Mapping Determinants of Healthy Living in Rural Areas

Overweight and obesity is a rising public health crisis in Kansas. Obesity is a risk factor for several diseases, including type 2 diabetes, cardiovascular disease, some cancers, and musculoskeletal disorders such as arthritis. As recently as thirty years ago, less than one-half of all adults nationally were overweight or obese; today more than two-thirds are. A 2007 survey conducted by the Kansas Department of Health and Environment found that approximately 64 percent of all Kansans were overweight or obese. The prevalence of overweight and obesity in rural areas of the state, however, is approximately 10 percent higher than the rate in urban areas. Why is this? Do rural communities in Kansas have structural barriers to healthy lifestyles that may influence overweight and obesity among local residents? 

During the summer of 2009, 17 KU medical students spent six weeks with a rural Kansas primary care physician. In addition to clinical duties, all of these students worked with the University of Kansas Medical Center’s Healthy Living Kansas (HLK) and Rural Primary Care Practice and Research Programs. The medical students conducted chart reviews of the participating physician’s patients. Patients eligible for the HLK program were invited (via a letter from their physician and Healthy Living Kansas) to log onto the HLK website and complete a colon cancer assessment. 

Today was exciting! I left clinic around 5...at about 6:30PM I got a call from the Dr. saying there was a 2 day old baby with a 103 degree fever. I threw my dress clothes back on and ran out the door. We loaded up the car with a box of instruments, a box of files, and a duffel bag full of medications and drove 15 minutes to Thayer where the settlement is. The Amish here are extremely conservative (no electricity or phone...the father hopped on the buggy and went to the nearest house with a phone). This was the couples 17th child. When we arrived, the baby had a respiration rate of 120 and was running a 104.2°F temp. We listened to her lungs and brought her and the parents back to the clinic for chest xrays because we suspected pneumonia. Turns out she had RLL pneumonia probably due to group B strep. We’re going back out on Saturday to check on her. The whole visit including treatment, medications, and transportation back and forth cost the family $94...since they don’t have health insurance. The doctor’s really doing an incredible service to the people here. Other than that, I also saw primary leiomyosarcoma of the lung on Tuesday, Perthe’s disease today (avascular necrosis of the head of the femur), and watched part of a movie with the doctor and his wife while we waited for the next patient.

Cassandra McCullough

Read more about the extraordinary experiences students had in the Rural Primary Care Practice and Research Program on pages 6, 7 and 8.
Your involvement makes a difference!

We would like to extend our sincere gratitude to every physician preceptors who gave up their time and educational energy to assure the success of this program for those students with an aptitude and interest in primary care and rural practice. This program could never succeed without the dedication of our preceptors and we want to be sure that they realize that we are all, from the students to the faculty researchers, in their debt. Due to the support of our funders, and preceptors, this program continues to provide a unique learning opportunity for students to advance clinical skills and begin to understand the complexity of clinical practice; and it offers the opportunity for students to understand the rewards of such practice and the fulfillment received from providing direct service to patients and families in a rural community setting. Our desired outcome is that participants in this program will share their enthusiasm with their peers in the medical school and, we believe, based on prior study and analysis, that these students are most likely to pursue primary care and become part of the future rural primary care workforce in the State of Kansas.

Mapping Determinants of Healthy Living in Rural Areas

To help answer this question, the 29 students enrolled in the 2009 Rural Primary Care Practice & Research Program participated in a community-based research project. Overweight and obesity occurs when a person consumes more calories from food than he or she burns. This project attempted to assess barriers in rural communities to consuming better quality foods and to increasing physical activity. Rural communities that do not have grocery stores or only very small ones are veritable food deserts. Although most communities have at least one convenience store, these stores typically do not sell fruits, vegetables, meats, and unprocessed grains. The inability to buy quality foods locally strongly affects the choice of foods that are consumed. Some rural communities also lack the built environment to encourage physical activity. The “built environment” is the man-made surroundings that provide the setting for human activity, such as roads, sidewalks, and buildings. Small communities may not have adequate funds for infrastructure development and maintenance of their built environment. Finally, sparsely populated rural communities are more likely than more densely populated ones to lack facilities where residents can engage in physical activities (e.g., parks with walking trails, fitness centers). Because the built environment may
not encourage physical activity – and may, in fact, hamper it – many rural residents may engage in less physical activity than their urban counterparts. The lack of these and other structural supports may place rural residents at a comparative disadvantage. But many rural residents and community leaders may be unaware of their deprivation and of the affect it has on the health of residents. The primary objective of this project, therefore, was to identify aspects of the built environment and the food economy that negatively influence behavior and health in rural areas and to use that information to engage civic leaders in a conversation of what can be done about it.

