and fellowship programs need to continue their progress in growing and standardizing ultrasound training. Concerted efforts are needed to support continued

training and implementation of ultrasound into the practice of active clinicians through continued medical education, infrastructure and local, regional, and national leadership.

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For a complete reference list, please contact the corresponding author.

CME POST-TEST

13. Which of the following materials, housed inside the ultrasound transducer is responsible for generating the ultrasound waves?
 - a. Crystals
 - b. Magnets
 - c. Helium gas
 - d. Oil
14. Which of the following transducer frequencies will provide the highest detail resolution?
 - a. 3 Mhz
 - b. 5 MHz
 - c. 10 MHz
 - d. 12 MHz
15. A 56 year old male presents with generalized weakness and fatigue. Heart rate is 126 and blood pressure is 76/40. Which of the following ultrasound exams would be most useful to make immediate diagnostic and therapeutic decisions?
 - a. Ultrasound guided central venous access
 - b. RUSH exam
 - c. Renal
 - d. Deep venous thrombosis

Rural Practice Realities

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To more deeply understand today's rural care realities, it's worthwhile speaking with the physicians who are in the trenches, treating rural patients daily, navigating the shifting reimbursement scene and finding ways to deliver care given daunting challenges.

Travis Hansbarger, M.D., is a family physician with the Monroe Health Center system, practicing in Craig County, Virginia. This dual-state FQHC is unique not only because it crosses state lines but because Monroe County is the only West Virginia County where the health department is totally integrated into the local primary care center. Dr. Hansbarger is the public health officer who serves out of the Union-based facility.

The Monroe Health Center (MHC) was founded by Hansbarger's father, Clark Hansbarger, M.D., 40 years ago. The center's staff includes full-time, board-certified family practice physicians, physician's assistants, nurse practitioners and administrative support staff who work not only in Union, but also in the two satellite offices – the one in Craig County and another in Peterstown, W.Va. The MHC operates Wellness Centers in every school within the counties they serve where both children and school staff can be seen by licensed healthcare professionals during normal school hours.

"One of the most talked-about challenges rural areas face is attracting and retaining good

people," said Hansbarger. "As a Federally Qualified Health Center with HRSA ranking, we do offer malpractice coverage and loan payback for recent graduates."

For new physicians overwhelmed by six-figure debt, the loan repayment or loan forgiveness programs offered by the state of West Virginia or the National Health Service Corps are invaluable.

"It's important for new physicians entering primary care to understand that while rural areas are on the lower echelon of the physician pay scale, the cost of living is also going to be lower," he elaborated. "The compensation is usually not as bad as it looks on paper."

He emphasized that rural care is not for the physician who wants to be a stranger to their patients. In a rural community, people want to know their doctor. They want their family physician to be their neighbor. "I've been practicing in Craig County for six years and I still hear the question 'Are you staying?'" Hansbarger said. "It takes time to build trust. But the feeling of community is meaningful."

Recruiting challenges continue to erode access to care in many rural communities. Roughly three-fourths of the 2,050 counties in the United States have a shortage in primary healthcare.¹ Nearly one in 10 rural counties has no primary care physician at all.² In the state of West Virginia, 47 out of 55 counties contain Health Professional Shortage Area (HPSA) designations for primary medical care.³ It has been a critical issue

for decades and it's poised to get worse as 27% of rural primary care physicians approach retirement age.⁴

Merritt Hawkins is a national healthcare search and consulting firm specializing in the recruitment of physicians across all medical specialties. According to their data, primary care physicians remain at the top of the wish list for healthcare organizations nationwide. For the seventh consecutive year, two types of primary care physicians – family physicians and general internists – were Merritt Hawkins' two most requested physician search assignments.⁵

This isn't surprising given a 2004 Health Affairs analysis that broke down Medicare spending and quality. Based on the data, researchers determined that states with a higher proportion of primary care doctors had better care and improved outcomes. Interestingly, a greater density of specialists in an area correlated with poorer quality outcomes.⁶

Additionally, in 2011, Merritt Hawkins surveyed 302 medical residents in their final year of residency. One-third of residents said they'd be most interested in becoming a hospital employee, compared with four percent in 2003 – a striking difference.⁷ Nearly half, 48 percent, desired a position in an urban setting of 500,000 people or more.⁸ Only six percent preferred a community of under 50,000 people – a disturbing trend considering that 1 in 5 U.S. residents lives in a rural area.^{9,10}

Not surprisingly, studies show that doctors who train in rural areas are two-to-three times more likely to return to practice in a rural community.¹¹ All three of the state's medical schools are using grant monies for Rural Health Initiatives to expand training in rural areas. And increasingly medical schools are identifying students from rural backgrounds during the admissions process.

In 1977, Congress passed the Rural Health Clinic Services Act (PL 95-210). The legislation had two main goals: improve access to primary healthcare in rural, underserved communities; and promote a collaborative model of health care delivery using physicians, nurse practitioners and physician assistants. In subsequent legislation, Congress added nurse midwives to the core side of primary care professionals and included mental health services provided by psychologists and clinical social workers as part of the Rural Health Clinic (RHC) benefit.

The mission of the RHC program has remained remarkably consistent during the lifetime of this unique benefit. Improving access to primary care services in underserved rural communities and utilizing a team approach to healthcare delivery remain the focus of the program. In most cases, these clinics are disproportionately dependent on Medicare and Medicaid as the principle payers for health services.¹²

This is the case for Jana Peters, D.O., who operates an RHC in Princeton called New Hope Family Practice. "More than 30% of our patients are under Medicaid," she explained. "Even though I took over another physician's patients when I arrived in Princeton, I still had to work ER shifts to make ends meet while I was establishing my practice."

Rural Health Clinics have proliferated in the past 10 years, in part due to decreasing

reimbursements from the standard fee-for-service system.¹³ Because Rural Health Clinics are supposed to receive cost-based reimbursement, providers are turning to RHCs to be able to continue providing services to the rural poor and elderly.

"Rural Health Clinics are absolutely necessary," said Peters, "but there are so many insurance constraints that make it hard to make ends meet. If a person comes in who is really sick, there's one flat compensation for that office visit. But what if he needs a chest x-ray or a shot? Often, there's no profit left to pay the staff." She continued. "Reimbursements are constantly being reduced. West Virginia public schools now require a TDaP vaccination. However, many insurers don't reimburse us enough to cover the cost we pay for the vaccines. Unless a patient is covered under Medicaid, we've found we cannot dispense these vaccinations without losing money."

Dr. Peters' clinic is not-for-profit - she's just trying to break even and cover costs. "My patients are naturally concerned when they feel an appropriate level of care is not being provided," she explained. "They don't understand that their insurance does not cover the services they need."

Recently, an eleven-year old patient arrived at the New Hope Family Practice with his CHIP (Children's Medicaid) card. He was experiencing dizziness and seizures. New Hope was his third stop in trying to identify what was wrong. He had not received a head scan at either his local emergency room or in Charleston. "When he arrived at the clinic, we were able to get him approved for an MRI," said Peters. "It turns out; he had a brain tumor and was transported to Roanoke the same day."

So is operating a rural health clinic more challenging than operating in an urban area?

There's no question that a variety of economic, geographic, educational and social/cultural factors can impede rural residents from achieving care and hamper rural physicians from being able to effectively provide it. According to the National Rural Health Association, compared to their urban counterparts, rural Americans are more likely to live below the poverty level, are less likely to be privately insured, they smoke more, exercise less, have a higher incidence of chronic conditions and have greater transportation challenges getting to healthcare providers, which can delay, interrupt and lengthen treatment.^{14, 15}

Peters is an optimist by nature, but she struggles with the present-day realities of operating a small rural clinic. "How can we transform our health care system into a functional model that serves the patients and serves the physician without compromising care?" she asked. "I've got patients who can either pay their co-pay or they can purchase food for the day, but they cannot do both. We want our healthcare system to attract and educate doctors who are in medicine for humane reasons - to care for people. These are the doctors we all want treating our loved ones. But the system ties our hands and limits the work we can do."

Stanley Day, M.D., operates the Family Care Clinic, a rural health clinic in Hinton. "I came to Summers County right after I completed my residency," he explained. "I had a public health scholarship with a two-year service obligation. Once my obligation was up, I decided to stay in the area."

While he did not have roots in the area, his wife did. Like other rural practitioners, he's

found it hard to attract and retain good people over the years.

"If I hire someone who doesn't have local ties, they stay until their service obligation is up - maybe three years - then they leave," he said. "Now we try to hire locally and they stay longer, maybe five or six years." Two of his former physician assistants have gone on to medical school in the state.

"PracticeLink, which advertises physician openings, is based here in Hinton, but I bet they don't see a lot of new doctors looking for a job opportunity in Summers County, West Virginia."

Now contemplating retirement, he's hoping his former PA will return to Summers County after completing his residency and take over the practice.

"The nice thing about a practice like mine is that I'm able to be home in the evenings with my family. We've enjoyed being part of the community here. We've been able to build the type of practice we always envisioned. Every staff member is a part of our family."

Like all the rural docs who shared their experiences, Dr. Day admits to doing house calls. "When I was first starting out, house calls helped to build the practice," he said. "My patients found me solely through word-of-mouth and that took time. Now my home visits are reserved for patients who are truly homebound."

He started his practice with a staff of three: himself, plus a nurse and one person who functioned as both the receptionist and the billing person. "Now we have a staff of ten," he explained. "The logistics of running an independent practice have gotten more complicated. There are more mandates, more insurance issues."

He understands the growing concern about the viability of small rural practices. "There's concern the Affordable Care Act will squeeze out the small private practice,"

he admitted. "I've enjoyed being a family doc for my community. I wouldn't hesitate to encourage a young physician to approach the owner of a private practice and ask to purchase it. That way, you have more control."

So does the small rural practitioner enjoy quality of life benefits that outweigh the financial compensations or other amenities of an urban practice?

"It depends entirely on the person," Hansbarger said, explaining his return to a county with no traffic light after years of practicing medicine in Huntington. "Rural areas make nice places to live, but they can be isolated. For example, docs may have fewer providers who can cover call. When I was on the faculty at Marshall, I was surrounded by other doctors, every type of specialist, and there's an opportunity to bounce ideas off of each other. I miss that. Especially in the beginning of a career, it can be tough for new docs to stand on their own."

He described the daily life common to many rural physicians. "In our clinic, we often function as an emergency room, but without all the bells and whistles. We may have a patient code and it's just me and a nurse aide trying to resuscitate. It's not like you see on television when a patient codes and there are a half dozen people in the room."

He disputes the idea that primary care may represent a less challenging career path. "People might be surprised at the injuries which come through our doors on a regular basis. We receive knife wounds, gunshots, chainsaw accidents. We're seeing something different all the time. It can be scary, but the challenges keep you on your toes."

His passion for his life's work is evident.

"Primary care is challenging," Hansbarger explained. "A primary care physician has to know a

little bit about everything. One day, you might be in the role of a junior surgeon, but with your next patient, you're a cardiologist or a nephrologist or an endocrinologist. Primary care needs smart people who are interested in everything. Sure, a brilliant cardiologist can earn accolades and publish in medical journals, but a brilliant primary care doc can turn around a community."

Turning around a community is exactly what one rural West Virginia physician has in mind.

Dino Beckett, D.O., practices in Williamson, the Mingo County seat. One of the poorest counties in the state, the Mingo population has shrunk to one third of its previous size ... and, according to the U.S. Census Bureau, decreased by five percent in just the last ten years. 26% of residents live in poverty, including 30% of the children.¹⁶

In September 2012, Beckett was elected to head the Mingo County Redevelopment Authority (MCRA)

"The local economy was originally built around coal mining, but we're creating a new vision for the area which includes clean energy, preventive health care and training for diverse occupations," he explained. "The solution is community engagement and commitment to lifestyle changes. Being sustainable for the future isn't just one thing. It's 360 degrees of integration across multiple initiatives that, together, create the type of community where people want to live and work and raise their families."

Recent initiatives include installation of solar panels on community buildings, including Beckett's downtown Williamson clinic, the creation of a community garden, development of a local farmer's market; monthly 5K runs around the county, a JOBS project that teaches residents new skills, and more.

“Currently, we offer a free health clinic once a month for Williamson’s uninsured and underinsured and we’re in the development phase of creating a Federally Qualified Health Center which will operate next door.” In addition to his revitalization efforts, Beckett has taken an active role in preventative healthcare efforts for the entire community.

Over a year ago, Mingo residents concerned about diabetes – nurses, doctors, pharmacists, hospital employees and other concerned citizens – united to form the Mingo County Diabetes Coalition. According to the coalition’s website, the prevalence of diabetes in Mingo County is 13.7%. Early in 2012, the coalition received a four-year grant from Bristol Myers Squibb for \$50,000 a year, to increase public awareness of how to prevent diabetes along with activities for school-age populations to encourage them to be more active.

More good news quickly followed.

“The Mingo County Diabetes Coalition will receive \$3 million dollars to take part in an innovative new program to help rural diabetics manage their disease,” said Beckett, local medical director for the grant awarded to Duke University Medical Center and the University of Michigan’s National Center for Geospatial Medicine by the Centers for Medicare and Medicaid Services (CMS).

“The goal is to develop models of chronic disease management which other rural communities can use to help patients on Medicare and Medicaid,” he explained. “We believe we can achieve better health care, better outcomes and overall lowered costs. Every single participant will be assigned a mentor to monitor their progress, but also to encourage and support healthier behaviors.”

Why does he believe so passionately that community transformation is possible?

“The strength of small rural communities is just that – they’re small rural communities. People look out for each other. They’re connected. I think Mingo County can be an innovator and a model for other communities,” he enthused. “If we want to attract economic opportunity, health care improvement and a better quality of life, we have to get everyone involved.”

In each conversation with a rural physician, the refrain is repeated: “Everyone deserves access to quality health care.” This is the ideal whether one lives in an urban area or a rural area, but when fewer than six percent of medical residents report a willingness to practice in a community of fewer than 50,000 people – and only 11 of the state’s 55 counties qualify – the prospects for achieving healthcare equity in the near future may appear dim. Nevertheless, for these rural physicians who enjoy fresh air, low crime rates and night skies where the stars shine brighter than any city lights, a small rural practice can still represent an appealing way of life.

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Expanding Models for Rural Primary Care in West Virginia

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Abstract

This review paper outlines current and newer rural healthcare organizational models to improve availability and access to healthcare services for our state's large rural population. Included in the review are several suggested models for addressing rural healthcare needs: (a) the rural interdisciplinary medical home model; (b) the spoke and wheel model; (c) medical center/community linkages; (d) technology-based outreach modalities, such as tele-health; (e) part-time physician care and (f) expanding the role of health education centers to improve rural primary care. The overall goal is to stimulate exploration, funding and adoption of some of these models and advocate novel methods of addressing and reducing healthcare disparities in rural West Virginia.

Introduction

Imagine for a moment that you are a young medical student considering a future career in rural West Virginia as a family physician or other primary care provider. What

will the future hold? What will your career be like? You may have the fortunate opportunity to work in a rural community for a few weeks to experience the environment and determine whether it fits your needs and maintains your interest. If so, you will see firsthand the excitement, the challenge, and the wide variety of medical opportunities. However, you also will likely be mentored by a very busy, older practitioner, perhaps working alone in a small community, with little interaction with colleagues and other health professionals. You will appreciate the hard work and heroism of these great role model physicians, like the country doctor featured in a recent Sunday Parade magazine (*Parade* March, 2013). On the other hand, you may wonder whether you want to live the next three decades of your life in relative professional isolation in a solo or small practice, on call almost every day, with little chance of even taking vacation.

For those of you who have worked in rural practice, the lure of wonderful community people, exciting recreational opportunities, fresh air, and daily excitement and variety in medical practice far outweigh the disadvantages. However, in today's new healthcare environment of less solo practice, more managed care, and more advanced team approaches to primary care, today's young physicians are looking for more modernized, technologically advanced, and interconnected models of practice. There will

always be a few heroes and brave men and women who enter rural practice and thrive on the isolation, but to address the persistent lack of access in rural communities, we will need to consider newer more connected models of practice.

The challenges facing health care providers and patients in rural areas are vastly different than those in urban areas¹. Economic factors, cultural factors, educational issues, and geographic distance combine to thwart efforts to address the health disparities that exist in rural West Virginia. Many programs are in place to increase healthcare access and provide primary care to rural areas, including Federally-Qualified Health Centers (FQHCs), National Health Service Corps Scholarship Programs, the WV Area Health Education Centers (AHECs), and many others. Despite these efforts, stubborn health disparities remain throughout West Virginia, including the recent distinction of being listed as the 47th healthiest state².

New models of delivery of primary care services may provide some assistance in addressing WV's persistent health disparities. Other states with large rural populations have produced reports with recommendations for expanding primary care and utilizing new models of health care delivery to better meet rural health care needs³. Minnesota's strategy has been to emphasize primary care and patient-centered medical home development, a type of primary care that emphasizes care of a defined

Objectives

Considering new models for the organizational delivery of rural primary care may improve availability and access to healthcare services for West Virginia's large rural population. After reading this review, readers will be able to describe several suggested models for addressing rural healthcare needs: (a) the rural interdisciplinary medical home model; (b) the spoke and wheel model; (c) the medical center/community linkages model; (d) the technology-based outreach model; (e) the part-time model and (f) the health education center model to improve rural primary care.

population as well as acute and chronic medical care. Another feature of their recommendations was to emphasize funding for start-up and partnerships with small business and independent providers, to insure equitable participation by private concerns. These recommendations should be given due consideration by WV rural health leaders.

Current Models

First, let's review the models of organization of primary care that are more prevalent in West Virginia. The models of the practice of medicine prevalent in rural West Virginia generally fall into one of three major groups: the private practice, institutional sponsorship, and governmental supported. The traditional private practice model is based on ownership and operation by one or more practitioners. These practitioners operate under a business model, bill and collect for their services, are responsible for the management of the practice, and establish relationships with hospitals, laboratories, and other organizations for support services. The owner/operators are responsible for scope of practice, employees, regulatory compliance, and financial aspects. Once the almost exclusive model for rural practice, the establishment of private, especially "solo" or "small group" appears to be increasingly rare. There are many potential reasons, including capitalization (especially in the climate of growing student debt and difficulties of financing new practices), an increasingly complex regulatory environment, the relatively large rural uninsured and elderly population, and the availability of careers in urban and suburban areas as hospitalists, urgent care providers, and members of large group practices.

Institutional sponsorship of rural practice includes practices established or supported by hospitals, large medical groups, faith-based organizations, and academic health science centers. Providers often work

on salary or on an incentive practice plan, or both. The parent institution provides capital, administrative support, and clinical support services. Once popular, this model appears to be becoming increasingly rare beyond a few communities in relatively close proximity to the larger cities.

The third prevalent model, one that appears to be growing, is a medical practice at least partially supported by government. One model especially prevalent in West Virginia is the Federally Qualified Health Center, or "FQHC." This is a provider organization defined by Medicare and Medicaid Statutes, including those receiving funds under Section 330 of the Public Health Service Act and so-called "FQHC-Look-alikes." These practices may receive grants to establish new sites, reimbursement rates for Medicare and Medicaid based on reasonable practice costs ("Cost-based Reimbursement") recruit providers through the National Health Service Corps, purchase of out-patient medication at reduced cost, and be eligible for medical malpractice liability coverage through the Federal Torts Claims Act. These are significant advantages to the rural practice. The FQHC Look-alike practice may be eligible for some of these advantages, such as Cost-based Reimbursement, and purchase of out-patient medications at reduced cost. These are significant advantages, provided to encourage and support access to care to isolated and disadvantaged populations. FQHC practices currently serve about 20% of all West Virginians and operate 58 school-based health centers.

Other models active in West Virginia are the eight "Free Clinics" operating in the state. Which are largely supported from local and other non-federal sources but are eligible for consideration for liability coverage under the Federal Torts Claims Act. Rural Health Clinics are practices certified to receive special, often cost-based, reimbursement. Unlike FQHC's, "Look-alikes," and Free Clinics, a Rural Health Clinic

can be for-profit, not-for-profit, public, or private. These clinics must be staffed at least 50% of the time by midlevel practitioners. According to statehealthfacts (statehealthfacts.com), provided by the Henry J. Kaiser Foundation, there are 50 certified Rural Health Clinics operating in West Virginia. West Virginia is among those states most dependent on government supported practices. The rural nature of the state, its economy, geography and demographics all contribute to this dependence.

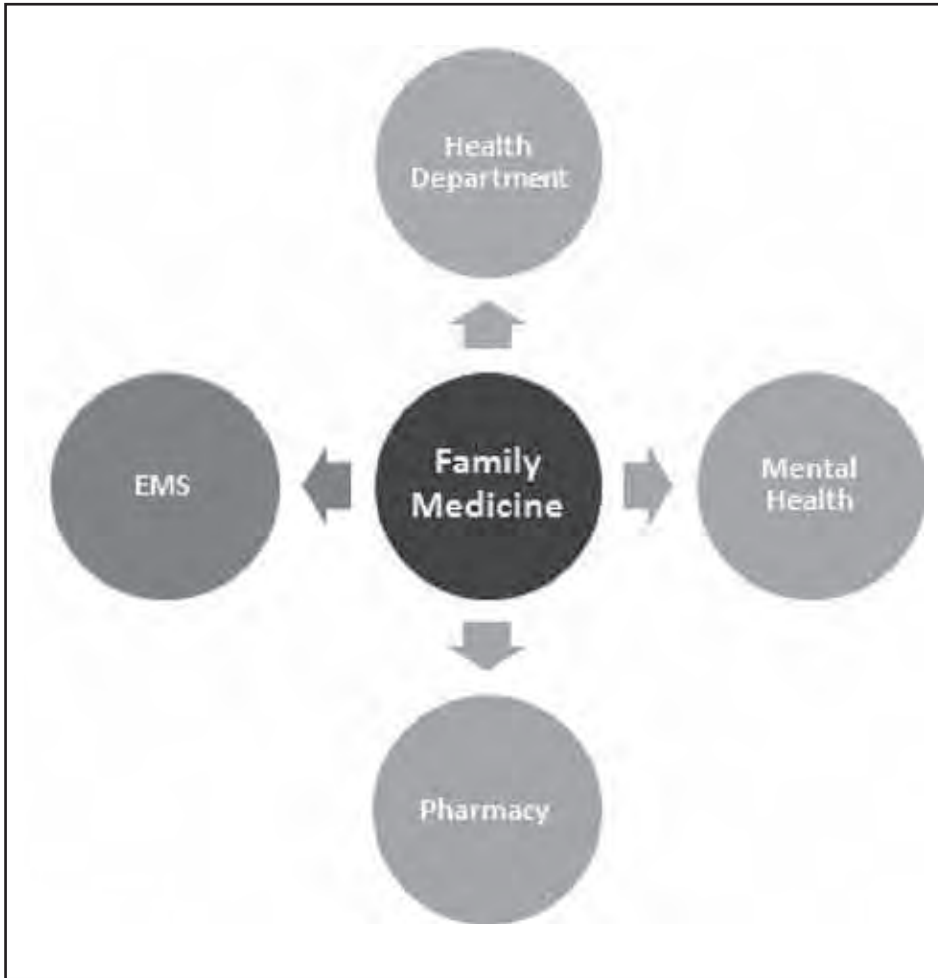
New Models

Several specific rural care models should be considered to expand WV's health care capacity and better meet community needs in areas that have not been reached using the models above. While many of these new models are present in WV or partially being used, most have not been fully developed as part of WV's primary care delivery capacity.

1. The Rural Interdisciplinary Medical Home (RIM) model

The Rural Interdisciplinary Medical Home model emphasizes the need for more comprehensive primary care services in smaller rural communities. The more complete the services offered, the better the quality of care and the easier it will be to recruit health care providers. The RIM model is consistent with the emerging trend in modern practice of "patient-centered medical homes" (PCMH). In PCMH, teams of interdisciplinary health professionals work together to meet patients' needs, manage their care, and offer more coordinated primary care services⁴. PCMH is already being revised and adapted for rural practice^{5,6}.

Regardless of the size of community, a more complete menu of services is desirable and beneficial to deliver high quality primary care. A RIM model in a rural community would include access to pharmacy services, mental health services, public health services, dental care,

Figure 1. *The Rural Interdisciplinary Medical Home model (RIM)*

and primary care physician(s) (Figure 1). For example, a RIM rural community would perhaps have a medical practice office, a branch of the health department, a pharmacy, part-time mental health services, a nearby volunteer emergency medical service (EMS), and other services.

The RIM model offers a plan for recruiting and health planning in rural communities where primary care access is lacking. Patient care for individuals in rural towns is incomplete if the person sees a physician but then cannot get their prescription filled, or cannot obtain counseling for anxiety or depression that often accompanies chronic illness. Further, recruiting physicians to practice in an area without RIM interdisciplinary primary care services available is more difficult, as evidenced by primary care shortages

in 50 of WV's 55 counties (Figure 2). Primary care practice is a web of interconnected services; physician care without a pharmacy or mental health access is incomplete, and hampers effective team care. RIM model communities offer a place for physicians to practice which is much less professionally isolated, regardless of the geography, because a more complete complement of primary care services is available. Physicians and their patients will be much more supported in a situation in which other health professional colleagues are nearby.

2. Spoke and Wheel Model

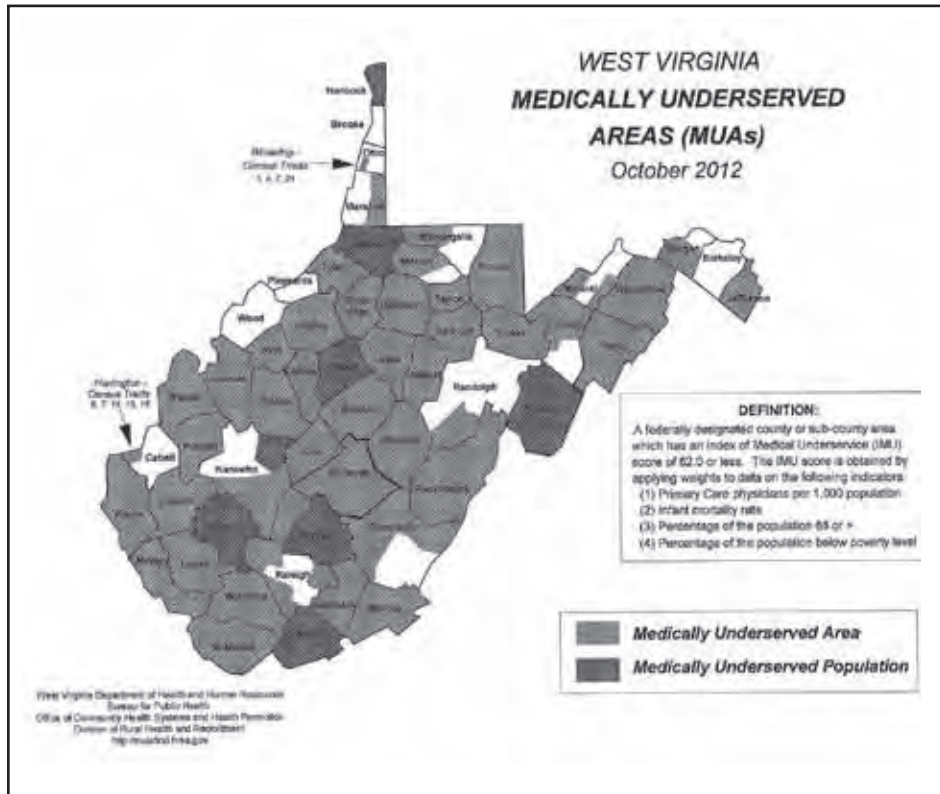
The Spoke and Wheel Model includes a central hospital or medical center and branches of primary care practices in surrounding rural communities. The model is more

than a series of unconnected solo practitioners in isolated communities; the "spokes" are connected by a common practice arrangement, sharing call, and sharing hospital responsibilities (Figure 3). Variations of the model have been used, but all have the common thread of a "distributed" primary care practice in a spoke and wheel arrangement around a central organizational core. The core provides support, funding, and a central meeting place for coordination of care. Hospitals in medium and smaller WV communities could act as the core in the model, promoting coordinated practice arrangements and PCMH/RIM support. The hospital would benefit from providing the hospital care for the patients of the practices, and the practitioners benefit from having a strong connection with other colleagues in the community.

The primary care physicians in such a model would be partnering to provide care in four-five surrounding communities. For example, a practice group might have five physicians and be covering four small rural communities in a distributed area around a central larger community with a hospital. One of the physicians would be a "mobile" practitioner, doing the hospitalist duties for one out of every five weeks, caring for inpatients from any of the four surrounding practices. In the next four weeks, the mobile physician would cover each of the other four practices in the group for a week at a time while the physician from that practice covered the hospital. There would always be one physician at the hospital and one in each practice. The mobile physician would be a combination hospitalist and locum tenens-type practitioner, while each of the other physicians would spend four of every five weeks in their community, and one of five weeks covering the group's hospital practice.

This arrangement offers several advantages. Despite being separated up to 50 miles or more in different communities, the physicians in

Figure 2. Medically Underserved Areas in West Virginia, by county. The shaded areas are federally designated county or sub-county areas which have an index of Medical Underservice (IMU) score of ≤ 62.0 . The IMU score is obtained by applying weights to data on the following indicators: (1) primary care physicians per 1,000 population; (2) infant mortality rate; (3) percentage of the population ≥ 65 ; and (4) percentage of the population below the poverty level.



this model are partners, working together, and have a much greater sense of coordination and community. Recruiting and retention in this model are likely to be much greater than in a model of recruiting to individual practices in individual communities, as evidenced by the North Carolina Office of Rural Health experience with this model in previous years. Another advantage is the reduction in daily travel to provide hospital care. While one of the partners travels to the hospital each day, the other practitioners are able to stay in the communities rather than travel to the hospital for daily rounds, resulting in one person doing the daily travel instead of four-five individuals doing so. Coordination, retention, and more efficient travel and hospital coverage make this an attractive model for West Virginia's rural communities.

3. Medical Center/ Community Linkages

Linking communities with regional university medical centers represents a growing strategy of addressing WV's rural healthcare needs. This model is characterized by a variety of practice arrangements and affiliations between community hospitals, practitioners, and medical schools/centers. In some communities, the medical center has assisted in recruiting a needed primary care or specialty practitioner for a specific rural area. In other communities, university medical centers have offered teaching affiliations to rural providers. Such affiliations provide academic as well as clinical support, learning opportunities for medical students and other health professional students, and opportunities to

link with academic colleagues in clinical or research initiatives.

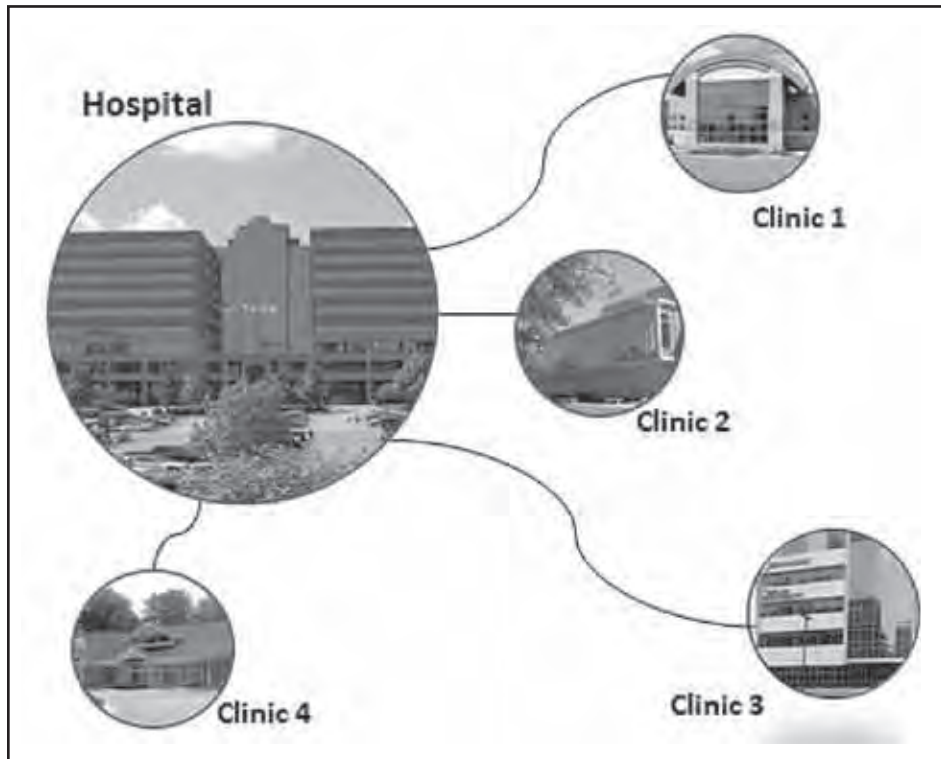
University/community linkages provide several advantages in meeting the needs of rural West Virginia. Some examples include Marshall University Family Medicine offices in Barboursville and Lavalette and West Virginia University's expansion of their medical campus in Harper's Ferry and Martinsburg. More such community offices and outreach are needed, because such medical center/community linkages serve both to expand training of medical professionals and to serve community healthcare needs. Such expansions need to be done in partnership with existing practitioners and hospitals in a supportive and capacity-building way and not as competition for rural patients. With appropriate relationship-building and partnership, university medical centers can reach out to rural communities in a collaborative and mutually beneficial way.

4. Rural Outreach through Technology

Technology, e-visits, and telemedicine have the potential to facilitate the delivery of health services to rural areas. A variety of teletechnology applications are emerging including telemedicine for specialty outreach to rural areas, home telehealth, critical care telemedicine, health screening via e-mail/web service, teleradiology, and even e-visits^{7,8}. Clinical problems have been the focus, and have included psychiatry, dermatology, heart failure management, and stroke care. Many of the technology applications are success stories, such as extending the reach of health services into frontier areas of Montana using telemedicine⁹ while others demonstrate a mixed picture, such as increased prescribing of antibiotics for common illnesses.⁸

The applications and reach of these technologies are expanding daily. Many of these technologies are attractive and offer promise

Figure 3. The Spoke and Wheel Model. The physicians are partners even though they are in different communities. They share call, cover each other's patients in the hospital, and they meet regularly for quality improvement activities to enhance patient-centered medical care.



in certain situations, including consultations. Some of the new technology complements care. But despite the amazing capabilities of the web, handheld devices, and home teleapplications, none of these technologies will replace rural primary care services delivered face-to-face by a team of health providers. The overriding need in rural communities is for comprehensive, coordinated, continuity-based care, a type of care that is best provided by a team of physician-led health professionals.

5. Part-time Physician Care

The model of using part-time physician care by a variety of health providers instead of a single provider or group of providers is a "second-best" option, but one that should be considered for some rural areas in West Virginia. The concept is to provide at least some physician service to a community as opposed to having none at all. Some counties that

are chronically designated as health personnel shortage areas may be able to meet the needs of the community using several part-time primary care providers. The providers in this model may come from other larger communities nearby, and may provide services in a smaller community for one-two days a week. A series of such part-time providers from different communities might be able to provide healthcare services for up to five days a week in a small rural community. The National Health Service Corps or state government could consider supplying partial loan repayment funding to several providers to work one day a week in a community, which could add up to one full-time provider.

The model offers the advantage of access to primary care to a rural community that has not had such care. The disadvantages include a loss of continuity and coordination of care. However, in place of no care, the model offers some service, and with

the use of electronic medical records and regular communication between providers, may offer a reasonable model of care in places that cannot support a full time physician.

6. The Role of Area Health Education Centers

Established in 1972 under section 781 of the Public Health Service Act, the National Area Health Education Centers (AHECs), are designed to assist health professional schools improve the distribution, supply, quality, utilization and efficiency of health professionals in rural and underserved communities through the efficient use of regional educational resources. Since its inception, the 235 Centers across the country have greatly contributed to addressing the training and placement of health professionals.

However, more needs to be done. The nation has approximately 100,000 primary care doctors, but will need approximately 39,000 more family physicians by 2020 to replace retiring physicians and expand services to accommodate the aging population⁹. Another study completed in 2008, predicts that population growth and aging will result in a deficit of up to 44,000 adult care generalists physicians by 2025.¹⁰ These statistics illustrate the particularly daunting challenges facing WV, a state with a population among the oldest in the nation.¹¹

West Virginia University's AHEC program is a significant asset when considering the models of care mentioned above. WVU's AHECs have established the relationships with rural communities and providers necessary to expand rural development and contribute to the recruitment of health providers. A significant objective of the state's medical schools, in collaboration with the AHEC program, is to increase the number of students and family medicine residents' choosing rural primary care practice by providing them opportunities to

learn directly from a rural, primary care practitioner. The most recent mid-year report submitted to the WV Higher Education Policy Commission clearly shows that health professions students are spending valuable educational time in rural communities. Early exposure to rural communities in medical training can lead to meaningful recruitment opportunities and in the case of residents, contracts for employment upon graduation. So far, this exposure alone has not been enough to meaningfully impact WV's healthcare disparities.

WV AHECs will need to expand their role and partnerships with communities to coordinate the adoption of the above new rural healthcare models. The RIM model, spoke and wheel, University, and part-time physician models require administrative, technical and logistic support. With such support, new healthcare infrastructure can blossom and new recruitment opportunities can be realized.

Barriers to success need to be overcome, including issues of poor compensation for primary care physicians relative to other specialties, geographic realities, and administrative challenges of working with many different

hospitals, practitioner groups, and government agencies. However, while progress on some of these issues, such as compensation, will likely be slow, we in WV should move ahead in areas where we can work together at the state, local and regional level to try new solutions to address the persistent rural health access problem.

In summary, new models of delivering rural healthcare services may be beneficial for improving West Virginia's long-standing health disparities and persistent health professions shortages. Further refinement of the models will occur as development progresses. Lack of perfect solutions should not deter us from action. We recommend moving forward on one or all of these fronts in the near future. Rural health research programs, pilot programs, foundation involvement, and state initiatives need to be explored to promote the development of the innovative models discussed above, to determine which are most effective in reducing disparities and attracting new health professionals to meet West Virginia's needs.

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CME POST-TEST

16. Which of the following is not a proposed model for expanding rural primary care in WV?
 - a. the rural interdisciplinary medical home model;
 - b. the spoke and wheel model;
 - c. the solo practice community model;
 - d. technology-based outreach modalities, such as tele-health;
 - e. part-time physician care
17. In the spoke and wheel model, what is the minimum number of practitioners that would be recommended to cover five rural practices?
 - a. 1
 - b. 2
 - c. 4
 - d. 6
 - e. 8
18. In the rural interdisciplinary medical home model, which of the following are recommended to be included for healthcare in a rural community?
 - a. A pharmacy
 - b. A physician
 - c. A mental health provider
 - d. A health department branch
 - e. All of the above

Inter-Hospital Transfers from Rural Hospitals to an Academic Medical Center

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Abstract

INTRODUCTION: The need for inter-hospital patient transfers from rural hospitals, especially Critical Access Hospitals, to larger, more urban hospitals is predictable considering the limited resources at rural hospitals. No systematic study of the inter-hospital transfers themselves has been published. The aim of this retrospective descriptive chart review was to provide a preliminary look at inter-hospital transfers from rural hospitals to a more urban, academic medical center in West Virginia. Ultimately, the creation of an agenda for further research was in view.

METHODS: A list of study participants was generated from the academic center's electronic health record database. Study participants were patients who had been transferred for acute care, from November 2011 through June 2012, to the receiving hospital from another acute care hospital and had been under the care of the family medicine teaching service.

RESULTS: One hundred and thirty-eight patient transfers were included. Medicare was the most common source of health insurance coverage but over a third of the patients were uninsured. Only five of the twenty-four referring hospitals were Critical Access Hospitals. Four institutions alone initiated 49.3% of

transfers. Nineteen specialty services were sought with critical care and neurology accounting for 53.9% of requests. Stroke or stroke-like presentation was the most common transfer diagnosis. 24.6% of transfers were transferred for services that were available at the transferring facility.

CONCLUSIONS: This study has suggested an agenda for further research that includes replication and analysis of the data with larger study samples as well as qualitative research into the transferring physicians' decision-making process.

Introduction

The need for inter-hospital patient transfers from rural hospitals to larger, more urban hospitals is predictable considering the limited resources at rural hospitals.¹⁻³ In fact, increased inter-hospital transfers of trauma patients has been viewed positively as evidence of successful implementation of a statewide trauma system.⁴ The need for inter-hospital transfers might be particularly acutely felt at Critical Access Hospitals (CAH). These small hospitals (with a maximum capacity of 25 beds) located in rural or poorly accessible areas are supported by cost-based Medicare reimbursement under the provisions of the Balanced Budget Act of 1997.^{5,6}

However, skeptical scrutiny has also been directed at various aspects of inter-hospital transfers from small, rural hospitals. The risks of transportation of critically ill patients have been highlighted.⁷ A study of differences in outcomes

between trauma patients transferred from outlying hospitals and those directly admitted to the receiving hospital found none, a fact that could either point to the benefits of transfers or undermine their necessity.⁸ This latter interpretation appears to have been the conclusion of a retrospective chart review that determined that patients transferred for acute myocardial infarction care were younger and less ill than those who were not transferred.⁹

Again, there was no difference in mortality between the patients cared for in a rural hospital and those cared for in an urban hospital. The necessity of transfers of non-critically ill children to tertiary care pediatric emergency departments has also been questioned.¹⁰ Furthermore, one rural academic center has pointed to referral bias on the part of transferring physicians at outlying hospitals in explaining a disproportionately high referral rate of patients with intra-cerebral hemorrhage.¹¹ The use of telemedicine technology has been studied as a means of avoiding the transfer of rural emergency department patients.¹²

However, there are no published reports in which the nature and patterns of inter-hospital transfers themselves have been systematically studied. The aim of this retrospective, descriptive chart review was to provide a preliminary look at the reasons for and nature of

Objectives

The aim of this paper is to report the results of a retrospective, descriptive chart review examining the reasons for and nature of inter-hospital transfers from rural hospitals in the tri-state region of West Virginia, Ohio and Kentucky to a more urban, 303-bed academic medical center in Huntington, West Virginia (population 49,138). This review's findings are to be viewed as preliminary and as a guide to further research into this aspect of rural healthcare, particularly in West Virginia.

inter-hospital transfers from rural hospitals in the tri-state region of West Virginia, Ohio and Kentucky to a more urban, 303-bed academic medical center in Huntington, West Virginia (population 49,138). These preliminary findings are intended to guide further research into this aspect of rural healthcare, particularly in West Virginia.