Here is what we did. Each student-researcher conducted five in-home interviews with persons with one or more chronic disease selected form the practice of the student’s physician preceptor. (The average age of respondents was 66 years old and 64 percent were female.) Each student-researcher also conducted five neighborhood assessments in their summer communities. The assessments were made during walks or approximately 25 minutes using a checklist of neighborhood characteristics. Using other checklist data collection tools, students also conducted assessments of two food stores and two physical activity resources. The 27 communities that hosted the students varied considerably, most notably in size. Because the food and built environment resources were likely to differ by the size of the community, the communities were assigned to size-based peer groups for analysis. One group consisted of communities with populations smaller than 2,500 residents. The middle group consisted of communities with populations between 2,500 and 15,000, and the final peer group contained communities with populations greater than 15,000. When the results of the assessments were shared with community leaders, local findings were compared to the peer group average. This improved the quality of cross-community comparisons. During the holiday break in December 2009, students will return to the communities where they spent their summer and report their findings. The project is based on the premise that health improvement – encouraging physical activity and consumption of healthy foods – is a community-level issue that will be solved through local, community action. We hope that the reports the student-researchers make to community leaders will stimulate discussion and policy changes that improve opportunities for citizens to engage in healthy lifestyle.

Table 1. Patient Interviews: Percent who agree with statement

<table>
<thead>
<tr>
<th>Statement</th>
<th>Peer Group 1</th>
<th>Peer Group 2</th>
<th>Peer Group 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are sidewalks on most streets in my neighborhood.</td>
<td>57.6%</td>
<td>34.0%</td>
<td>50.0%</td>
<td>47.6%</td>
</tr>
<tr>
<td>Sidewalks in my neighborhood are well maintained.</td>
<td>50.8%</td>
<td>33.3%</td>
<td>23.4%</td>
<td>38.6%</td>
</tr>
<tr>
<td>There are many attractive natural sites in my neighborhood.</td>
<td>61.0%</td>
<td>58.0%</td>
<td>34.3%</td>
<td>53.9%</td>
</tr>
</tbody>
</table>

Table 2. Neighborhood Assessments: Sidewalks

<table>
<thead>
<tr>
<th>Question</th>
<th>Peer Group 1</th>
<th>Peer Group 2</th>
<th>Peer Group 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are sidewalks continuous?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, one side</td>
<td>1.8%</td>
<td>11.6%</td>
<td>11.5%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Yes, both sides</td>
<td>20.0%</td>
<td>4.6%</td>
<td>19.2%</td>
<td>14.5%</td>
</tr>
<tr>
<td>No</td>
<td>78.1%</td>
<td>83.7%</td>
<td>69.2%</td>
<td>78.2%</td>
</tr>
<tr>
<td>If a sidewalk is not present, is there a safe place to walk?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, one side</td>
<td>17.8%</td>
<td>4.6%</td>
<td>17.4%</td>
<td>14.5%</td>
</tr>
<tr>
<td>Yes, both sides</td>
<td>67.8%</td>
<td>48.8%</td>
<td>34.8%</td>
<td>54.0%</td>
</tr>
<tr>
<td>No</td>
<td>14.3%</td>
<td>46.5%</td>
<td>47.8%</td>
<td>31.4%</td>
</tr>
</tbody>
</table>
Colon cancer is the second-leading cause of cancer deaths in Kansas, killing nearly 520 people in 2008. These statistics are alarming because this disease is highly preventable and curable if detected early.

The Rural Primary Care Practice and Research Program matched medical students with rural Kansas primary care physicians. It is by shadowing physicians and working on research projects that medical students learn clinical skills and gain an appreciation for evidenced-based medicine.

Several of the medical students were able to go to their home towns for the summer program. “I was so excited to go back home and work with this project” Amanda Baxa said. “Hopefully it will help Dr. Claassen’s patients get tested and maybe even save lives.” Amanda worked with Randal Claassen, MD in Hillsboro, KS.