Methods

Institutional Review Board (IRB) approval was obtained. A list of study participants was generated from the academic center's electronic health record database. Study participants were patients who had been transferred for acute care, from November 2011 through June 2012, from another acute care hospital. During this time period there were approximately 2,000 patients transferred to the academic center as a whole. However, only those patients who were, at some

point during their admission, under the care of the acute care family medicine teaching service, one of three main adult medicine services, were included. Of these patients, those who were transferred in order to maintain continuity of previously provided care and those transferred in response to patients' requests were excluded.

One of the investigators (MMG) reviewed each study participant's chart, including accompanying documentation from the transferring facility. The following information was extracted: the patients' demographic characteristics, primary health insurance, attachment to a primary care physician, the specialty service for which they were transferred and whether or not the service was provided at the receiving hospital. Services were recorded as not having been provided only if this applied to all of the services requested for a

given patient. In addition, data was collected regarding diagnoses, more than one diagnosis per transfer being recorded when appropriate. The concordance between the diagnoses assigned at the transferring hospital and those assigned by the receiving hospital's physicians upon admission and at discharge was examined. Each patient's length of stay was also recorded. The extracted data was subsequently examined for accuracy and consistency by the other investigator (DN).

In addition, this latter investigator spoke by phone with an administrative or management staff member at each of the transferring institutions to determine the availability at that institution, during the study period, of the specialty services for which patients had been transferred. A service was considered available only if coverage was assured without interruption. Critical care services were counted



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Table 1: Twelve Most Frequent Single Primary Transfer Diagnoses

Primary Diagnosis	Frequency	% Total
Stroke or stroke-like presentations	21	15.2
Hip Fracture	9	6.5
Gastrointestinal bleeding	9	6.5
Seizure	9	6.5
Pneumonia	8	5.8
Renal failure	6	4.3
Respiratory failure, cause unspecified	6	4.3
Undifferentiated Symptoms	6	4.3
Dental abscess	5	3.6
Drug overdose	5	3.6
Altered mental status, cause unspecified	5	3.6
Sepsis	5	3.6

Table 2: Description of transferring hospitals

Transferring Hospital	No. of transfers	Distance away ¹	Travel Time ²	Beds	Local Population
1	25	76	1.5	166	3,255
2	22	67	1.5	132	574
3	11	64	1.25	72	3,459
4	10	31	0.75	70	6,284
5	9	81	1.75	148	602
6	7	50	1	222	20,226
7	6	75	1.25	25	3,076
8	6	38	0.75	90	2,467
9	5	47	1	266	3,641
10	4	23	0.5	214	21,684
11	4	45	1	101	4,350
12	4	102	2	261	6,903
13	4	85	1.75	25	634
14	3	107	1.75	300	17,614
15	3	87	1.5	25	3,252
16	2	158	2.5	240	10,447
17	2	21	0.5	465	21,684
18	2	99	1.75	25	2,322
19	2	100	1.75	25	7,730
20	2	135	2	53	3,572
21	2	69	1	159	6,845
22	1	45	0.75	231	13,450
23	1	81	1.75	76	3,191
24	1	95	1.5	42	6,895

¹Measured in miles. ²Measured in hours.

only if critical care specialist coverage was continuous. Finally, other characteristics of the referring hospital were examined. The number of beds at the transferring hospital was determined by review of its website or during interview of a hospital administrator or by consulting the online databases of the West Virginia Department of Health and Human Resources (<http://www.wvdhr.org/ohflac/FacilityLookup/default.aspx>) and the Kentucky Hospital Association (<http://info.kyha.com/KHADBS/hospitals.asp>). The distance of the quickest route from each hospital to the receiving hospital in miles and in driving time (rounded to the nearest quarter of an hour) was determined by using Google Maps. The population of the town in which the facility was located was obtained from the United States Census Bureau’s online database at <http://quickfacts.census.gov/qfd/index.html>.

The study was designed and approved only to examine the records of those transferred patients who were cared for by the academic family medicine service. For this reason and because the study sample was relatively small in comparison with the total number of transfers analytical statistical methods were deferred. Instead, descriptive methods were used.

Results

One hundred and thirty-eight patients were included in this study. Sixty (43.5%) were male and their average age was 46.5 years with a range from 18 to 89 years. Pediatric patients, obstetrical patients and trauma patients transferred from other hospitals would not typically be cared for under the family medicine service. Less than half (45.6%) of the patients were attached to a primary care provider. Medicare was the most common source of health insurance coverage (45%) but over a third (36.2%) of the patients were

Table 3: Description of specialty services for which patients were transferred

Specialty Service Sought	Frequency Service Sought	Frequency Service Provided
Critical Care	50	98.0%
Neurology	33	90.9%
Neurosurgery	12	83.3%
Orthopedics	11	91.0%
Gastroenterology	8	100%
General Surgery	8	87.5%
Oral Surgery	6	100%
Otolaryngology	5	100%
Medical Management	4	100%
Dialysis	3	100%
Ophthalmology	3	100%
Urology	3	67%
Oncology	2	100%
Burn Care	1	100%
Pulmonology	1	100%
Endocrinology	1	0%
Cardiology	1	100%
Medical bed	1	100%
Infectious Disease	1	0%
SERVICES ABOVE COMBINED	154	76.1%

uninsured. 18.1% had commercial insurance and only 0.7% were Medicaid recipients. In 96.4% of the transfers there was agreement between the discharge diagnosis at the referring hospital and the admitting diagnosis assigned at the receiving hospital. However, there was concordance between the discharge diagnosis at the referring hospital and the discharge diagnosis at the academic center in only 77.5% of cases. When each transfer was considered in terms of a single primary diagnosis, twelve of the forty-three diagnoses accounted for over two-thirds (68.1%) of the transfers (Table 1). Strokes or stroke-like presentation comprised 15% of the total. The average length of stay was 4.25 days. Two of the patients, both in their early 70's and who were both transferred for non-specific

respiratory complaints, died at the receiving hospital after two-week stays. One was ultimately diagnosed with non-Hodgkin's lymphoma and the other with pulmonary embolus and subsequent cerebral infarction.

The study participants came from twenty-four acute care hospitals in the tri-state area of West Virginia, Kentucky and Ohio (Table 2). They ranged in size from 25 to 465 beds and five of them were Critical Access Hospitals. Two institutions alone accounted for over a third (34%) of the transfers and four initiated almost half (49.3%) of them. The median number of transfers per institution was four. The referring facilities were between 21 and 107 miles distant from the academic center (median: 75.5 miles) and driving times did not exceed 2 hours for any transfer (average: 1.36 hours). The locations

of the transferring hospitals all had populations below 25,000 with the median population being 3,996.

There were nineteen specialty services for which patients were transferred (Table 3). Occasionally, more than one service was sought for a given patient. Critical care and neurology, the two most frequently sought specialty services, accounted for over half (53.9%) of the requests. When neurosurgery and orthopedics were added, these four specialties accounted for over two-thirds (68.8%) of the specialty needs of the transferred patients. While these specialty services were almost always provided in the care of the patient at the receiving hospital, in slightly over 10% of instances the primary team caring for the patient did not obtain the specialty service for which the patient had been transferred. Also, almost one quarter (24.6%) of transfers were transferred for services that were available at the transferring facility.

Discussion

The data collected in this descriptive retrospective chart review shows some notable patterns and presents many important questions. These questions might be helpful in fueling and directing research into healthcare in rural West Virginia.

First, none of the four institutions from which almost half the transfers came were Critical Access Hospitals. In fact, patients transferred from the five Critical Access Hospitals taken together, comprised only 12.3% of the total number. Why were Critical Access Hospitals so underrepresented in this data? Furthermore, why is it that a few hospitals made disproportionately large contributions to the total number of transfers? These hospitals were not significantly closer than the Critical Access Hospitals and in several instances were considerably larger. To what extent might advertising by the receiving

institution or personal preferences of the transferring physicians for that institution be playing a role?

Second, the data on desired specialty services and on transfer diagnoses highlighted particular demand for a few specialties. If this data is consistently reproduced it might help identify priorities in terms of recruitment and retention of certain specialists and also with regard to the educational needs of primary care physicians in the referring hospitals. It is intriguing that in approximately one out of four cases patients were transferred for services that appear to have been available at the transferring hospital. It is possible that the data collected in this regard is not accurate since it was provided by hospital staff during a telephone conversation and concerned a global period of time rather than a specific point. This method is subject to errors due to faulty perception and recall bias. Nevertheless, the telephone interview also offered the opportunity to clarify responses, thereby potentially increasing accuracy. It is reasonable, therefore, to ask why these apparently unnecessary transfers were made. Perhaps the stated reasons for transfer found in

the patients' charts were not always accurate or complete. Again, the transferring physicians' personal affinities for the receiving institution might be relevant. Alternatively, the reason for the transfer might stem from the transferring physicians' lack of confidence in services at the originating hospital or in their own ability to correctly discern the need for these services or appropriately manage the patients even after these services had been obtained. Some hint of the clinical ambiguities involved is reflected in the average length of stay being greater than 4 days and in the observation that, in almost one case out of four, the admitting diagnosis and the discharge diagnosis at the receiving hospital did not match. Might targeted education and training for primary care and emergency department physicians working in rural hospitals alleviate some of this angst, if it exists?

Third, the characteristics of the patients transferred warrant attention. Though from a wide age range, the patients tended to be relatively young. It is conceivable that greater pressure to avoid an undesirable outcome might have come to bear on the referring

physician in the case of younger than older patients. Yet, is this really the case? The sizeable proportion of uninsured patients is likely, at least in part, connected with the fact that younger patients would not usually be eligible for Medicare. However, what accounts for the extreme paucity of patients with Medicaid coverage? Given the general socioeconomic status of the tri-state region, it is reasonable to conjecture that there might be at least as many Medicaid beneficiaries as uninsured patients in need of transfer.

This study has several limitations, the most fundamental being that it is only an indirect examination of inter-hospital patient transfer from rural hospitals. To study these transfers more directly data might have been collected from observations made at the referring hospitals instead of at the accepting hospital. Further, qualitative research methods would have been ideally suited to understanding the transferring physicians' decision-making process.¹³ Secondly, the validity of this study's results might have been improved with a larger sample. The current sample comprised about 7% of the total number of transfers to the receiving hospital during



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the study period. Also, the sample was missing trauma, pediatric and obstetric patients. A larger, broader sample would have enabled robust statistical analysis. Finally, the accuracy of the data collected from the chart review and the telephone interviews of hospital staff might have been decreased by the lack of consistent, standardized means by which the desired data were stored in the charts and by the hospital staff.

Despite all these limitations, however, this study has achieved its intended goal. It has provided a preliminary look at a very important aspect of rural healthcare disparities. In doing so, it has suggested an agenda for further research:

1. Seek to replicate and analyze this data using larger samples from wider settings.
2. Employ qualitative research methods at the referring rural hospitals particularly focusing on the transferring physicians' decision-making process.
3. Explore the potential impact on inter-hospital transfers of focused, learner-directed continuing

medical education and distance consultative support for primary care and emergency department physicians at rural hospitals.

4. Consider the potential results of special incentives for the recruitment and retention of selected specialties to rural hospitals based on inter-hospital transfer patterns.

It is to be hoped that on the other side of this research lies better health for rural West Virginians and wise stewardship of healthcare resources to achieve it.

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CME POST-TEST

19. What are Critical Access Hospitals?

- a. Rural academic medical centers which receive patient transfers from outlying hospitals
- b. Small rural acute care hospitals that receive cost-based Medicare reimbursement
- c. Urban acute care hospitals that serve impoverished, underserved populations
- d. Urban tertiary care facilities that receive critically ill patients from outlying hospitals

20. What is known about why patients are transferred from rural hospitals to more urban hospitals?

- a. Patients are sometimes transferred for specialty services that are available at the transferring facility
- b. Patient care outcomes are consistently worse for transferred patients than for those who are not transferred
- c. Transferred patients are more critically ill than those who are not transferred
- d. Transferred patients consistently receive the specialty services for which they were transferred

21. What characterizes the current state of the research into inter-hospital transfers in rural United States?

- a. Methods to reduce the transfers have not been explored
- b. The benefits of the transfers are undisputed
- c. The risks associated with the transfers have not been examined
- d. The transferring physician's decision-making process is poorly understood

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Cost-Savings Analysis of Telemedicine Use for Ophthalmic Screening in a Rural Appalachian Health Clinic

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Abstract

Life in mountainous, rural areas poses unique obstacles for ophthalmic care-- notably, a lack of access to ophthalmologists and cost of care. Using telemedicine as a screening tool addresses both issues for diabetic retinopathy (DR) screening, as fundus photography has been determined to be sensitive and specific when screening for DR.^{1,2} The American Diabetes Association places a Grade E recommendation on fundus photography as a screening tool.³ We analyze the financial impact of ophthalmic telemedicine in a mountainous, rural health clinic in West Virginia over a seven year period from 2003-2009. At-risk patients are screened with a fundus camera during routine clinic visits, and the image is interpreted off-site by an ophthalmologist. Patients are either advised to follow up yearly or receive an immediate ophthalmic referral. Considering the number of patients screened, travel costs, work missed, overhead, and billing considerations yields a savings of \$153.43 per patient visit.

Introduction

The town of Gary is located in McDowell County along the banks of the Tug Fork River in southern West Virginia. Gary is a former coal mining company town, established by U.S. Steel, which has seen its economy suffer drastically with the ceasing of the company's activities in the area in 1986. Although rich in natural beauty, Gary is an economically depressed area, with few opportunities for employment. Just 18.2% of Gary's working age citizens find work for one week or more annually compared to the rest of the state.⁴ The 2010 U.S. Census data peg Gary's population at 937,⁵ with 27.8% of the population living below the poverty line.⁶

The overhead involved to establish an ophthalmologic practice, the small population base of Gary, and the high rates of joblessness create an unfavorable situation for the citizens of Gary to receive local ophthalmic care. Therefore, it is imperative to find a solution to reduce cost while mitigating the difficulties encountered in transportation to the nearest ophthalmologist.

Telemedicine screenings offer a solution to the paired issues of cost and remoteness by using technology to bridge distances between patient and ophthalmologist at a reduced cost.

The telemedicine screenings are conducted on site at the Tug River

Medical Center (TRMC) in Gary by a nurse who handles general clinic duties as well as the telemedicine screenings. She offers screening to select patients based upon individual patient characteristics. Fundus photos and intraocular pressures measured with a Tono-pen are taken of diabetics, those with family history of glaucoma, and/or visual complaints in which the nurse suspects a retinal problem. Patients whose screening results require an ophthalmology visit are referred to an ophthalmologist in the Bluefield, WV area, which is one hour away by car.

Methods

We conducted a cost savings analysis from the perspective of a telemedicine screening system which is composed of parts which do not exist in a vacuum. That is, some components of the system are co-opted from pre-existing uses and therefore these aspects of the system have fixed costs which would exist with or without the screening system. Thus, we do not consider these fixed costs in the analysis. However, some components of the system have been created specifically for the screening system and their costs and benefits are included in the analysis. When considering the costs and benefits to the telemedicine screening system in place, our model exists within the framework

Objectives

Our primary study objective was to determine the cost effectiveness of telemedicine screening in a remote, mountainous rural area in southern West Virginia. We then sought to quantify the savings or cost to the medical system. We sought to consider the number of patients screened, travel costs, work missed, and billing considerations. We hope the results of this paper will serve to strengthen the healthcare infrastructure of West Virginia.

of healthcare-related spending when considering net financial detriment or benefit to society.

The costs we did consider included the cost to pay the ophthalmologist for interpreting the screening image, the purchase price of the fundus camera, and the costs associated with a positive screening result which required a referral to an ophthalmologist. When a referral was generated, we included the cost generated by the additional screening step rather than a direct referral. These costs were additional costs on top of the regular operation of the components of the screening system.

Our savings estimations are based on the fact that all patients who were screened had an indication for ophthalmic screening which would have otherwise required a trip to an ophthalmologist. The savings to the screening system were projected considering travel costs, costs generated from missed work, and the Medicare rate for a standard binocular screening exam.

When accounting for travel, we considered that the fundus camera photo was taken when the patient was already in the clinic for a general health appointment and thus we did not need to factor in the cost of the clinic visit or clinic overhead as it was a fixed expense. We considered the savings gained from not having to make an additional appointment to see the nearest ophthalmologist in Bluefield, WV--34 miles and a one-hour drive away. We multiplied the number of patients by the WV State Travel Management Office mileage rate. Then, we multiplied the result by the minimum wage (\$7.25 per hour) based on time taken off from work to make the two hour round trip from the TRMC at Gary, WV to Bluefield, WV and a two hour ophthalmologist visit. Travel and missed work for patients who had an indication for ophthalmic screening,

yet were spared the expenses as a result of the telemedicine screening, yielded a savings of \$28,067.36 over the study period.

Next, we considered the Medicare billing rate for a binocular screening exam, code 99204 of \$154.53 and then subtracted the cost of \$10 to pay an off-site ophthalmologist to read the fundus photograph, which yields of savings of \$144.53 per patient without a subsequent referral. However, patients who subsequently needed a referral were counted as a cost to the screening system as an additional \$10 per patient screened.

On the expense side, we factored in the cost for a comparable camera to the Topcon TRC-NW6S Non-Mydriatic Retinal Camera used at the TRMC. Here, we used the figure of \$21,990, as a new Zeiss Visucam was recently purchased by University Eye Surgeons at Marshall University on open market bidding for this price.

In our analysis, we did not consider items which are already in place therefore were fixed costs with or without the screening system. The screening ophthalmologist's office computer was not considered as a cost to the screening system. Although necessary to view the fundus images, the computer is not considered an added cost to the system since maintaining the computer would still be required to comply with the job requirements of the ophthalmologist's regular office functioning. Additionally, although a busy ophthalmic practice may find retaining an on-site photographer beneficial due to the quantity of patients who need to be photographed, we did not factor in cost of training a photographer. A general health clinic, such as the Tug River Medical Center, may find that cross-training of staff members for fundus photography is sufficient as minimal training is needed in order to obtain quality

Table 1. Sum of the total USD saved in travel plus the total USD saved due to missed work plus the savings derived from lower billing to the patient. 659 total patients screened.

7 year gross savings	\$95,129.28
Fundus camera	\$21,990.00
Additional Costs	\$1,950.00
Total 7 yr savings	\$71,189.28
Average savings per patient	\$153.43

fundus photographs.⁷ As shown by the number of patients who were screened over a seven year period, the volume of patients who required fundus photography was small enough to allow for cross-coverage.

Results

Six hundred fifty-nine total patients were screened. Three hundred seventy-one patients had their fundus photos interpreted as normal, no referral needed. Two hundred eighty-eight patients had an abnormality reported on their fundus photos, but 93 patients did not require a referral, thus sparing a trip to the nearest ophthalmologist. In total, 464 patients were screened but did not require a trip to the ophthalmologist.

Based on the number of patients, the seven year period saw a savings of \$153.43 per patient and a total seven year savings of \$71,189.28 as shown in Table 1. Factoring in a billing cost per patient of \$10 versus the 99.204 Medicare billing rate of \$154.53 for the patients who did not require a referral, the savings in billing costs alone was \$34,978.57. As indicated in Table 2, years in which

Table 2.

Telemedicine Savings Project			
Year	n Patients*	USD Saved in Travel†	USD Saved in Work Missed‡
2003	36	\$1,133.64	\$1,044.00
2004	143	\$4,503.07	\$4,147.00
2005	91	\$2,865.59	\$2,639.00
2006	70	\$2,204.30	\$2,030.00
2007	50	\$1,574.50	\$1,450.00
2008	22	\$692.78	\$638.00
2009	52	\$1,637.48	\$1,508.00
	Total Patients	Total USD Saved in Travel	Total USD Saved in Missed Work
	464	\$14,611.36	\$13,456.00

* n Patients = eyes read as “normal” plus “abnormals” with no referral needed

† (Round Trip Distance from TRMC, Gary to Bluefield Ophthalmologists) * (WV State Travel Management Office official mileage reimbursement) * (number of patients in the year) That is, USD Saved in Travel = (67 miles) * (\$0.47) * (n patients)

‡ USD Saved in Missed Work = (2 hr round trip driving time + 2 hr office visit) * \$7.25/hr WV minimum wage * (n patients per year)

more patients required screening yielded a larger amount of savings.

Discussion

With the cost of healthcare to society becoming an ever larger discussion, policy makers will be searching for ways to maintain the quality of healthcare while reducing its cost. Telemedicine promises to fill an important niche to bridge the gap between maintaining a highly-trained physician workforce and connecting that workforce to patient populations in remote areas of the country and world. As refinements are made to the technology involved with telemedicine, it will undoubtedly grow into a role as a future development becoming important to ophthalmology, as well as other specialties.

As with any study which attempts to create a model of a system, we had to create reasonable starting points and rules for simplification that are not exactly consistent with the

complexities of real-world system. We did not factor into our analysis the cost of some unknown factors such as missing a diagnosis and resulting sequelae such as increased morbidity and perhaps cost. The major hindrance to investigating the false negative rate and false positive rate and resulting clinical outcome was the lack of documentation from the ophthalmologists who received a referral from the primary care clinic. The lack of communication between the ophthalmologists and the primary care clinic also means we could not factor in the number of patients who may have been false positives and therefore resulted in unneeded ophthalmic referrals and subsequently increased cost.

Although we could not accurately measure the cost from false negatives, we did consider the impact of false positives upon the screening system. When running our analysis with the scenario that every referral was a false positive, our analysis still

yielded a seven year net savings of \$29,260.48, or \$44.40 per patient screened, including both referred patients and non-referred patients. In the 100% false positive scenario, we accounted for the same factors as previously outlined, but we counted referrals as costs to the screening system. That is, travel, missed work, the standard Medicare billing rate for a binocular screening exam, and the cost of the telemedicine screening were additional costs to the system.

Although not knowing the exact sensitivity and specificity of the telemedicine screening creates some limitations in our analysis, previous studies have found the use of fundus photography as a screening device to be highly sensitive and specific. Scanlon et al 2003 found a sensitivity of 86% and a specificity of 77% when examining a population of 3611.¹ Ruamviboonsuk et al 2005 examined the sensitivity and specificity of a fundus camera-based screening in rural Thailand and reported a sensitivity of 80% and a specificity of 96% for detecting DR with a sample size of 130.² In light of these studies, we believe our financial conclusions are appropriate estimates.

Additionally, our analysis of the screening system did not consider the impact of poor patient compliance with screening recommendations. We considered an ideal system in which every patient who is referred then takes time from work to travel and follow up with the physician. Perhaps balancing this discrepancy in our analysis in which we included every referral generated by a telemedicine screening as a cost due to 100 percent follow up rates as well.

More studies will need to be done to continuously refine telemedicine’s role in ophthalmology. Other specialties may also find the use of fundus photography beneficial for patient care. The use of fundus screening by primary care physicians and endocrinologists has been

studied and the results indicate positive outcomes.^{8,9} However, the gold standard for eye care remains a dilated fundus exam by an eye care provider. In light of this, the authors are planning a study of the sensitivity and specificity of the telemedicine project. This study will use patients who agree to have telemedicine screening performed and calibrated against the gold standard slit lamp exam.

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CME POST-TEST

22. The type of area in which this analysis examined the use of ophthalmic telemedicine is a small town of under 1,000 people in southern West Virginia with a high poverty rate and high jobless rate which is not served by a local ophthalmologist.
 - a. True
 - b. False
23. Why might integrating fundus photography be a fairly simple process for a remote general health clinic with no nearby ophthalmologist?
 - a. Training to mastery of fundus photography requires relatively few patients and low hours. After 10 patients and an hour of practice time trainees showed equivalency with a 20 year veteran fundus photographer.
 - b. Staff can cross train and operate the fundus camera in conjunction with general clinic duties.
 - c. The clinic can use a regular digital camera without actually purchasing a fundus camera
 - d. a & b are correct
 - e. a, b, & c are correct
24. What were the financial benefits to a system which uses telemedicine screenings for a general health clinic?
 - a. no financial benefit was noted--the main benefit was increased patient compliance
 - b. \$55 per patient visit
 - c. \$153 per patient visit
 - d. \$200 per patient visit
 - e. no benefit of any kind was noted

Thinking Outside the City: Treating Patients with Disordered Eating in Rural West Virginia

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Introduction

Across the nation, many patients with clinically significant disordered eating behaviors, thoughts, and attitudes do not receive the care they need.¹ Obesity's jump to the forefront of the West Virginia public health agenda has placed increased emphasis on disordered eating. Despite this focus and improvements in treatments and delivery, citizens of West Virginia continue to face significant challenges accessing adequate care. This article presents both barriers to implementing evidence-based treatment for patients with disordered eating and specific solutions to these problems for healthcare providers across the state.

Disordered eating occurs across a spectrum of severity. Common factors include emotional and cognitive components (e.g., body

image, values about one's shape/weight) in addition to behavioral and medical components (e.g., body mass index, nutrition status, bingeing, purging, other compensatory behaviors).² Patients with eating disturbances may meet criteria for multiple eating disorders across their lifespan; for instance, diagnostic crossover is frequent, both from anorexia nervosa (AN) to bulimia nervosa (BN) [8%-54%]^{3,4} and from BN to AN [4%-27%].^{4,5} Premorbid obesity is common in individuals who develop AN (7-20%) and BN (8-40%)⁶ and binge eating disorder (BED) is often comorbid with obesity (over 33%).⁷ Refer to Table 1 for a list of eating disorder diagnoses in the DSM-IV-TR.⁸

Eating disorders have serious medical and psychological health consequences including malnutrition, hypotension, suicide and electrolyte imbalances. Individuals with AN, BN, or eating disorder not otherwise specified (EDNOS) are at increased risk of death compared with their age and gender matched peers.⁹ Only one-third of people with AN and an even smaller fraction of those with BN receive mental health care.¹⁰ Disordered eating behaviors function to help individuals achieve desired weight loss or

weight maintenance. Therefore, individuals with eating disorders often underreport or even disguise their symptoms to their social support networks and healthcare providers.¹¹ Providers rarely screen for disordered eating behaviors (e.g., binge eating, skipping meals, severe calorie restriction, purging) which may contribute to the low rates of diagnosis and treatment.¹² Early diagnosis and engagement in a specialty, multidisciplinary treatment team is key to help patients achieve optimal outcomes.¹³⁻¹⁵

Barriers to Eating Disorder Treatment in Rural West Virginia

Patients with eating disorders who live in rural areas face unique challenges. Research demonstrates that distance and access to transportation are frequently reported barriers to health care utilization, and patients with transportation difficulties are 1.45 times more likely (OR, 1.45; 95% CI, 1.19 to 1.77) to delay seeking medical care.^{16,17} A medical records review of 42 patients enrolled in the WVU-Disordered Eating Center of Charleston (WVU-DECC) indicated travel distance as a formidable

Objectives

The rural nature of West Virginia poses significant challenges for patients with eating disorders to access treatment. The present paper describes the barriers to treatment these patients face, including limited local specialist treatment providers, the financial and time burdens of traveling for intensive treatment, and difficulty accessing healthful foods. We discuss innovative approaches that clinicians can use to help better serve these patients. Specifically, primary care providers can use positive health-behavior messages and routine screening to help prevent the development or escalation of disordered eating behaviors. For patients with clinical eating disorders, technology, self-help resources, and family support can be enlisted to help alleviate the burdens of traditional face-to-face therapy. Finally, we address the importance of collaboration between clinicians and researchers to quantify treatment disparities and advocate for patients at the policy level.

Table 1. Eating Disorders in the DSM-IV-TR

<p>Anorexia Nervosa (AN)</p> <p>A. Features: Significantly underweight (i.e., BMI < 18.5), severe fear of gaining weight, disturbance in body image, amenorrhea</p> <p>B. Restrictive subtype and Binge/Purge subtype</p> <p>Bulimia Nervosa (BN)</p> <p>A. Features: Binge eating (include both excessive quantity of food and uncontrolled quality of eating), compensatory behaviors to prevent weight gain, body image disturbance, not significantly underweight</p> <p>B. Purging subtype (includes vomiting, laxatives, or others) and Nonpurging subtype (excessive exercise to compensate for binge, fasting between binges)</p> <p>Eating Disorder, Not Otherwise Specified (EDNOS)</p> <p>A. Examples include: subclinical presentations for the above eating disorders, weight in normal range but meets other criteria for AN, inappropriate compensatory behavior in normal weight individual after only eating a small amount of food, repeatedly chewing and spitting food</p> <p>B. Binge Eating Disorder (BED): recurrent binge episodes without inappropriate compensatory behaviors</p>

^aData from DSM-IV-TR⁸

barrier to treatment access in the outpatient program (range of 2-158 miles, M=32.5 miles). However, these patients have indicated to our team that the time it takes one to travel to Charleston for treatment is more important than the number of miles traveled. The mountainous terrain slows travel considerably especially during inclement weather. The difficulty of mountainous travel coupled with the necessity of frequent sessions (1-2 per week) can make both initiating and sustaining treatment challenging. Due to significant time and distance traveled to access treatment providers, many of our patients have been unable to attend weekly appointments with their specialist treatment team.

Nutritional stabilization is a crucial element of eating disorder treatment and can be particularly challenging in a rural context. These patients' limited options for acquiring food



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Table 2. Brief Screening Questions for Eating Disordered Behaviors and Attitudes

<p>Have you experienced weight gain or loss? Do you ever restrict your food, or skip meals to lose weight? Do you ever eat a very large amount of food in a short period of time? If YES, Do you feel out of control while you are eating during those times? Do you have a specialty diet, calorie limit, fat gram limit?</p> <p>Have you ever made yourself vomit as a way of losing weight? Have you ever used laxatives as a way of losing weight? Do you ever exercise (a) longer than 60 minutes per day, (b) despite injuries, (c) so much that other people might think it's excessive?</p> <p>Is your period regular? How often do you feel exhausted? Do you ever experience fainting or dizziness? Do you have any gastrointestinal complaints? Do you have abdominal pain?</p> <p>Have you been feeling depressed? Have you been feeling nervous or anxious? How would you rate your self-esteem on a scale of 1-10? How would you rate your satisfaction with your shape on a scale of 1-10?</p>

Note. Based in part on LaFrance and colleagues¹¹

create obstacles which often go unaddressed by healthcare providers during nutritional counseling. For instance, does the patient routinely buy his/her food at the local convenience store, limiting him/her to highly-processed, sugar-laden foods? Grocery stores and farmers' markets are sometimes scarce in rural areas of our state and healthcare providers should not assume patients have routine access to stores well-stocked with produce, whole grains, or lean meats. Limited food access adds a layer of complexity to treatment as it increases difficulty

- 1.) Re-feeding patients with AN who may be particularly fearful of processed, high-sugar, or fatty foods and
- 2.) Helping individuals with BN or BED resist binge eating on these highly palatable foods.

Healthcare providers should inquire about food availability and work within the limitations inherent for a patient living in a rural area when developing a meal plan.

Ultimately, successful treatment of eating disorders requires resources. Lack of access to healthful foods and transportation to appointments speak to larger socioeconomic issues faced by many rural West Virginians. Individuals with severe eating disorders often need a high level of care to facilitate the re-feeding process and monitor eating disorder behaviors, services that a general psychiatric hospital are not typically equipped to provide. Even with insurance, receiving treatment for eating disorders necessitates travel, time away from work, and high out-of-pocket costs for this degree of

specialized care. For many patients, especially those on disability or those covered by public insurance (i.e. Medicaid and Medicare), this means choosing between receiving treatment and meeting the basic needs of their families.

Solving the Disordered Eating Problem: Primary, Secondary and Tertiary Prevention

While the barriers may appear overwhelming, the first step that all clinicians can take is to help prevent disordered eating by sending positive and consistent health-behavior messages to all of their patients when discussing issues of weight, eating, and exercising. These messages include recommending moderation in one's approach to food, following the U.S. Department of Agriculture's guidelines (Refer to Figure 1)¹⁸, and accepting one's shape if in the BMI range of 20-29 with no health problems. Many of our patients in WVU-DECC were formally overweight or obese. These patients often remember comments and advice by well-meaning clinicians about the need to lose weight. They were often praised for any weight loss, and eventually became obsessive about maintaining their new, lower weight status. Ultimately, many of these individuals enter treatment in our center because they have developed clinical eating disorders.

Patients with eating disorders may "fly under the radar" in visits with clinicians because of their tendency to minimize their symptoms. We encourage clinicians to focus on their patients' health status (blood pressure, laboratory measures of cardiovascular and diabetes risk factors) rather than weight status. Individuals who are slightly overweight (BMI 25-29) but engaging in healthy habits may be in good health and should therefore be encouraged to accept their bodies



at their size.¹⁹ When counseling those patients with BMI over 30, encourage healthy lifestyle and exercise choices and inform patients of the dangers and long-term health consequences of resorting to extreme crash or fad dieting, or disordered eating behaviors such as purging.

Routine screening for disordered eating behaviors in all patients will help with early identification, which leads to better long-term prognosis.^{14,15} Patients with eating disorders commonly appear to their primary care physicians first, and may indicate change in weight status, change in mood (e.g., feeling more depressed lately), and/or withdrawal from their usual family and social roles. Table 2 lists questions providers may use to screen for behaviors, attitudes, and associated emotional problems common to disordered eating.¹¹ These questions can be added to the standard visit protocol or asked by support staff when rooming a patient for a medical visit. Standardized questionnaires may also be useful to screen for eating disorders or gather follow-up data. For instance, one simple, free, well-validated measure of disordered eating is the Eating Disorder Examination-Questionnaire (EDE-Q-6), which is available online at (www.rcpsych.ac.uk/pdf/EDE-Q.pdf).²⁰ This instrument provides patient-report

data, represents little burden on office staff or physician time, and requires no training to administer.

Once a patient has endorsed disordered eating behaviors, attitudes, or beliefs, clinicians need to be prepared to discuss and recommend treatment options. The most effective treatment for eating disorders is within a multi-disciplinary, specialty treatment team that includes mental health practitioners, physicians, and dietitians with extensive training treating these conditions.¹³ To the best of our knowledge, the only opportunities for multi-disciplinary team-based provision of services exist at WVU in Morgantown and through the WVU-DECC program. Other interventions for frontline clinicians include frequent follow-up appointments to assess progress, and provide nutrition counseling and psychoeducation about exercise and balanced eating.¹¹ If detected early and followed closely, some patients may be able to effectively change their disordered behavior patterns with the assistance of their local practitioner. Integrated models of care, particularly in rural primary medicine clinics, are well positioned to address this need. If the patient requires specialty treatment, electronic medical records systems may assist in collaboration among providers, sharing notes and test results, and communicating questions and concerns regarding shared patients. This approach can be effective with good communication between the local healthcare providers and specialty treatment team to ensure consistency in treatment approaches and goals.

Within the WVU-DECC program, clinicians accommodate the needs of patients from rural areas in a number of ways. For instance, the team psychologists utilize regular between-session contacts, including text messages or planned phone calls.

These extra-contacts are helpful for patients who are unable to attend weekly sessions due to distance or to receive a higher level of care due to insurance. During these contacts, we collaboratively work with our patients, addressing their present symptoms and behaviors as they work towards their goals and navigate emergent challenges. Research has demonstrated that phone and text-messaging has been effectively used for the patient to share self-monitoring data and the clinician to provide feedback.^{21,22} We have found that these extra contacts are not burdensome, but help both the patient and clinician remain motivated and targeted in their progress to changing behaviors and attitudes in spite of significant challenges.

Another effective treatment option for patients in rural areas is the involvement of family members and other supportive persons in our patients' lives. Family-Based Therapy (also known as the Maudsley approach) is an evidence-based treatment for adolescents with AN,²³ with emerging evidence for treating teens with BN²⁴ and young adults with AN.²⁵ This treatment dictates that the patients' parents actively re-feed their child by supporting the child at all meals until he/she has reached a healthy weight status. Because there are no partial hospitalization, residential, or intensive outpatient treatment centers in West Virginia, families who engage in Family-Based Therapy serve as an extension of their child's treatment team. All clinicians on the WVU-DECC have received training in working within the Family-Based Therapy framework because of its utility for many of our rural patients and their families. We also have worked with educators and school personnel who may be enlisted to provide meal support therapy so students

with eating disorders are monitored during the re-feeding process. Other adaptations for treatment of adults with eating disorders include couples-based approaches²⁶ and inclusion of supportive partners and friends in the treatment.

Telehealth and the use of other technologies provide a promising medium through which to improve eating disorder treatment access and dissemination. Video conference therapy has been widely studied with many patient populations and therapeutic formats, and clinical outcomes are similar to traditional face-to-face sessions.²⁷ Telehealth has been shown to be an acceptable and effective way of delivering cognitive-behavioral therapy (CBT) to individuals with BN²⁸, and further study is underway to determine effectiveness for a broader array of eating disorders. Continued advocacy for telehealth coverage by insurance companies and development of the infrastructure required to deliver telehealth services are necessary to expand this practice across the state.

Internet-based treatments for eating disorders have also demonstrated effectiveness. Research on internet-based CBT programs indicates that patients with BED find them acceptable and effective.²⁹ Patients in West Virginia who are fortunate enough to receive intensive treatment at centers out of state may also benefit from internet-based treatment when they return home. Internet-based interventions may help maintain the support of patients following more intense treatment. Gulec and colleagues (2011) introduced an internet-based treatment for patients who no longer met full criteria for BN or EDNOS.³⁰ The program comprised online components for psychoeducation, self-help, peer support, and professional counseling. Pilot data indicate that patients were able to adhere to this program and

were generally satisfied with it. The sustainability of treatment effects post-discharge is a major challenge in clinical practice with eating disorders. Preliminary evidence suggests that internet-based interventions may help patients with maintenance of treatment gains. Though many challenges remain to adapting and developing technology-based treatments in West Virginia, these interventions may address limitations that many patients with eating disorders from rural areas experience.

Another alternative to traditional face-to-face therapy is guided self-help. Guided self-help protocols have been designed to be suitable for individuals with all eating disorders other than severe AN.³¹ Striegel-Moore and colleagues (2010) developed a treatment package for individuals with BED that combines minimal contact with providers (8 sessions, most 20-25 minutes in length) in tandem with self-guided, manualized interventions.³² The treatment condition, known as CBT-GSH (Cognitive-Behavioral Therapy Guided Self Help), demonstrated significant positive effects for patients with BED compared to a control group of patients who received treatment-as-usual (may have included visits with PCP, nutritionists, or other types of psychotherapy). Guided self-help has been shown to be an acceptable and appropriate first-line treatment for individuals with disordered eating presenting to primary care.³³

Future Directions

Over the last several decades, tremendous advances have been made in the provision of eating disorders treatment. However, diminished socioeconomic status, lack of education, and geographic isolation significantly impact health care utilization and adherence for those living in rural West Virginia.

Improving outcomes for those suffering from eating disorders frequently demands unique interventions and the integration of theories from diverse disciplines. One advance would be the creation of a registry of clinicians from multiple disciplines who treat eating disorders in our state.

In addition, continued research is necessary to make the case for resource allocation. This research should focus on the quality and effectiveness of various treatments, including psychological, nutritional, and medical. These data can demonstrate trends in the incidence and prevalence of disordered eating and assess the utilization of treatment services. Research trends demonstrating successful treatments can be used to support policy change to cover these treatments. Quantifying eating disorders in this way provides a tangible means for policymakers to conceptualize and address disparities in care.

Conclusions

Treating eating disorders in a rural context requires flexibility and the use of multiple treatment strategies to enable the delivery of proper care. Patients facing these barriers will benefit from clinicians in West Virginia committing to advocate for more resources, trainings, and the development of higher levels of treatment provision. WVU-DECC remains committed to working with healthcare professionals and providing comprehensive treatment to individuals in West Virginia struggling with disordered eating.

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CME POST-TEST

25. Individuals with clinical eating disorders are at elevated risk of death compared to age and gender matched peers.
 - a. True
 - b. False
26. Augmentation to traditional face-to-face therapy for patients with eating disorders includes:
 - a. Phone calls or text messaging check-ins with the treatment provider
 - b. Internet-based CBT programs
 - c. Supervised meals at school
 - d. All of the above
 - e. None of the above
27. Guided self-help protocols are suitable for patients with
 - a. Anorexia nervosa only
 - b. Bulimia nervosa only
 - c. All eating disorders
 - d. All eating disorders other than severe anorexia nervosa

Dr. Who? Providing Stability to Recruiting and Retaining Health Care Professionals in West Virginia

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Abstract

Primary care physicians comprise less than 15%¹ of the United States outpatient work force, yet they perform 23%² of the visits that Americans make to their physicians each year. In rural areas, an even greater proportion or about 42%³ of these visits are to family physician's offices. The country's rural areas have been medically underserved for decades. United States census data has determined that about 21%⁴ of the United States population lives in rural areas. Sparse population, extreme poverty, high proportions of racial and ethnic minorities and lack of cultural amenities characterize rural communities most likely to suffer from a shortage of physicians. This persistent, intractable shortage of physicians in rural communities means that many communities struggle continuously to recruit and retain physicians.

The Division of Rural Health and Recruitment, located within the Office of Community Health Systems and Health Promotion, Bureau for Public Health, works diligently to alleviate some of those

shortages and to strengthen the health care safety net in West Virginia. The Division of Rural Health and Recruitment utilizes the most up-to-date and relevant provider recruitment and retention strategies available.

Introduction

In the United States, 66 million people live in areas, both rural and urban, that the United States government recognizes as underserved, according to the Department of Health and Human Services. The agency estimates that about 7,438 primary care physicians are needed to bridge this health care provider shortage.⁵ Health care leaders predict that this scarcity will worsen dramatically in the next 15 years.