A grant from the National Cancer Institute funds the Healthy Living Kansas program. Kimberly Engelmann, PhD, assistant professor at the University of Kansas Medical Center, is the principal investigator for the grant. The Healthy Living Kansas program staff would like to thank and acknowledge the following primary care offices for their help and support of the program. Without the support and assistance of the physicians, their staff, and the KU medical students, HLK would not be able to facilitate colon cancer screening among commonly underrepresented rural primary care patients.

Healthy Living Kansas

Thank you for your support of the Healthy Living Kansas project:

- Gregory Coup, MD
  Konza Prairie Community Health Center, Junction City
- Kerri Fellows, MD
  Associates in Family Care, Paola
- A. Randal Claassen, MD, PMA
  Hillsboro Family Practice Clinic, Hillsboro
- Martin Klenda, MD
  Beloit Medical Center, Beloit
- Brenda Brennan, APNP
  Community Health Center of Southeast Kansas, Pittsburg
- Seeley Feldmeyer, MD
  Meade Rural Health Clinic, Mead
- Gary Yarbrough, MD
  Parsons
- Daniel Sanchez, MD
  Plainville Medical Clinic LLP, Plainville
- Manuel Caga-Anan, MD
  Elkhart Medical Clinic, Elkhart
- Celeste Rains, DO
  New Frontiers Health Services, Oakley
- Dave Hodgson, MD
  Washington Clinic, Washington
- Rhonda Green, MD
  Summit Clinic, Arkansas City
- John Ryan, MD
  Community Physician Clinic, Marysville
- Richard Whitlow, MD
  Lansing
- Mark Basham, MD
  Basham Clinic, Eureka
- Mary Beth Miller, MD,
  Cheyenne County Clinic, St. Francis
- Rebecca Allard, MD
  Cheyenne County Clinic, St. Francis
- Larry Anderson, MD
  Sumner County Family Care Center, Wellington
Although cigarette smoking is the #1 preventable cause of death in the US, helping patients quit is often not a top priority during doctor visits. Patients frequently have health issues that need immediate attention, they may not be ready to quit, or they may need longer-term counseling and support. Especially in rural clinics, doctors are short on time and don’t have a place to refer their patients for help in quitting. So it’s important to find ways to assist doctors in helping their patients quit smoking without placing extra burden on busy rural practices. Connect2Quit is a research study funded by the National Institutes of Health (NIH) that tests the effectiveness of telemedicine-delivered counseling for smoking cessation. KUMC’s Department of Preventive Medicine and Public Health is partnering with the Department of Family Medicine and the KU Center for Telemedicine and TeleHealth (KCTT) to make this project happen. This study is using cutting edge methods to bring smoking cessation treatment to rural smokers. Patients are randomly assigned to receive four sessions of either integrated telemedicine (ITM) counseling or standard telephone quitline (QL) counseling. ITM is delivered through a web camera mounted on a desktop computer in the doctor’s office, while QL is delivered to a phone of the patient’s choice. In the summer of 2009, Connect2Quit partnered with 11 clinics across the state of Kansas where first year medical students were doing a rural health rotation. The students and clinic sites were: Patty Kleinholz at Family Practice Associates in Dodge City, Leah Meier at Pleasanton Family Care, Brandon Pruitt at United Methodist Mexican American Ministries in Garden City, Marta Lasater at Wichita County Health Center in Leoti, Whitney Smith at Partners in Family Care in Moundridge, Anthony Strickland at Dr. Seglie’s clinic in Pittsburg, Erin Locke at Plainville Medical Clinic, Melinda McMurry at Bluestem Medical Clinic in Quinter, Erin Kenny at Scott City Clinic, Jessica Leiker at Greeley County Family Practice in Tribune, and Branden Comfort at Jefferson Medical Clinic in Winchester. All totaled, our students screened over 100 patients for Connect2Quit and referred over 200 other patients for screening. As of September 22, we have enrolled 72 smokers into the study. Because video counseling is so new, there are many technology issues to resolve. Getting 11 clinics up and running in a short amount of time all across the state has been a challenge. KCTT works with two IT video specialists, stationed in Kansas City and Hays, to keep the connections running. The study is conducted by a highly trained staff including a project director, data manager, and 6 full or part time counselors offering services in both English and Spanish. If the project proves effective, the potential payoff from the study is big. It will establish an effective way of delivering high-quality services to patients in their medical homes that could be used to treat obesity, diabetes, and other chronic and difficult to treat conditions. For more information, please contact Leah Lambart, MPH, Project Director, at 918-588-3782; Kimber Richter, PhD, MPH, Principal Investigator, at 913-588-2781; Ryan Spaulding at 913-588-2081; or Allen Greiner, MD, MPH, Co-Investigator and Director of Research, at 913-588-1956.
Today I helped deliver a baby girl! It was very exciting...I have been at a few deliveries but today I actually got to be the first person to hold someone’s baby. It was so scary/exciting/slimy!