Recruitment and retention of primary care providers in rural areas has been a national concern for several years. Strategies undertaken to recruit rural physicians include initiatives that decrease educational debt and those that provide flexible practice opportunities such as salaried and part-time positions; group practice positions; and increasing communities' attractiveness and recruiting abilities.

The recruitment of health care providers to practice in West Virginia is a very complex and detailed endeavor. West Virginia is the second most rural state in the nation, and the only state that is located entirely within Appalachia. Eighty

percent of West Virginia contains miles of hardwood forests, wind-swept mountains, and photo perfect valley landscapes. West Virginia covers 24,078 square miles, with the 2011-estimated population of 1,855,364 people, of which 819,193 citizens live in rural areas.⁶

In many instances, there is a lack of public transportation and other basic amenities in rural communities throughout West Virginia. As a result of these deficiencies, it is often difficult to find health care providers willing to relocate and practice in rural areas, causing many small, rural communities throughout the state to continuously recruit health care providers.

Forty-four (44) percent of the State's population resides in these rural areas, usually in communities of 2,500 or less, living at or below 200% of the Federal poverty level. Twenty-six (26) West Virginia counties are federally designated as whole- or partial-county Primary Care Health Professional Shortage Areas (HPSAs). Fifty-one (51) counties have whole- or partial-county Medically Underserved Area or Medically Underserved Population (MUA/MUP) designations.⁷

Over the past ten years, the number of people receiving emergency care annually has increased 32% from 90.3 million to 119.2 million.⁸ A significant contributing factor for this increase

Objectives

This article provides recent data regarding the shortage of primary care providers nationwide and documents shortage areas in West Virginia. Information is provided regarding healthcare provider recruitment and retention initiatives that are active in West Virginia. These programs increase access to healthcare in underserved areas of West Virginia, especially in rural areas.

is that more and more patients are turning to emergency departments for care because of lack of insurance, for after-hours care, or due to limited options in rural communities.

In a national survey conducted in 2011 by the American College of Emergency Physicians, 97% of Emergency Room physicians reported treating insured patients (both Medicaid and private insurance) daily for non-emergency conditions.⁹ The physicians reported that individuals with Medicaid stated they were unable to find a physician who accepted Medicaid patients.

The recruitment of health care providers, specifically for rural areas, and that accept Medicaid patients, is a perplexing task. The Division of Rural Health and Recruitment (DRHR) works to improve access to care for West Virginia's underserved populations.

The DRHR manages a health care provider placement service and maintains a clearinghouse for matching providers with practice opportunities throughout the state. Typically, the DRHR has approximately 300 openings statewide for primary care physicians; sub-specialists; specialists; physician assistants; family nurse practitioners and dentists. This service is offered at no cost for the health professional.

The DRHR administers three financial incentive programs and participates in the J-1 Visa Waiver program. Each requires that the provider practice in a designated shortage area and see all patients regardless of their ability to pay; including Medicaid, Medicare, and Children's Health Insurance Program (CHIP).

The following are a list of health care provider recruitment programs that the DRHR administers and/or oversees:

- **The National Health Service Corps (NHSC)**

The NHSC loan repayment program extends to primary care physicians, physician assistants, nurse practitioners, certified nurse midwives, general and pediatric dentists, dental hygienists, behavioral health care providers, nursing faculty, and practicing nurses. The NHSC awards up to \$60,000.00 for the initial funding in exchange for a two-year service obligation at an NHSC-approved site with HPSA status. Awards are highly competitive.

- **State Loan Repayment (SLRP)**

The SLRP, initiated in 1987, is a federally funded program with matching dollars paid from the State General Revenue Fund. The total budget of \$300,000.00 provides loan repayment to approximately ten (10) providers (physicians, nurse practitioners, dentists, physician assistants, pharmacists) per year in return for their obligation to work in rural West Virginia. The initial award is usually for \$40,000.00, requiring the recipient to work for a period of two (2) years. At the end of the initial obligation, the recipient is eligible to reapply for an additional commitment period of two (2) years.

Recruitment & Retention Community Project (RRCP)

The RRCP, which began in 1987, mirrors the SLRP and is supported entirely by State General Revenue Funds. Unlike the SLRP, the RRCP only requires that the facility be located in a federally designated MUA/MUP. The initial award can be up to \$10,000.00 for a one-year commitment, with the employer matching the award, for a total of \$20,000.00. The recipient may apply for and receive this award for a total of four years.

- **J-1 Visa Waiver Program**

The J-1 Visa Waiver Program, initiated in 1987, offers a means of increasing the availability of physicians in areas of West Virginia designated as either a HPSA or an MUA/MUP. Communities unable to recruit a United States citizen to provide health care are allowed to recruit a foreign physician trained (residency or fellowship) in the United States. The DRHR supports and recommends assignment through the Department of State and the Appalachian Regional Commission.

- **Department of State Conrad 30 Program (DOS)**

The DOS allows the placement of primary care specialists and sub-specialists who are licensed to practice medicine in West Virginia, and agree to provide health care for at least forty (40) hours per week in an underserved area for a minimum of three years. The DOS allows for placement in either rural or urban areas. Ten (10) flexible slots are available each year that require the physician to serve patients that reside in a HPSA or MUA.

- **Appalachian Regional Commission (ARC) J-1 Visa Waiver Requirements:**

The ARC requires the physician to have completed a residency within the United States in one of the following specialties: pediatrics, family practice, obstetrics/gynecology, internal medicine, internal medicine/pediatrics, or psychiatry. The physician must be licensed to practice medicine in West Virginia, and agree to provide clinical care forty (40) hours per week in a designated HPSA for a minimum of three years,

In addition to the physician recruitment programs, DRHR administers an innovative community program created to encourage community participation in the recruitment and retention of rural providers.

- **Recruitable Community Program (RCP)**

The Recruitable Community Program, initiated in 1998, is a collaborative effort between the DRHR and the West Virginia University Extension Service (WVU), to promote community engagement and volunteerism and enhance a community's ability to attract providers to rural underserved areas.

The program utilizes the services of the WVU First Impressions Team (FIT) and the Community Design Team (CDT). The First Impressions Team offers an objective analysis of the community from the perspective of a first time visitor, and assesses the local health care system, business opportunities and educational system, as well as accessibility to those services. The Community Design Team typically consists of health care professionals, public administrators and economic specialists who work with community members during a three-day visit, to lay a course for future development and health care provider recruitment.

The result is a detailed plan of action presented during the visit and, a comprehensive written report which details CDT recommendations, and which is often used by the community during grant applications. The professional services provided by the teams yield approximately \$25,000.00 worth of expertise to the selected community.

The primary goal of the RCP is to educate and share best

practice procedures with community stakeholders, health care centers, hospitals, and the general population in the field of recruitment and retention.

The RCP has assisted eighteen (18) communities and provided feedback for community improvement and health care provider recruitment.

The DRHR continues to develop and implement new approaches to recruitment and retention with collaborative partnerships between federal and state agencies that strengthen the health care safety net, and is involved with the National Rural Health Association, the National Organization of State Offices of Rural Health, the Rural Recruitment & Retention Network (3R Net), the West Virginia Primary Care Association, and the West Virginia Rural Health Association. The Division coordinates our placement services with each of the state's medical schools, and maintains an active participation with the Recruitment & Retention Committee as led by the West Virginia Higher Education Policy Commission.

Through these various programs, the Division of Rural Health and Recruitment has placed a total of 154 NHSC providers; 52 SLRP providers; 47 RRCP providers and 94 J-Visa physicians since 2008. Currently, 80% of these providers have remained at their initial placement site upon completion of their obligation.

The Division of Rural Health & Recruitment receives a \$150,000 per year grant funding from the United States Department of Health and Human Services, Health Resources and Services Administration (HRSA), Bureau of Clinician Recruitment and Services "Grants to States for Loan Repayment", for the State Loan Repayment Program. Additional funding for the State Loan Repayment Program is provided by the State Legislative

Primary Care Support budget in the amount of \$150,000 per year.

The National Health Service Corp (NHSC) loan repayment and scholarship programs awards are made by United States Department of Health and Human Services, Health Resources and Services Administration (HRSA), Bureau of Clinician Recruitment and Services. During the past four years, NHSC has awarded \$9.2 million dollars in loan repayment to West Virginia clinicians. Administrative costs are covered by funding through the United States Department of Health and Human Services, Health Resources and Services Administration (HRSA), Office of Rural Health Policy, "State Offices of Rural Health Grant Program (SORH)", and State Legislative Appropriations for Primary Care Support. Funds are received by HRSA totaling \$200,000 per year, with a state match of \$400,000 for primary care support. The State Legislative Appropriations also provide funding the Recruitment & Retention Community Project (RRCP) in the amount of \$268,000 per year.

The cost of placing these providers is \$568,000 in loan repayment provided by the State and the Federal Government per year, and administrative costs also provided by the State and Federal Government.

National Health Service Corps loan repayment funding is handled directly by the Federal Government. The cost of those placements is \$9.2 million dollars. Each placement receives \$60,000 for a two-year commitment.

For more information about these initiatives, or if you need assistance in securing a practice opportunity in West Virginia, please contact the Division of Rural Health and Recruitment at 304-558-4382.



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Physical Education in West Virginia Schools: Are We Doing Enough to Generate Peak Bone Mass and Promote Skeletal Health?

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Abstract

Peak bone mass (PBM) is attained at 25-35 years of age, followed by a lifelong decline in bone strength. The most rapid increase in bone mass occurs between the ages of 12-17. Daily school physical education (PE) programs have been shown to produce measurable increases in PBM, but are not federally mandated. Increases in PBM can decrease the lifelong risk of osteoporosis and fractures; critical for West Virginia prevention programs. Nationally only 1 in 6 schools require PE three days per week, with 4% of elementary schools, 8% of middle schools and 2% of high schools providing daily PE. In 2005, West Virginia passed the Healthy Lifestyles Act that returned physical education to the K-12 curriculum. This law requires only one credit of PE from grades 9-12 and provides only 35% of the recommended PE for grades K-12. This article highlights the relationship of

PE to PBM and discusses the potential impact on West Virginia skeletal health.

Introduction

Skeletal development, peak bone mass and osteoporosis

Throughout life, there is a constant turnover of bone through a process called remodeling that involves both the formation and absorption of bone. During the growing years, there is a net positive balance toward bone formation. The amount of bone accrued during this critical time contributes to our peak bone mass (PBM) and is a major determinant in the reduction of fracture risk later in life.¹⁻³ The greatest increases in bone mass are obtained between the ages of 12-15 years in girls and 14-17 years in boys, with PBM occurring at 25-35 years of age.^{2,4,5} (Figure 1) After peak bone mass is achieved, a neutral or negative balance occurs throughout life favoring bone loss and increasing the risk of osteoporosis and fracture.

An individual's PBM is influenced primarily by genetics.⁶⁻¹⁰ The remaining variance in bone density is affected by nutrition and physical activity.^{4,11,12} Increases in PBM by 10% would reduce the fracture risk by 50% and delay the onset of osteoporosis by 13 years, placing critical emphasis on school nutrition and exercise programs.¹³⁻¹⁵ (Figure 1,

lines A and B) Strategies to prevent osteoporosis development later in life should therefore focus on the establishment of behaviors at a young age that maximize PBM, avoid exposure to risk factors like alcohol and smoking, and slow the bone loss associated with aging.^{14,16}

For avoidance of risk factors, we have one of the nation's top rates for smoking (28.2%), heavy alcohol use, and physical inactivity (33.2%). The Centers for Disease Control documented that 17.3% of adolescents reported having no physical activity during a 7 day time period, with only 24% attending daily physical education classes.^{17,18} Additionally, our aging population (WV is second nationally for percent population ≥ 65 years of age) and predominant 94.4% Caucasian ethnicity (ethnicity with the greatest risk of osteoporosis and fracture) present non-modifiable risk factors that dramatically impact the state's skeletal health.^{19,20} Thus, our current state mandates should try to maximize PBM through the development of school age prevention programs. Current law requires only 1 credit of physical education after 8th grade following the passage of House Bill 2816 – the Healthy Lifestyles Act – that returned physical education to the K-12 curriculum.^{17,18} (Table 1)

Objectives

This article highlights that current West Virginia state law limits the amount of physical education (PE) required at the most critical time for the development of peak bone mass. The PE mandates are currently below national organization recommendations. Introduction of dynamic, load-bearing exercises, in addition to increasing the quantity of exercise, can lessen the burden chronic diseases like osteoporosis, obesity, and heart disease.

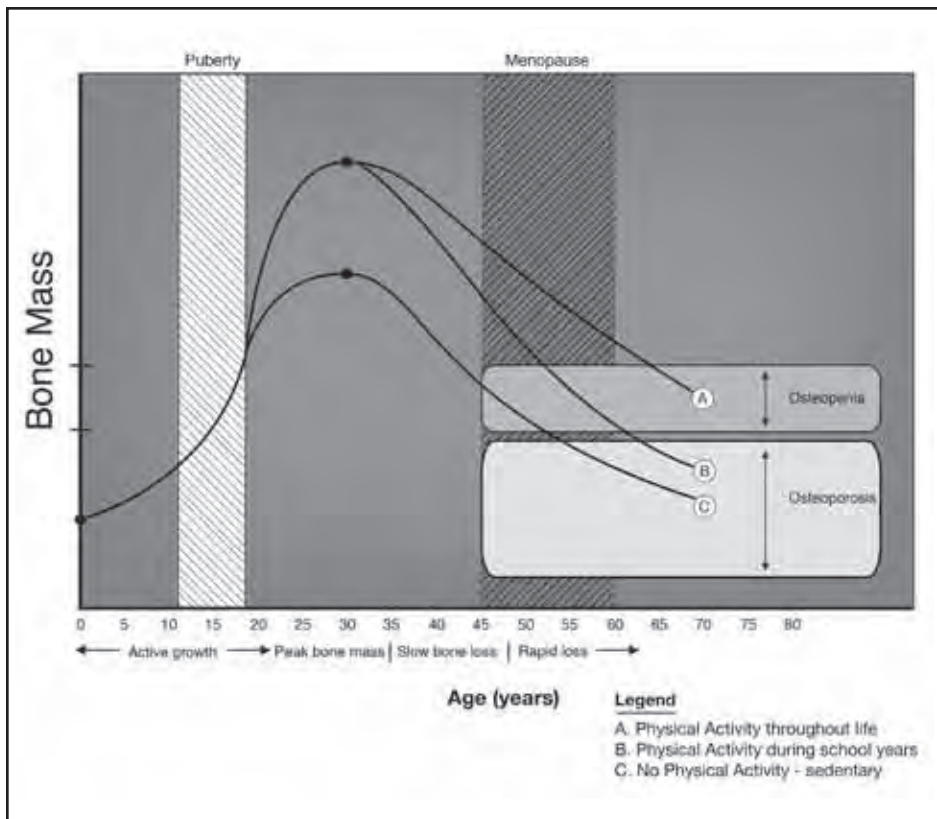


Figure 1: Physical activity alters PBM and shifts the risk of development of osteoporosis. Lines A and B represent the generation of PBM following NASPE and American Heart Association recommendations. Line A illustrates the impact of continuing active lifestyle behaviors throughout adulthood, and line B illustrates the progressive bone loss due to a more sedentary lifestyle, with 33.2% of WV adults reporting no physical activity during the past month. Line C should be avoided and represents our current state mandates for PE that will not generate PBM and do not encourage the development of active lifestyle behaviors generating a greater risk of osteoporosis and greater risk of fracture. Adapted from^{13,14,18,20,46,47}

Physical Education and Evidence for Increased Bone Mineral Density

There are few studies that have failed to show a significant difference in bone mineral density (BMD) following exercise protocols; confounding variables for these studies include insufficient intervention time, insufficient follow up, differences in exercise programs, or other factors.²¹⁻²⁶ On the other hand, there are a large number of studies demonstrating how exercise interventions, particularly load-bearing exercises, can increase BMD and bone mineral content (BMC).

Increases in BMD are associated with increases in children's weight-

bearing physical activities.^{2,27} A Canadian study following children over seven years showed that the group of children in the highest quartile of physical activity developed up to a 17% increase in BMC during the years of peak BMD accumulation compared to those in the lowest quartile.³ In another 8 month study, prepubertal boys were randomized into a control or intervention group which had three 30 minute sessions of moderate physical activity per week. The intervention group developed higher BMC in the femoral shaft versus the control group.²⁸ It is not known which physical activity was responsible for

the increased BMC in this study.²⁹ Dynamic axial loading exercises, like jumping, have the greatest effect on BMD and BMC of the femoral neck and lumbar spine.³⁰⁻³³ As mentioned previously, the type of activity is critical because short duration exercise with high loads and dynamic loading (e.g. jumping) is more important than the total duration of exercise or endurance training for skeletal strength.^{23,30,31,33-36}

In a randomized-controlled jumping protocol in prepubescent children, a 2 foot step up exercise followed by a jump off the boxes generated an eight-fold increase in body weight force during the exercise producing a significant increase in the BMC of the femoral neck and lumbar spine at seven months.³³ In another 2 year intervention trial, prepubertal girls engaged in 10 to 12 minutes of diverse weight bearing exercises, such as circuits of jumping during regular PE classes produced roughly a 2% increase in BMC per school year.³⁷ They reported a 3.7% increase in BMC at the lumbar spine and a 4.6% increase at the femoral neck over the 2 year period, which they equated to offsetting approximately 3 to 5 years of postmenopausal bone loss. It is also important to note that the child's developmental stage affects the rate of BMC accrual. In a jumping program consisting of 10 minute intervals 3 times per week, no differences in BMC were noted for girls in tanner stage 1, but significant changes were noted in girls in tanner stages 2 and 3.³² These changes were evident in the femoral neck (2.6% higher) and intertrochanteric regions (1.7% higher) when compared to controls. They also noted an increased bone diameter at the femoral neck. A similar increase in BMC accrual and increase in bone size was reported by the Pediatric Osteoporosis Study that examined girls aged 7-9 years who participated in 200 minutes/

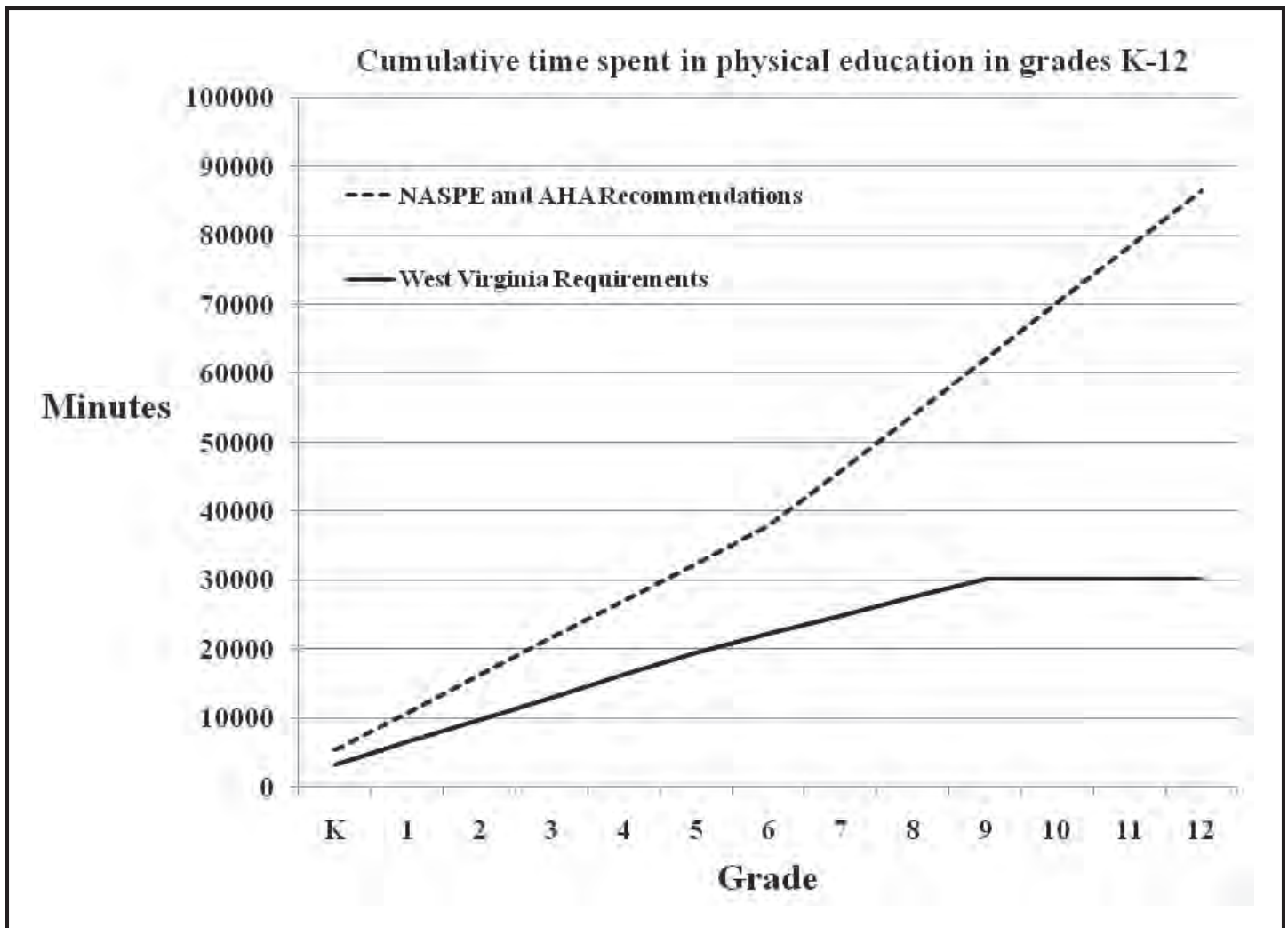


Figure 2: WV PE requirements for K-12 compared to NASPE and American Heart Association recommendations. *Our state’s PE mandates provide only 35% of the recommended physical educational recommendations in grades K-12 and should not be considered optimal to generate behaviors that emphasize the development of an active lifestyle throughout adulthood.*

week of general physical activity versus a less active control group.^{38,39}

Physical Activity in Childhood

Historically, childhood has been a very active time in peoples’ lives. More recently, however, playing tag at recess and school-yard basketball has been replaced with playing video games and watching television. A distinct reference for the exact timing of this change was not noted, but President Kennedy stated in 1961 that “we are becoming a nation of spectators, ones who ride instead of walk, watch instead of play.”⁴⁰ Many reasons exist for the erosion of physical activity

that include, but are not limited to, the ubiquity of video games and multimedia, child safety concerns with many parents afraid to send their kids out for unsupervised play, budgetary restrictions impacting state PE programs, and substitution of other academic requirements like computer training. It should be emphasized that there is no federal mandate for physical education, with individual states deciding the amount of PE required. This lack of national policy has resulted in only one state (Illinois) having a daily requirement for physical education

for K-12 children. In addition, only 1 in 6 schools nationally require PE 3 days per week with only 4% of elementary schools, 8% of middle schools and 2% of high schools providing daily PE.⁴⁰ As a result, childhood obesity rates are the highest in US history with 16.9% of children obese.⁴¹⁻⁴³ For West Virginia, 67.4% of our adult population has a body mass index (BMI) of ≥ 25 ; 32.5% with BMI ≥ 30 and 14.2% of our adolescents are obese ($\geq 95^{\text{th}}$ percentile BMI by age and sex).¹⁸ Physical activity in childhood is important for skeletal health because

Table 1. West Virginia requirements for physical education compared to NASPE and American Heart Association recommendations.

Grade levels	West Virginia Requirements*	NASPE/AHA recommendations
K-5	90 min per week	150 min per week
6-12 th grade	6-8 th grade = 75 min per week* 9-12 th grade = 18.75 min per week*	6 th grade = 150 min per week 7-12 th grade = 225 min per week
Totals K-12	30240 TOTAL minutes PE	86400 TOTAL minutes PE

*Please note that the table uses minutes/week to compare to NASPE/AHA recommendations with WV requirements averaged.

mechanical loading results in an accelerated growth response in bone mineral content and structure when compared to an adult.^{23,44} The type of activity is also important because short duration exercise with high loads (e.g. jumping) is more important than the total duration of exercise or endurance training for skeletal strength.^{23,31,33-36}

Physical Education Requirements and House Bill 2816

The National Association of Sport and Physical Education (NASPE) has documented the state mandated PE requirements across the US.⁴⁵ West Virginia mandates at least 90 minutes of PE per week K-6 with one credit of PE required in grades 9-12. This report does differ from the language in WV House Bill 2816 that returned physical education to the K-12 curriculum. It is therefore worth noting the directives covered in this bill. WV House Bill 2816 mandates the following:

K-5 – PE for 30 minutes three days per week = 90 min/week;

6-8th grade – PE 1 period per day for 1 semester (about 90 instructional days)

9-12th grade – PE for 1 course credit required for graduation.

West Virginia also mandates the following: a daily recess is not required in elementary schools. There is no minimum weekly requirement for physical activity time for middle school, junior high, or high school students and physical activity can be withheld for disciplinary reasons.

As shown in **Table 1 and Figure 2**, WV is currently providing only 35% of the recommended physical educational requirements demonstrated to help prevent the burden of chronic diseases like obesity, heart disease and osteoporosis.⁴⁵

Conclusions

Osteoporosis-associated fragility fractures are a significant cause of morbidity in the aging US and WV population. West Virginia's PE mandates provide only 35% of the recommended physical educational recommendations in grades K-12 and should not be considered optimal to generate behaviors that emphasize the development of an active lifestyle throughout adulthood. Since peak bone mineral density is a key determinant in the onset of osteoporosis, we believe that our state would greatly benefit from improvements in its PE system to both increase the quantity of exercise to NASPE and American Heart Association recommendations and also to improve the quality of exercise. Changing current PE protocols to include dynamic, load-bearing exercises like jumping to optimize PBM generation can lessen the burden of osteoporosis for our state.

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CME POST-TEST

28. The amount of time spent in physical education in schools is determined by which entity?
 - a. The state
 - b. The federal government
 - c. The play 60 program from the National Football League
 - d. A combination of both state and federal mandates
29. The most rapid rate of gain of bone mass occurs at ages 12-17. When is peak bone mass realized?
 - a. In childhood
 - b. At 20 years of age
 - c. Between 25-35 years of age
30. What percent of our adolescents in West Virginia attend daily physical education in school?
 - a. <10%
 - b. Between 10-20 %
 - c. 24%
 - d. >25%

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Extending the University into the Community to Address Healthcare Disparities

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Abstract

Healthcare disparities in rural areas contribute to poor health outcomes, but health outcomes are also affected by social determinants of health and lifestyle behaviors. There is a compelling need to promote physical, mental, and financial health through community-based programs that lead to behavior change. The objective of this article is to disseminate information about West Virginia University Extension Service programming as it relates to health issues in rural communities. There is a WVU Extension office in each county with one or more faculty and staff members. They deliver research-based educational programs that promote diabetes self-management, moderate physical activity, healthier food choices, stress management, fall prevention, and financial competency. Healthcare providers are encouraged to refer clients to their local Extension office for educational programs that put knowledge to work.

Introduction

West Virginia is impacted by rates of obesity, hypertension, diabetes, and tobacco use that are consistently higher than the national average.¹ These health indicators are associated

with higher rates of morbidity and mortality, which are exacerbated by disparities in healthcare. Fifty-one of West Virginia's 55 counties have medically underserved areas or populations² and much of the state is federally designated as a Health Professional Shortage Area. This situation presents challenges to health and quality of life. Optimal health depends on access to, and utilization of, health services including preventive care. An important component of preventive care includes education that allows people to make informed decisions about individual behaviors including tobacco use, food choices, physical activity, and chronic disease self-management. Expanding access to primary care may address healthcare disparities, but it will not be enough to promote health equity throughout the rural areas of the state. The West Virginia University Extension Service (WVUES) employs county Extension agents who offer interactive, skill-based educational programs that promote healthy behaviors, effective utilization of healthcare services, and self-management of chronic conditions. Healthcare providers who are aware of the programs that are offered by the county Extension office can refer clients to those programs as a way to maximize local resources and promote community health. The objectives of this manuscript are to provide an overview of health education through WVUES; raise awareness among healthcare providers of ways to utilize WVUES programs

to benefit their clients; and discuss the role of WVUES in addressing healthcare disparities in rural areas.

The Cooperative Extension System in Land-grant Universities

Land-grant universities were created by the Morrill Act of 1862 to make practical education in agriculture, military strategies, and mechanical arts available to a broad segment of the population.³ The intent of Congress was that these universities would be publicly controlled and responsive to the needs of the states in which they were established; each state and territory has at least one land-grant university. To support research, Congress passed the Hatch Act of 1887, which provided federal funds to establish an agricultural experiment station in connection with each land-grant university. The Cooperative Extension System (CES) was created by the Smith-Lever Act of 1914 to apply the benefits of academic research to address local needs related to agriculture, nutrition, food safety, and youth development. Each U.S. state and territory has a state Extension office connected to the CES at its land-grant university and a network of local or regional offices funded through federal, state, and local collaboration. The Extension Service at West Virginia University (WVUES) is a part of this national network that combines trusted research with local experts. WVUES meets the lifelong learning needs of people, organizations, and communities by putting knowledge to work (<http://ext.wvu.edu>). There

Objectives

The Cooperative Extension System is a nation-wide system that brings the benefits of land grant universities into the community. The West Virginia University Extension Service is a part of this system. It is often described as a "best-kept secret". After reading this paper, readers will be able to 1) briefly describe the Cooperative Extension System and WVU Extension Service; 2) list some educational Extension programs that promote healthy behaviors and promote healthcare equity; and 3) discuss the role of Extension educational programs in managing or preventing diabetes in West Virginia.

is an office, or “mini campus”, in each county with one or more extension agent faculty members who are embedded in the community and deliver educational programs based on the needs of county residents. They answer questions, train volunteers, and deliver interactive classes about topics of local interest. They are committed to helping people find answers that work. As they confront local needs, Extension faculty and staff translate research and knowledge into action and provide a direct link from the community to the resources at WVU and throughout CES.

Health Education Offered by WVUES

A priority area for WVUES is health promotion. Health status is affected by genetics, lifestyle, and social determinants of health – socioeconomic status, health literacy and numeracy, clean air and water, safe housing, reliable transportation, and access to safe, nourishing foods. Extension educators promote health equity through research-based programs that increase knowledge and skills associated with physical, emotional, and financial health. Most programs are offered at no charge to participants or for a minimal charge to cover program materials and supplies.

WVUES has a long record of diabetes education in partnership with the WV Bureau for Public Health, Diabetes Prevention and Control Program (DPCP). Diabetes is a critical issue for the state. The prevalence of diagnosed diabetes was estimated to be 10.4% in 2010, up 131% since 1995 and among the highest in the nation.⁴ Dining with Diabetes is a diabetes self-management support program that began in WV and has now spread to 20 states across the country. It is taught by local Extension agents and credentialed health care partners. Each year, more than 600 adults with diabetes and their family members participate in the program where they learn the importance of clinical examinations and laboratory tests, practice moderate physical activity, taste test diabetes-friendly recipes, and learn how to plan healthy

meals. The WVU Institutional Review Board approved data collection for this program and all participants signed consent forms. Participants experienced increased confidence in managing their diabetes; 67% report feeling confident that they can control their diabetes after the series of classes compared to 56% before ($p < 0.01$). Survey questions at the beginning of the program indicated depressive symptoms in 17% of participants, decreasing to 9% at the end ($p < 0.01$). There were significant improvements in reported dietary patterns and physical activity. Average hemoglobin A1c decreased from 6.95 to 6.7 in the total group ($p < 0.05$) and from 8.25 to 7.5 in those with beginning A1c values above 7.0 ($p < 0.01$). In 2013, WVUES will expand diabetes programming to include the evidence-based diabetes prevention program, Group Lifestyle Balance™.⁵

To support healthcare providers, WVUES sponsors a diabetes symposium each year, usually in October. The WV Diabetes Symposium and Workshop: Bridging the Gap through Education (<http://dsw.ext.wvu.edu>) brings nationally-recognized speakers to the state to present best practices in diabetes prevention and management. It is a way to bring professionals together to address the burden of diabetes in the state and to provide continuing education credits for physicians, nurses, dietitians, pharmacists, social workers, and health education specialists.

WVUES offers other programs that help to decrease health disparities. Taking Charge of Your Health and Safety promotes activities to prevent falls and accidents in the home and support healthy behaviors to allow greater independence for senior citizens. Love Your Heart Talks empowers women to recognize the signs of a heart attack in women. Extension agents and volunteers promote moderate physical activity through walking groups and the Active for Life Program. Financial management classes teach adults and youth to manage resources to meet current needs and save for the future.

The Family Nutrition Program (FNP) provides classes for adults who participate in or are eligible for the Supplemental Nutrition Assistance Program (SNAP). Participants in the classes learn how to choose and prepare healthier foods for their families, keep food safe, and better manage their food resources. Some of the classes may include trips to a local farmer’s market that accepts electronic benefit transfers. Graduates of FNP classes increased their intake of fruits and vegetables; the number of participants that reported offering five servings of fruits and vegetables per day increased by 30% after the series of classes. Twenty-seven percent of participants reported increased use of safe food handling practices and 31% reported improved food resource management.

Young people were included in health promotion. Elementary school children from low-income families received nutritious meals and academic enrichment during the summer through Energy Express. They learned about healthy foods and the importance of being active through fun, interactive lessons during the school year through FNP. The 4-H Youth Development program reached more than 80,000 young people last year. Teenagers and pre-teens were exposed to healthy environments and health promotion messages in their clubs, camps, and after-school programs through the 4-H Health Officer initiative. Students participated in lessons that promoted healthy lifestyles, healthy relationships with family and friends, and avoidance of risk behaviors. They learned to stay safe on the farm or an ATV, if that was their interest. More than 750 young people have had at least two hours of ATV safety instruction through extension programming.

Discussion

Eliminating healthcare disparities and facilitating health equity in West Virginia will require multiple strategies. Grumbach and Mold⁶ recognized the need to revitalize primary care and suggested that

practicing physicians need county-based health extension agents, similar to the agricultural extension agents that transformed U.S. agriculture through CES. The University of New Mexico Health Sciences Center developed Health Extension Rural Offices (HERO) with health extension agents who are supported by regional coordinators and a state office at the Health Sciences Center.⁷ Similar to county extension agents with CES, these agents identify critical community health needs and link those needs with university resources. Most HERO agents are not funded to serve full time in that role; they work for local healthcare facilities and must carve time out of another position to fulfill their agent responsibilities. WVUES agents serve in full-time positions, but have many responsibilities and offer educational programs that cover a variety of topics beyond health and wellness.

Most WVUES county agents are not healthcare professionals, but are well-trained by health specialists to deliver accurate, reliable information in a model that is similar to using community health workers (CHW). Community-based health education has been delivered effectively in many settings through trained lay persons or peer educators, referred to as community health workers.^{8,9,10,11} Community health workers come

from the communities or populations that they serve; they are part of that culture, know the people and see them in the grocery stores or at church. They are able to deliver culturally relevant messages. Those positions are often funded through a grant and may not be sustainable after the grant ends. Extension faculty, staff, and volunteers, like CHW, live in the area and are trained to deliver programs that meet local needs.¹² The CES has existed for 100 years, so it is clearly sustainable and is a valued resource for local communities.

Conclusion

West Virginia University Extension Service provides educational programs that lead to behavior changes that promote health. This is a way to increase health education capacity and decrease healthcare disparities in rural areas. Physicians and other healthcare professionals are encouraged to get acquainted with the programs and services that are available through Cooperative Extension for their clients and to develop and nurture a community-based partnership to enhance health equity in the most isolated areas of the state.¹³

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CME POST-TEST

31. The Cooperative Extension System was created by the Smith Lever Act of 1914 to apply the benefits of academic research at land-grant universities to agriculture, nutrition, food safety and youth development.
 - a. True
 - b. False
32. Participants in Dining with Diabetes, a self-management support program for people with diabetes and their family members...
 - a. Learn the importance of medical tests and examinations
 - b. Develop increased confidence in their ability to manage diabetes
 - c. Learn how to prepare diabetes-friendly meals
 - d. Practice moderate physical activity
 - e. All of the above
33. The prevalence of diabetes in West Virginia in 2010 was ____, up 131% since 1995.
 - a. 10.4%
 - b. 8.5%
 - c. 7.6%
 - d. 13.4%

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Appalachian Women and Heart Health: Current Prevention Strategies and Future Directions

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Abstract

Background: Heart disease claims the lives of 25% of women in the United States. Only about half of women recognize it as the number one cause of adult female mortality, indicating a gap in the public's knowledge base. In West Virginia, women often face barriers such as social isolation, lack of healthy lifestyle options and fewer physician visits.

Methods: Literature review focused on successful efforts to remedy barriers in Appalachian women with strategies such as community outreach, group, and individual education.

Results: Primary care doctors can get involved by providing personalized information on heart health risk and utilizing appointments as opportunities for preventative heart health treatment.

Conclusions: Future initiatives should highlight the need for brief, accurate risk assessments and continued encouragement to decrease cardiac risk factors. An ongoing West Virginia Rural Scholars project is aimed at achieving those two aforementioned goals: increasing awareness and reducing risk factors for women's heart health.

Heart Disease and Women

Heart disease has become a major focus for women's health in recent years in the United States. It has been shown that 1 in 4 American women die from heart disease. Coronary artery disease is in fact the leading cause of death for women in this country. However, in a 2012 survey conducted by the CDC, only 54 percent of women are able to identify heart disease as their number one killer.¹ While death rates from heart disease have continued to decline in the past 30 years for both men and women, the death rates for women from this tragic killer have not seen quite the same extent of reduction.² This may indicate a lack of public awareness and/or motivation to change as it applies to female heart disease.

There are obvious factors that increase the risk of heart disease. Tobacco use, dyslipidemia (total cholesterol >200, LDL>100, and/or HDL<50), high triglyceride levels (>150), elevated blood pressure (>120/80 mm Hg), diabetes, being overweight or obese (body mass index >25), physical inactivity, adhering to an unhealthy diet, dealing with stress or depression, anemia, and sleep apnea are some of the modifiable risk factors that men and women share. Family history of heart disease and the level of inflammation within arteries, such as

blood levels of C-reactive protein, are some examples of uncontrollable risk factors that men and women share. There are a few distinct issues that affect women only, however. The use of birth control pills combined with tobacco as well as a lack of estrogen that begins with menopause (most evident after a woman turns 55) are just a few of these. Research has shown that having just one risk factor doubles a woman's chance of encountering coronary artery disease. Two risk factors increase the chance by fourfold while having three risk factors increases the risk more than tenfold. Research has also shown that more than 75 percent of women aged 40-60 in the US have at least one risk factor.²

Appalachia's Challenge

The Appalachian Regional Commission was established by Congress in 1965 to target this area of the country for improvements in many aspects, one of which is healthcare. This group has defined Appalachia as a 205,000 square mile region that extends from southern New York to northern Mississippi. A total of 420 counties lie within its borders (See Figure 1). This includes all of West Virginia as well as parts of the following states: Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania,

Objectives

Although it is the number one killer of women in our region, heart disease is routinely underestimated as the prominent threat that it is for female adult patients. Specific objectives of this review are to highlight the barriers to women's heart health in Appalachia and illuminate the preventive practices that have heretofore been effective in educating and raising awareness of heart disease. A brief overview of a current West Virginia Rural Scholars project targeting this problem will conclude the review.

South Carolina, Tennessee, and Virginia. More than 25 million people reside here. It is interesting to note that 42 percent of this region is considered rural while the average for the rest of the nation is 20 percent.³ Further, since West Virginia is the only state entirely situated in Appalachia, health risks and subsequent initiatives for those risks exclusive to Appalachia would by definition impact West

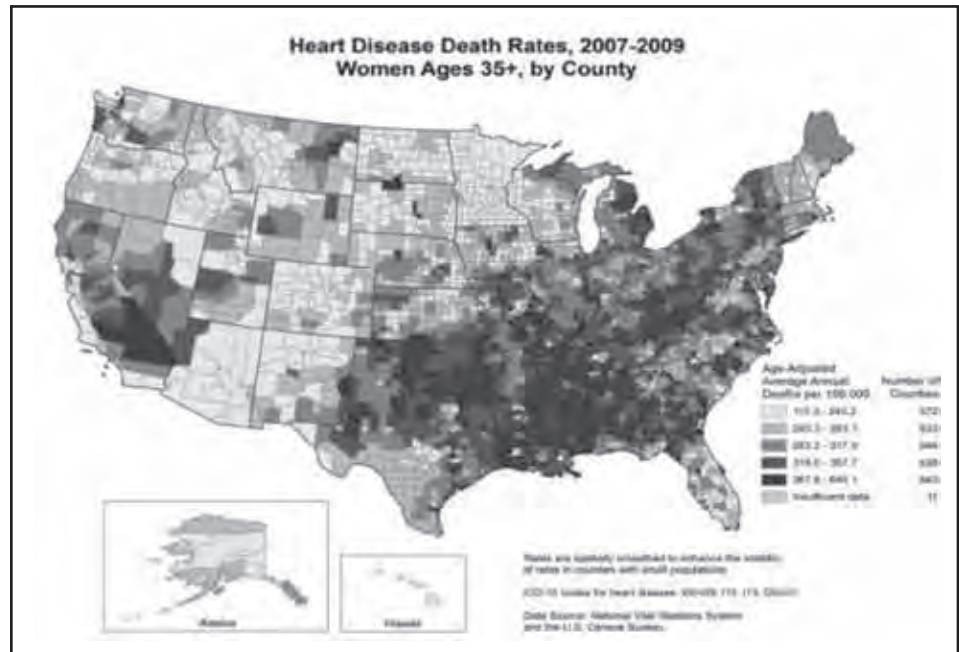
Figure 1. The Appalachian Region. Reproduced from the Appalachian Regional Commission, <http://www.arc.gov/>



Virginians at a greater per capita rate than citizens of other states.

Appalachia is a geographical region with a population that has long been found to have numerous health disparities when compared with others around the nation. One such discrepancy is the lack of access to healthcare resources. The US Department of Health Resources and Services Administration (HRSA), which is a part of the US Department of Health and Human Services, has noted Appalachia as an area with a shortage of Health Professionals. In fact, 39% of Appalachian counties are lacking the minimum number of primary care providers while 19% are lacking the minimum number of dentists and 67% are lacking the minimum number of mental health providers. Fifty percent of counties

Figure 2. Female Heart Disease Death Rates by County.



in central Appalachia have only one hospital while 20% have none.⁴ People in Appalachia also have less health insurance coverage and are also less likely to have regular preventative care and screenings.⁵

It is obvious that heart disease has a huge effect on women's health in the United States. Research has even gone further to show the impact of heart disease in rural Appalachia. According to *Women and Heart Disease: An Atlas of Racial and Ethnic Disparities in Mortality* published in 2000 by the CDC, counties within Appalachia along with others in the Ohio-Mississippi River Valley, the Mississippi Delta, and the eastern Piedmont and coastal regions of Georgia, South Carolina, and North Carolina have the highest death rates from heart disease in women. This particular publication estimated that a previously ignored risk factor was "social isolation" in this population. The authors found that 25-40 percent of elderly women in both the Mississippi Delta and Appalachian regions have limited access to care.⁶ The Center for Disease Control has published a map

(Figure 2) with more recent statistics covering 2007-2009 showing similar information. As seen on the map, West Virginia has a high rate of female cardiac death rate, particularly in the Southern coalfields.

Going one step further, Hendryx and Zullig (2009) have published research that evidences a higher rate of heart disease in coal mining regions of Appalachia. These authors found that Appalachian coal mining counties have higher rates of coronary artery disease as well as morbidity from heart attacks when compared to non-mining counties outside of Appalachia. They also found that coal mining communities of Appalachia had higher cardiovascular disease rates and heart attack rates than coal mining communities that were outside of Appalachia. The increased prevalence of heart disease as well as increased morbidity from heart disease was documented for both men and women in this research.⁷

There is research showing that women are indeed personally affected by heart disease. There has been information published that also

indicates that women, and even more specifically Appalachian women, care about this issue. Schoenberg, Hatcher, and Dignan held focus groups throughout Appalachian counties inquiring into the most important health concerns of the region. Their 2008 published results showed that heart disease and diabetes ranked 3rd among the perceived greatest health threats to these communities behind drug and medication abuse (#1) and cancer (#2).⁸

Current Prevention Strategies

The problem of cardiac disease in women is clearly a big one. While it is the number one killer of women, it is the number three concern of Appalachian women, and hence is less likely to be perceived as the threat that it truly is in West Virginia. The next logical question to pose is the following: What has worked to help better the education on and prevention of heart health issues in West Virginia's women? Numerous national groups have indicated that cardiovascular risk factor control should be the basis of any effort to improve the cardiovascular health of women.²

The Heart Truth is a benchmark campaign that was created by the National Institutes of Health with a specific goal: to decrease the toll that heart disease is taking on women in the United States. The objective of this action plan was to educate women about heart disease and to give them the knowledge and tools necessary to lower their risk factors in order to prevent disease. The Heart Truth also specifically uses the 10-year Framingham scores to calculate risk of heart disease. This program sponsors events around the country and through media. However, events target large cities such as Atlanta GA, Los Angeles, CA, Chicago, IL, Charlotte, NC, New

York, NY, and Palm Beach, FL.² The authors believe that West Virginia rural communities could benefit from the same efforts constructed on a grass roots level locally.

After conducting six focus groups throughout rural communities, however, Krummel, Humphries, and Tessaro documented in 2002 that many rural women are very much unaware of their personal cardiovascular risks. When these women did agree on topics such as the importance of dietary choices on heart health, they were found to lack proper education and skills on how to improve their nutrition. These researchers recommended that educating rural women while providing resources such as nutrition guides would help improve the cardiovascular health of this population. They also found that women placed a huge importance on cultural beliefs and living situations as contributors to their lifestyles.⁹

Whitlock and Williams published research in 2003 concerning the impact that primary care clinicians can have in the prevention of heart disease. Because of this research, the United States Preventative Task Force (USPSTF) and the Task Force on Community Preventive Services (CTF) recommend that primary care clinicians can help prevent cardiovascular disease in women by providing evidence-based recommendations for tobacco cessation and adhering to a healthy diet. There was, however, lack of sufficient evidence to recommend promotion of a healthy diet and physical activity in routine primary care appointments. This group noted the lack of gender-based and minority-based data on this subject and suggested that improving such tactics would drastically help in primary care preventative research¹⁰ Of course, a scarcity of primary care providers in rural Appalachian

areas such as West Virginia also contributes to the problem.

Another group published an article in 2009 detailing the importance of health promotion in faith- and community-based organizations in the prevention of cardiovascular disease for high-risk women. These authors focused on ethnic minorities, but this information can reasonably be applicable to the faith based women of West Virginia as well. In this study, women were enrolled in biweekly counseling sessions for four months with a focus on addressing cardiovascular disease risk factors (including hypertension, cholesterol, obesity, and physical inactivity) along with signs and symptoms of heart attack and stroke. Then they were enrolled in four to six maintenance sessions over the following three months. Lay and medically trained professionals implemented medical screenings, health behavior counseling, risk behavior modification, and stage of change counseling in all of these sessions. The following outcomes were attained through these interventions: increased knowledge and awareness of heart disease, understanding of signs and symptoms of heart attack, understanding cardiovascular risk factors, attaining control of blood pressure, and forward movement in stage of change for wanting to control risk factors. It should be noted that the primary outcomes of this study were not obtained: reducing obesity and increasing physical activity. This group concluded that it is possible to improve cardiovascular knowledge and awareness outcomes in high risk women through intervention combined with community engagement, advocacy, self efficacy, resource knowledge, and health promotion in faith- and community-based organizations.¹¹

A literature review was completed as part of a project entitled "Behavioral Health Change

Figure 3. Your Personal Heart Health Assessment

What is coronary heart disease?

Coronary Heart Disease refers to a build-up of plaque in the walls of the arteries feeding the heart. When this plaque reduces blood flow to the heart, the heart doesn't get the oxygen that it needs. This can lead to chest pain (angina), heart attacks, heart failure, irregular heartbeats, and sudden cardiac arrest.

General Information:

- Heart Disease is the leading cause of death for women in the United States.
- 1 in 4 women dies from heart disease in this country.
- There are certain risk factors that increase your chance of developing heart disease.
- Having just one of these risk factors doubles your chance of developing heart disease while having 2 risk factors increases this chance by fourfold and 3 risk factors increases your chance by tenfold.
- Some of these risk factors can be prevented.

<u>Common Risk Factors:</u>	<u>Applies to Me:</u>
1. Smoking	_____
2. High cholesterol	_____
3. High blood pressure	_____
4. High blood sugar/diabetes	_____
5. Overweight or obese	_____
6. Lack of physical activity	_____
7. Post-menopausal	_____
8. Stress or depression	_____
9. Sleep apnea	_____
10. Family history of heart disease	_____

This is your personalized risk assessment based on the Framingham Report:

- This assessment takes into account your major contributors to heart health including your age, gender, cholesterol, blood pressure, blood sugar and diabetes status, and smoking status.
- Based on this equation, your absolute risk of developing coronary heart disease over the next 10 years is _____.
- Based on this equation, this places you in the _____ risk group.

disease based on multiple risk-factor equations. The researchers included a specific set of guidelines to estimate women's risk. This information can be used by physicians and patients alike in preventative strategies as well as guidelines for treatment and risk reduction.¹³ The data has since been validated by other articles as well, one of which was published in *The Journal of American Medicine (JAMA)* in 2001.¹⁴ The utility of the Framingham Risk Assessment, while thought to be universal in the United States, has yet to be formally examined in a rural sample of West Virginia women.

Future Directions

In conclusion, through this review it is easy to understand the effect that cardiovascular disease is having on women and especially rural, West Virginia women. Heart disease is the number one killer of women and it is an even more formidable risk in Appalachia. While women are typically concerned about heart health, many do not have the access to medical providers and hence information necessary to help reduce their cardiovascular risk factors. Research has found that a focus on bringing specific awareness to patients about cardiac disease risk factors along with the use of screening tools and resource provisions has helped to improve heart health for this population. One such tool is the Framingham Risk Assessment. Primary care physicians can be a huge help in this area by utilizing measures such as the Framingham Risk Assessment to provide quick, detailed information to patients regarding cardiac risk factors. Further, that information can be provided as part of a broader, personalized handout to provide patients on heart health such as the sample handout the authors have provided above (See Figure 3).

in Appalachian Women with High Cardiovascular Disease Risk" out of the University of Kentucky in 2010. These researchers looked into what strategies seem to be the most effective in helping women in rural Appalachia (specifically rural Appalachian Kentucky, adjacent to Southwestern West Virginia) to reduce their risk for coronary vascular disease. The results showed that interventions that included personal instruction and education seemed to help women the most in reducing risk factors such as smoking, lack of physical activity, unhealthy eating, high blood pressure, high BMI,

and increased cholesterol. This approach also seemed to improve the number of cardiac events. Other ideas such as web-based interventions and community-wide media campaigns showed very little such improvements.¹²

Widely recognized and accepted national data from The Framingham Heart Study has provided much insight into heart disease as well. Research began as early as 1948 and followed participants over many years. Data from one arm of this study, published by Wilson, D'Agostino, and Levy et.al, calculated a patient's estimated 10-year risk of cardiovascular

Since previous research has shown risk factor reduction is paramount to improving cardiac health and decreasing cardiac disease burden, future studies should focus on how best to do this with women in West Virginia. Community awareness projects, civic, church, and medical center cohort groups can certainly prove valuable in terms of support and education for Appalachian women. The education regarding heart risk needs to continue for the problem to improve into the future. The present national emphasis on women's heart health such as the "Wear red" for heart disease days hold promise in improving awareness of women's heart health issues. Nonetheless, efforts to personalize risk and awareness for patients in the primary care clinic should not be ignored.

Regarding education, one current study as part of a West Virginia Rural Scholars project is set up to emphasize risk awareness and education. Approved to run in a rural federally qualified health center (FQHC), the project is set up to provide a preliminary assessment of the role that education concerning patient-specific risk can have

on two parameters: heart health awareness and reported motivation for positive lifestyle change. It is hoped that feedback to patients concerning current risk by way of the Framingham Risk Assessment and detailed information on ways to improve heart health can be pivotal in decreasing cardiac problems. It is important to find practical, valuable tools for the busy primary care physician to utilize during patient visits that will aid in both health prevention and promotion. The Framingham Risk Assessment is one tool that can provide this information in an efficient manner. It is hoped that continued assessment and education in West Virginia and Appalachia as a whole can lead to a reduction in the overrepresentation of this group as it applies to cardiac morbidity in women. After all, helping patients to live a long, healthy life is the ultimate outcome measure for any heart health initiative.

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CME POST-TEST

34. What is one of the best ways to help improve cardiac health in women?

- refer for yearly stress tests
- encourage risk factor reduction
- schedule annual cardiology appointments
- prescribe anti-depressants for mood improvement

35. What percentage of women in the US has at least one risk factor for cardiac disease?

- 20-30%
- 30-50%
- 50-75%
- over 75%

36. Research has shown that women are not concerned about heart health.

- True
- False

Recruitable Community Program A Plan of Action for Community Involvement and Revitalization

The Bureau for Public Health's Recruitable Community Program (RCP) was initiated in 1998. The program is a collaborative effort between the Division of Rural Health and Recruitment, professional community development agencies and institutions, community stakeholders and local health care facilities.

The RCP selects two communities annually to participate in the program. Selected communities must have an immediate need to recruit or retain health care providers, be located in a designated rural underserved area in West Virginia and cachement area of a Critical Access Hospital.

Maintaining dependable health care is a major concern for many rural West Virginia communities. It is one of the most important and practical investments a community can make. The purpose of the RCP is to provide a rural community with the necessary skills, tools and education to develop and strengthen its health care recruitment/retention potential and preserve quality health care within the boundaries of the community. The ability to provide quality health services is a vital element in promoting community growth and prosperity. Whereas, failure to retain health services can decrease a community's potential to attract

new businesses and other entities so vital to community sustainability.

Although the RCP's primary focus pertains to the recruitment and retention of health care providers, the program also addresses other community interests and needs. Community infrastructure, economic development, housing, transportation, health care and educational opportunities are typical areas of discussion during community visits. All aspects of the community and its health care system are evaluated by a team of qualified expert professionals assisted by undergraduate students. Based on the needs expressed by the community, this team may include landscape architects, city planners, public administrators, public health professionals, engineers, historians and economic development specialist.

Community involvement is an essential component of the RCP. The community must be willing to participate in the program and work as a team with the professionals. The outcome of the program depends greatly on the community's willingness to take an active role and work in collaboration for the benefit of the community. Another important element of RCP is the establishment of mutual trust, respect and consideration from the highest community official to the average citizen. Many communities

have unsung heroes just waiting for the opportunity to be asked to participate in a worthwhile project. The RCP strives to open doors to community volunteerism and utilize the talents, abilities and resources that many residents have to offer.

Town meetings and other social events provide a forum for residents to gather and discuss community development, revitalization and health care. Utilizing their combined knowledge and expertise, the professional team provides guidance and assistance to establish a community plan of action and offer ideas and suggestions on how the plan may be brought to fruition.

Public presentations and detailed written reports outlining the team's observations, conclusions and suggestions are furnished to the community. Together with the formation of organized community volunteer groups and a structured plan of action the community may utilize the team's reports to apply for additional funding and assistance from various community-based programs.

Cost for services provided by professional agencies and/or organizations are paid by the Recruitable Community Program.

Nancy C. Melton
RCP Coordinator

Liability Update for Physicians at Youth Sporting Events

On May 29, 2013, Governor Tomblin signed Senate Bill 336, the Concussion Bill, into law. Like similar laws in almost all other states, the bill helps protect student athletes by requiring parents of athletes to sign concussion information forms, coaches to receive training to recognize the signs of concussion, and players with suspected concussions to be removed from the field of play until they have been given medical clearance.

The new law does not specifically address liability for physicians who volunteer at sporting events, but a few other existing WV statutes are pertinent: The Good Samaritan Act (WVC 55-7-15); the Volunteer Team Physician Act (WVC 55-7-19); and WVC 29-12-5a, which deals with liability coverage from the Board of Risk and Insurance Management (BRIM). In addition, a federal law called the Volunteer Protection Act of 1997 may apply.

WV's Good Samaritan Act provides that "No person, including a person licensed to practice medicine or dentistry, who in good faith renders emergency care at the scene of an accident or to a victim at the scene of a crime, without remuneration, shall be liable for any civil damages as the result of any act or omission in rendering such emergency care." Presumably, this would provide a complete defense for a physician who, for example, jumped out of the stands at a sporting event to help an injured player, although this theory has not been tested in WV courts.

WV's Volunteer Team Physician Act applies to physicians acting in the capacity of volunteer team physicians at an athletic event

(including scheduled practices), sponsored by a public or private elementary or secondary school. It provides that, if such physicians have an agreement prior to an athletic event, render emergency care, during an emergency, gratuitously and in good faith, and without objection by the player, they are not liable for any acts or omissions above the limits of their professional liability insurance. This does not apply if the act or omission constitutes gross negligence. This act provides no defense and only minimal protection.

The BRIM Act ostensibly applies to physicians acting as volunteer team physicians for public school events. This act provides that BRIM will provide liability coverage for any alleged negligence, or other acts resulting in bodily injury, for Board of Education personnel who are acting within the scope of their professional duties, and so long as they have not acted with malicious or criminal intent. The act also stipulates that the County Board of Education or the insurer will provide the defense in the case of a suit. Although the language in the act refers to staff members and employees, and not expressly to volunteers, BRIM Executive Director Chuck Jones told Senator Ron Stollings, in writing, that he believes volunteer team physicians are covered under the act. The BRIM Act would offer public school physician volunteers greater protection than that provided by the WV Volunteer Team Physician Act since the physician would not be responsible for the insurance costs or the attorney fees.

Another possible defense for volunteer physicians is the federal Volunteer Protection Act (VPA).

The VPA provides immunity for volunteers of nonprofit organizations or governmental entities who are acting within the scope of their responsibilities, and not acting with gross negligence, reckless misconduct, or flagrant indifference. As with the WV statutes, case law regarding the VPA is scant, but in a case in Connecticut, a volunteer soccer coach successfully used the defense after being sued for injuring a child during practice.

It is important to note that these various acts only provide potential defenses or protections for defendants in lawsuits. They do not prevent injured parties from bringing suit. A recent case in Florida demonstrates that a state's liability protection act may not even offer much of a defense.

In the Florida case, a high school football player won a \$750,000 judgment against an orthopedic surgeon who served as a volunteer team physician, in spite of Florida's Volunteer Team Physician Statute.

The case was *Weiss v. Pratt* (53So.3d 395 (Fla. App., 2011)). The player was injured after a tackle and lay motionless for a few seconds on the field, then kicked his legs and rolled over. Dr. Weiss ran to his side and examined and questioned the boy for about 15 minutes. The boy mentioned seeing a flash of light, but said he had no unconsciousness or paralysis. Dr. Weiss and a trainer helped the boy walk to the sidelines, where he mentioned feeling nauseous. He was then taken by ambulance to a local emergency room, where he was treated for a shoulder injury and released. A few days later, he went to the doctor's office with reduced

mobility and strength in his arm, and MRI showed a spinal cord injury.

The boy brought suit against Dr. Weiss, the emergency room physician, and the hospital. At trial, the jury found that Dr. Weiss acted negligently because he failed to have the boy carried off the field on a backboard; the jury found in favor of the other two defendants.

The Florida Volunteer Physician Act operates differently from its counterpart in West Virginia: it provides immunity from civil liability to a volunteer physician who renders care “as a reasonably prudent person similarly licensed to practice medicine would have acted under the same or similar circumstances.”

The plaintiff’s expert witness was an ER doctor who testified that he would have had the boy carried off the field. Although the witness was neither a team physician nor an orthopedic surgeon, nor board certified, the court found him “similarly licensed” because, like the defendant, he was a medical doctor, and he “had the expertise of what to do in a similar circumstance.”

The Florida court noted that Florida’s Volunteer Physician Act was not a very useful defense: “The statute purports to provide immunity, but its protection is illusory. If the legislature intended to provide some additional layer of protection to those physicians who

volunteer their services, then perhaps the statute needs another look.”

Here in West Virginia, the Volunteer Team Physician Act does not even provide illusory immunity: it simply states that a team physician cannot be sued for an amount greater than his or her insurance coverage. Hopefully, physicians are not discouraged from volunteering, but they should be aware that they may be held to the same high standards when volunteering as they are in their professional practice.

Susan Baek, Esq.
WVSMA Legal Analyst

Obituaries



The WVSMA remembers our esteemed colleagues...

Ronny H. Go, MD

Ronny was born July 11, 1941, in the town of Ruteng in Flores, Indonesia.

He studied in Surabaya, Indonesia and attended Airlangga University Medical School, where he met his beloved wife, Sylvie. He and Sylvie married in Surabaya on October 19, 1969.

After moving to the United States in 1973, he completed his internship in Cleveland, Ohio and his residency in

Charleston, W.Va., where he practiced pediatrics from 1977 to 2007. He loved children and his patients loved him.

In his retirement he enjoyed ballroom dancing, gardening and spending time with his family while enjoying conversations with his friends, old and new.

Ronny fought a brave battle after he was diagnosed with stage 4 pancreatic cancer in October 2012

and passed away peacefully with his family by his side on June 2, 2013.

He is survived by his wife of 43 years, Sylvie; sons, Danny and Richard; sister, Gaby Yo; and brother, Raymond Gouttama.

Ronny will be greatly missed by his family and friends whom he loved and enjoyed so much.

A memorial service will be held on Monday, June 10, at 10 a.m. at El Camino Memorial - Sorrento Valley in San Diego, Calif.

Dr. Bradford Warden named director of WVU Heart Institute



Bradford Warren, MD

Bradford Warden, M.D., who has served as the interim director of the WVU Heart Institute for the past year, has been named its permanent director. The WVU Healthcare Executive Leadership

Group selected Dr. Warden for this responsibility based on his strong performance as interim director and his vision for the Heart Institute's future.

In his vision statement, he told the group, "The WVU Heart Institute is the flagship institution for cardiac care in the state of West Virginia. We are responsible for the entire continuum of cardiac health. It is our responsibility

to set policies for the administration of cardiac healthcare, to provide gold-standard clinical care, to train the highest quality cardiologists, residents and medical students and to lead the way in cardiac research."

WVU Healthcare officials say Warden has been pivotal in creating a program that provides seamless transition of cardiac care between inpatient, outpatient and ancillary services. Under his interim leadership, the Heart Institute has continued to expand patients' access to new medical procedures and services at its Morgantown location in the Suncrest Towne Centre, at Ruby Memorial Hospital

and at outreach clinics in Fairmont, Grafton, Elkins and Kingwood.

The Institute has experienced success with recruitment and has engaged in community service and strengthened its research program, largely in collaboration with WVU Center for Cardiac and Respiratory Sciences.

Warden is a graduate of the WVU School of Medicine, the WVU Internal Medicine Residency Program and the WVU Cardiovascular Fellowship Program. He is board certified in cardiovascular disease and interventional cardiology. In addition to interventional cardiology, his special interests include high-risk cardiovascular procedures and peripheral vascular disease.

WVU's Rhodes receives national rural health award



Larry Rhodes, MD

Larry Rhodes, M.D., interim chair of the West Virginia University Department of Pediatrics and director of the WVU Institute for Community and Rural Health, has been named

the 2013 Rural Health Practitioner of the Year by the National Rural Health Association (NRHA).

The award recognizes a direct service provider for leadership in bringing health services to rural populations. Factors taken into consideration include providing outstanding care, involvement in the community and lasting contributions to the healthcare system.

"I am truly honored to receive this award. I must admit, I was surprised at being chosen, in that I am a pediatric subspecialist. Upon reflection I realized that much of my work in the state occurs in rural areas. When you live and work in a place you love, such as West Virginia, you sometimes need to

be reminded that you are rural," Dr. Rhodes said. "I also believe that the bulk of the credit for this award goes to the staff of the WVU Institute for Community and Rural Health who are committed to improving healthcare for people in rural West Virginia."

A native West Virginian, Rhodes received his medical degree from the WVU School of Medicine. He completed residency training in pediatrics at WVU and fellowship training in pediatric cardiology and pediatric electrophysiology at Boston Children's Hospital. Before returning to WVU permanently, he spent 10 years working at Children's Hospital of Philadelphia. He is now chief of the WVU Section of Pediatric Cardiology.

Rural West Virginia and the people who live among its rolling hills hold a special place in Rhodes' heart.

He volunteers at outreach clinics serving rural West Virginia. He founded and volunteers each summer at Camp Mountain Heart - a week-long adventure where his patients and other kids with heart problems participate in fun activities under close medical

supervision. In 2012, the WVU Institute for Community and Rural Health, which is under his leadership, enabled 400 students to complete 2,700 weeks of rural health training. To-date, it has also provided \$475,000 in scholarships to WVU dental and medical students in exchange for a commitment to practice in a rural West Virginia community in areas where healthcare professionals are needed the most.

Rhodes received the award May 9 during NRHA's 36th Annual Rural Health Conference, which attracted more than 900 rural health professionals and students to Louisville, Ky. It is the largest gathering of rural health professionals in the nation.

NRHA is a nonprofit organization working to improve the health and well-being of rural Americans and providing leadership on rural health issues through advocacy, communications, education and research. NRHA membership is made up of 21,000 diverse individuals and organizations, all of whom share the common bond of an interest in rural health.



Marshall picks up national award for family medicine

Marshall University's Joan C. Edwards School of Medicine has received a Family Medicine "Top Ten" award from the American Academy of Family Physicians (AAFP) for being one of the nation's top schools in the percentage of graduates entering family medicine residencies.

Based on a three-year average ending in October 2012, AAFP reports 18.5 percent of Marshall medical school graduates have chosen family medicine residencies. The average places the school as number five in the

country and the only medical school in West Virginia in the Top Ten.

"Educating primary care doctors remains our top priority," said Dr. Joseph I. Shapiro, dean of the School of Medicine. "As the Affordable Care Act is implemented across the country, many more primary care doctors will be needed to provide care for the millions of patients entering the health care system. I am pleased our School of Medicine is doing its part to educate doctors on the front lines of medicine in this country."

Dr. John Walden, chair of the Department of Family Medicine, says Marshall's contribution to growing the nation's ranks of primary care physicians and more specifically, family medicine doctors, shows the school is doing its part to address the shortage of primary care physicians in the country.

Since 1992, Marshall has been honored 19 times by the AAFP for its high percentage of medical students choosing family medicine residencies.

Marshall Health appoints new director of pharmacy services

Brian A. Gallagher, R.Ph., J.D., is the new director of pharmacy services with Marshall Health for the Joan C. Edwards School of Medicine and the Marshall University School of Pharmacy. He has a joint faculty appointment in both schools.

Gallagher, a West Virginia native, most recently served as senior vice president of government affairs for the American Pharmacists Association in Washington, D.C. Gallagher graduated from West Virginia University in 1981 with a B.S. in

pharmacy and received his law degree from Wake Forest University in 1984. He is admitted to the West Virginia, Georgia and Pennsylvania bars and is licensed to practice pharmacy in West Virginia. Gallagher began his duties with Marshall Health March 29.

Study focuses on potential lung cancer therapies

Scientists from Marshall University, along with colleagues at Alderson-Broaddus College in Philippi, have completed a study that may eventually help lead to the development of new treatments for lung cancer.

Their results were published in the Feb. 15 issue of *Cancer Research*, the most frequently cited cancer journal in the world.

At Marshall, Dr. Piyali Dasgupta, associate professor in the Department of Pharmacology, Physiology and Toxicology in the Joan C. Edwards School of Medicine, worked on the study with her research team of Jamie Lau, Kathleen Brown and Brent Thornhill, and

undergraduate students Cody Stover and Christopher McNeas.

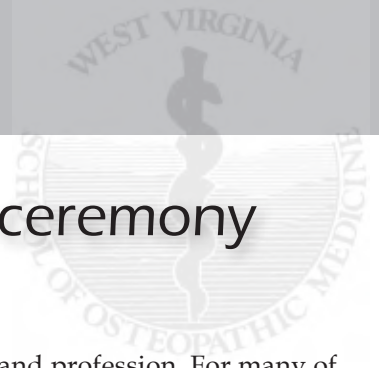
Researchers in Dasgupta's lab explore how the various components of tobacco, especially nicotine, advance the progression of lung cancer.

Dasgupta said this study focused on a specific type of lung cancer called bronchioalveolar carcinomas, or BACs, which are known to be associated with smoking. She and the other scientists working on the project looked at the cellular pathways through which nicotine – the addictive component in cigarettes – promotes the growth and survival of BACs.

According to Dasgupta, nicotine itself is not a carcinogen, but studies

have shown it can induce the growth and metastasis of lung cancers. It can also protect lung cancer cells against the beneficial effects of chemotherapy.

She said, "In this study, we found that nicotine raised the levels of specific neurotransmitters, or 'chemical messengers,' in human BACs. When we used a drug, vesamicol, to interrupt the neurotransmitters' pathways, the nicotine-induced growth of these carcinomas was significantly suppressed. Our findings are important because they indicate that agents like vesamicol may be useful in the treatment of human lung cancers."



WVSOM celebrates 36th commencement ceremony



Underneath a large white tent on a green field in Lewisburg rows of medical students sat donned in their suede green and black gowns with their gold tassels dangling from their caps. Each medical student in the Class of 2013 eagerly awaited the moment they would walk across the stage and receive their Doctor of Osteopathic Medicine degree from the West Virginia School of Osteopathic Medicine (WVSOM).

Underneath the tent also sat the students' family members, friends, significant others and the many WVSOM faculty and staff who have all supported the graduates on their four-year journey through medical school. The 36th annual commencement ceremony that took place on May 25 was the last step in medical school for the 191 students who now enter the medical profession as physicians.

Michael Adelman, D.O., D.P.M., J.D., president, and Lorenzo Pence, D.O., vice president for academic

affairs and dean, led the ceremony and awarded the degrees.

"WVSOM is a leader in graduating physicians of the highest caliber," Adelman told the graduates. "You should be proud of your individual accomplishments, your class and your school."

The WVSOM Board of Governors vice chair, Cheryl Schreiber, WVSOM Alumni Association president, Robert Holstein, D.O., and the president of the West Virginia Osteopathic Medicine Association, Ralph Wood, D.O., provided messages to guests.

Three esteemed leaders from the West Virginia Higher Education Policy Commission (HEPC) presented the commencement address. Chancellor Paul Hill, Ph.D., Chairman David Hendrickson, Esq., and Vice Chairman Bruce Berry, M.D., all stressed the importance of education and giving back to the community.

"I understand the extreme joy you are feeling today," Berry, a physician himself, said. "But joy doesn't come without an obligation to your

patients and profession. For many of you, you will be the only provider to your patients."

Hendrickson noted that just getting to this point proves that the graduates are committed to serving others.

"All you've done is evident that you care — about the community and the great state of West Virginia — and you care for others more than yourself," Hendrickson said. "You are graduating from a world-class institution in a small community with a huge heart."

Hill told the graduates that education is the key to a richer and fuller life.

"Class of 2013, so much opportunity lies ahead for you," he said in his speech. "Each challenge is an opportunity to fulfill your dreams and find your passion in life. Let your experience today be a catalyst for life-long learning. Your alma mater is a jewel in the state's higher education system."

Megan Thompson, Class of 2013 president, provided the class address, and reminisced about the students' past four years.

"We have all taken unique roads to get where we are today, but no matter what the path was we all joined together on this common road," she said.

Thompson explained that whether the students were on campus or in the hospital, their white coats carried stories only medical students would understand. From ink spots, to blood splatter and amniotic fluid, each stain carried a story that would live in their memories.

The ceremony concluded with the graduates reciting the osteopathic oath, part of which states that the graduates, "will be mindful always of my great responsibility to preserve the health and the life of my patients."

CALL FOR PAPERS—2014

THEME: West Virginians and Tobacco Cessation: What's Working and What's Not *and* What Now?

WEST VIRGINIA—#2 in the nation for the highest percentage of smokers per capita.

WEST VIRGINIA—#2 in the nation for the highest percentage of deaths related to tobacco use.

Billions of dollars are spent in lost productivity and treatment of tobacco-borne illnesses. Physicians and state government officials are well acquainted with these statistics. Proceeds from tobacco-related litigation have funded cessation efforts throughout the State. For this special issue, the WVMJ seeks review articles and original research papers focused on methods and programs that have produced measurable change.

The *West Virginia Medical Journal* is soliciting articles for this special CME edition to address the following issues:

1. Success of current smoking bans and programs to control second hand exposure – US and WV.
2. Youth tobacco use and success of control efforts – US and WV
3. Update on current use of smoked tobacco and associated disease morbidity – US and WV
4. Update on current use of smokeless tobacco and associated disease morbidity – US and WV
5. Update on current use of tobacco in pregnancy – US and WV
6. Current controversy regarding the use of non-tobacco nicotine delivery devices, e.g., Snus, e-cigarettes - US and WV
7. Impact of education, economics and other political, social and cultural factors on the addictive use of tobacco and other harmful inhaled substances, e.g., marijuana, water pipes.
8. The health care economic consequences of tobacco use in West Virginia in the last decade. Are our efforts saving money?
9. The cost-effectiveness/ comparative effectiveness of various “quit” programs at 6 months, 1 year and 2 years – especially contrasting the use or non-use of pharmacological aides.
10. **Any evidence of any significant decrease in second hand exposure of children in automobiles and homes by smoking parents or relatives? Are we being aggressive enough in preventing such exposure or do we need to enact measure equivalent to mandatory child car seat use?**

Submissions requirements

- 1) cover letter (include corresponding author's mailing and email address)
- 2) manuscript (double-spaced)
- 3) short biography *for each author*
- 4) three questions and answers pertaining to the manuscript (for CME Post-test Questions)
- 5) a paragraph stating the objectives of the paper
- 6) **All figures and photos must be submitted separately as black and white or grayscale .jpg, or .tif files. Files placed in a Word document are not acceptable.**
- 7) Submissions are limited to 2500 words and five visuals (i.e., 3 tables and 2 figures). Actual figure and table size are left to the discretion of the managing editor as space is available. The word limit includes up to 10 references. Additional references may be abridged, and a notation to contact the author for a full list of references will appear at the end of the article.
- 8) Reference format follows the same style as *JAMA*—superscript numbers placed AFTER punctuation.
- 9) Editorial/commentary submissions are limited to 700 words.
Scientific articles should be prepared in accordance with the “*Uniform Requirements for Submission of Manuscripts to Biomedical Journals*.” Please go to www.icmje.org for complete details. For additional requirements, please refer to *Manuscript Guidelines* at www.wvsma.org/journal.

For more information or questions about submissions, please contact Angie Lanham, Managing Editor.
angie@wvsma.org / 304.925.0342, ext. 20

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DEADLINES:

Manuscript submission: February 3, 2014
Reviews returned by: April 1, 2014
Resubmissions Due by: May 1, 2014
Publication date: July/August 2014 issue

There Is Power in Numbers

The West Virginia State Medical Association (WVSMA) appreciates the confidence and support from the following **Group Practices** who have already established their 2013 WVSMA membership. It is our privilege to serve you! We look forward to being your advocate in 2013 and beyond!

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The WVSMA would like to thank the following physicians, residents, medical students and Alliance members for their contributions to WESPAC. These contributions were received as of June 5, 2013:

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WESPAC is the West Virginia State Medical Association's bipartisan political action committee. We work throughout the year with elected officials to make sure they understand the many facets of our healthcare system.

WESPAC's goal is to organize the physician community into a powerful voice for quality healthcare in the West Virginia Legislature. We seek to preserve the vital relationship between you and your patients by educating our legislators about issues important to our physicians.

WESPAC contributions provide critical support for our endorsed candidates. Your contribution can make the difference between a pro-physician/patient candidate winning or losing.

To make a contribution to WESPAC, please call (304) 925-0342, ext. 12

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Please direct all membership inquiries to: **Mona Thevenin, WVSMA Membership Director at 304.925.0342, ext. 16 or mona@wvsma.org.**

West Virginia State Medical Association Employee Named Outstanding National Host Client



Practice Management Institute has named Barbara Good, Physician Practice Advocate for the West Virginia State Medical

Association, its

2012-2013 Outstanding National Host Client. The award was given out during an industry-wide ceremony held at the PMI Annual Conference for Medical Office Professionals, May 29-31, 2013 at the Crowne Plaza Hotel in historic downtown New Orleans.

Chosen nationally from among hundreds of PMI hospitals, medical society, physician service group and program host partners, Ms. Good has been recognized by PMI for her exceptional networking and relationship-building abilities, and for her outstanding commitment to her organization's physician community. Ms. Good has become,

for the second time in three years, the stand-out advocate on the importance of accessibility of education to the physician and staff. Ms. Good was also named the Outstanding National Liaison at the 2012 national conference held in San Antonio, Texas, and the Outstanding National Host Client for 2011.

"This award is special in that we spotlight the one client among hundreds who has made an important contribution regarding a particular message – that making education accessible is vital, and can do much to build bridges between an organization and the physicians they serve. For the third year in a row, it's hard to overlook her achievements and her passion for those she serves" said Michael Moore, Director of Outreach, Network, and Business Development for PMI.

"Ms. Good has by example taken the role of program host to the next level. Her belief in the importance of education, its potential impact

in building close bonds between WVSMA and its affiliated providers and staff, is second to none. She is praised for her determination that education will ultimately impact the quality of patient care in West Virginia. It's what other host clients in her role around the country are wanting to emulate." said Moore.

Established in 1867, the West Virginia State Medical Association is a physician-based organization which focuses on public health issues, strives to provide the highest level of continuing medical education, and seeks to promote the time honored commitment of the medical profession while improving the quality of life for West Virginians.

Practice Management Institute® (PMI) is the training, networking and credentialing source for medical office professionals. For more 30 years, physicians and their staff have looked to PMI for skills that contribute to a more efficient, profitable and compliant office.

WVMJ

Wants to hear from you!

If an article stirs your intellect and/or emotions, or you just have something on your mind related to medicine, we want to hear from you. Submit your letter via e-mail to angie@wvsma.org or send it to WVMJ Letters, 4307 MacCorkle Avenue, SE, Charleston, WV 25304.

THE WVSMA & PMI PRESENT

Certified Medical Coder (CMC) Course

The West Virginia State Medical Association (WVSMA), through our exclusive partnership with the Practice Management Institute (PMI), is pleased to announce the offering of the **Certified Medical Coder (CMC)** Course. The CMC certification is designed for physician-based coding professionals. Individuals who are able to demonstrate by exam a superior level of physician-based coding knowledge are awarded the CMC certification.

A **Certified Medical Coder** plays an integral role in the reimbursement process, ensuring that proper documentation guidelines are followed and that codes are submitted to the highest degree of specificity; thus ensuring that physicians receive their entitled reimbursement.

The 5 day course will include *Medical Terminology, ICD-9-CM Coding, ICD-10 Coding Conversion, HCPCS/CPT Procedural Coding, Ancillary Services and Advanced Coding*. Participants should bring coding books and a medical dictionary.

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Friday, September 13

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E-mail: karie@wvsma.org

Seen Your Insurance Agent Lately?

by Steve Brown

Have you seen your insurance agent lately – if he/she walked in the front door would you recognize him/her?

If not, let me introduce myself, I'm Steve Brown, agency manager of the West Virginia Medical Insurance Agency. I plan to visit your office 3 or more times per year if I'm your agent.

Recently I met with a prospective client by appointment to discuss the potential of becoming the insurance agent for the group practice she managed.

She had recently experienced some issues with her group's renewal involving the level of service she received from her then current agent.

As we discussed our services, we pointed out that we would pre-establish a schedule of services to be performed in any policy year cycle – this schedule actually included a plan to meet with her personally at least 3 times a year.

Her response went something like this – “you mean you will come to our office 3 times a year when I've actually never “seen” my current agent; I have just spoken with him/her on the telephone or through the mail?” My response to her was please review my agenda for our schedule of working with you – it includes personal visits to your office at periodic times, but could include more if need be.

This conversation may sound absurd, but it has happened to me on more than this one occasion.

Because we are the agent for doctors throughout the State (currently in 41 counties), visiting each one is not easy, but we find a way; for example, when I go to the Eastern Panhandle, the Northern Panhandle or to Mercer County, I never go to see only one client, I always plan to see as many as I can in the time frame I have allotted for that visit. Many times visits to these areas of the State include overnight stays and coincide with Mutual CME Loss Control or CARE programs scheduled in the evenings – giving me more opportunities to see my clients and develop new relationships.

Doctors are our business, our only business, and we aim to keep the ones we have by servicing them the way they want to be serviced (including our efforts to make sure they receive all the premium credits

possible and providing the “best” finance rate premium financing).

Kelly Pitsenbarger, MD, Family Practitioner, Beckley, said it this way: “It is really nice having a personal representative instead of working by telephone or computer on matters as important as my medical professional liability insurance. With the economy as it is today, our insurance premiums through the West Virginia Medical Insurance Agency have improved because of their efforts. Thank you Steve Brown for being our agent.”

If you want personal service on your medical professional liability insurance – let's meet and discuss the services we offer and the services you need that you may not be receiving.

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CME Answer & Registration Form

This special issue of the *West Virginia Medical Journal* is jointly sponsored by CAMC Health Education and Research Institute, a continuing education enduring material.

Name: _____

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Answers *(please circle your response)*

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10) a b c d

19) a b c d

28) a b c d

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11) a b c d

20) a b c d

29) a b c

3) a b c d

12) a b c d

21) a b c d

30) a b c d

4) a b c

13) a b c d

22) a b

31) a b

5) a b

14) a b c d

23) a b c d e

32) a b c d e

6) a b

15) a b c d

24) a b c d e

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16) a b c d e

25) a b

34) a b c d

8) a b c d

17) a b c d e

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9) a b c d

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	Content relevant to my practice					Review of Individual Article				
	Score Relevance					Score Article				
	No		Some		Very	Poor	Satisfactory			Excellent
	1	2	3	4	5	1	2	3	4	5
1. Behavioral Change in Rural Practice: Improving Patient Motivation in Primary Care										
2. Assessing Moderate to Vigorous Physical Activity in Rural West Virginia Elementary School Physical Education Classes										
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4. Rural Healthcare Disparities: Challenges and Solutions for the Pregnant Opioid-dependent Population										
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6. Expanding Models for Rural Primary Care in West Virginia										
7. Inter-Hospital Transfers from Rural Hospitals to an Academic Medical Center										
8. Cost-Savings Analysis of Telemedicine Use for Ophthalmic Screening in a Rural Appalachian Health Clinic										
9. Thinking Outside the City: Treating Patients with Disordered Eating in Rural West Virginia										
10. Physical Education in West Virginia Schools: Are We Doing Enough to Generate Peak Bone Mass and Promote Skeletal Health?										
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Course Evaluation

	Poor	Satisfactory			Excellent
	1	2	3	4	5
Score Presentation 1 to 5					
Extent to which the course objectives were met					
Potential impact on your practice					
Appropriate, qualified authors					
Avoided commercial bias or influence					
Article topics					
Your overall evaluation of the course					

What practice gaps were covered by the material presented in this issue? _____

What will you do differently in your practice as a result of your participation in this course? _____

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AUTHORS: A cover letter from the corresponding author, complete with physical mailing address and email address, should be submitted with the manuscript. Persons listed as authors should have participated sufficiently in the work to take public responsibility for the concept. No more than six authors will be listed. Other contributors may be recognized in an acknowledgement.

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2013 Healthcare Summit

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For additional details on this year's program, please visit our website at www.wvsma.org. If you have any questions please feel free to contact Karie Sharp, WVSMA Conference Coordinator at (304) 925-0342 ext. 12 or karie@wvsma.org.

Registration form on next page →

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West Virginia Responder Emergency Deployment Information system

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