She came out and I held her kind of upside down and below the mom so the umbilical cord could deliver more blood. And then she peed all over me while the cord was cut! (Thank God for shoe covers!:) Very cool experience....

Patty Kleinholtz
I've gotten to do quite a few minor procedures: draining blisters from a second-degree burn, excising a sebaceous cyst, freezing off skin cancers, and even a colonoscopy. I'm also getting a lot better at hearing heart murmurs and lung sounds, and I actually palpated/percussed out the border of a liver last week!

Probably the most “exciting” thing I've seen, however, is a case of familial Hibernian fever! It's also called TRAPS, which stands for TNF-Receptor Associated Periodic Syndrome. One of the other doctors at the clinic here says there are only 50-ish cases worldwide (I'm not sure if that number is accurate, as I'm having a hard time finding statistics about it). Anyway, it’s an enzyme defect in the TNF-alpha receptor that presents as recurrent, random fevers with severe GI pain and muscular cramping. Essentially, this guy shows up in the hospital once or twice a year with a fever; feeling terrible, he stays for a few days while they give him IV fluids and then he goes home. Crazy, huh? Plus, after I went home and read that it can be treated with steroids, my preceptor let me give him some to see if it helped - so I'm getting lots of practice writing hospital orders too!

Whitney Smith

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I thought I'd share about my experience in the ER last night. We were on-call, but I anticipated a slow night. I was wrong. We were called back to the ER at 7:30pm and didn’t leave until 4:30am. I was able to sleep for about an hour before being called back shortly before 6am because a patient was coding. Both my doctor and I tried to intubate, but unfortunately neither of us was successful. That was the first time I've ever participated in delivering bad news to the family. Not an experience that I want to repeat often. During the night we also sent one patient to Kansas City and another to Wichita, both by fixed wing. I'm exhausted today, but I feel years more experienced than I was only yesterday afternoon.

Erin Locke

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Today I saw a woman who bumped her leg on a piece of furniture. A large bruise developed and became raised. She came to the clinic, opened the skin and found a huge liposarcoma on her thigh. Today we debreeded it down to 2-3 cm in places. It was amazing. She's had radiation, and they have vacuum sealed the wound until Friday. She's the kindest lady. She wouldn't complain, even when we could tell it was painful. I'm going to pick up a card for her on the way in tomorrow. Hope your experiences are all incredible!

Dana Vietti

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I just thought I’d let you know a little bit about my first day. I got to do a Synvisc injection in our first patient’s knee, and in the afternoon we had an ER where I got to put 12 sutures in a pretty wicked gash on the patients forearm. Overall it was a pretty awesome day!

Dallas Walz

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What students have to say about their experiences
Preceptors for Rural Summer Program 2009

Jay Allen, MD  
Pleasanton Family Practice, Fort Scott, KS
Jeff Alpert, MD  
Wichita County Health Center, Leoti, KS
Larry Anderson, MD  
Sumner County Family Care Center  
Wellington, KS
Mark Basham, MD  
Basham Clinic, Eureka, KS
Brenda Brennan MD  
Community Health Center, Pittsburg, KS
Jen Brull, MD  
Plainville Medical Clinic LLP, Plainville, KS
Manuel Caga-Anan, MD  
Elkhart Medical Clinic, Elkhart, KS
A. Randal Claassen, MD  
Hillsboro Family Practice Clinic, Hillsboro, KS
Gregory Coup, MD  
Konza Prairie Community Health Center  
Junction City, KS
Christian Cupp, MD  
Scott City Clinic, Scott City, KS
Seeley Feldmeyer, MD  
Meade Medical Clinic, Meade, KS
Kerri Fellows, MD  
Associates in Family Care, Paola, KS
Will Greiner, MD  
F. W. Huston Medical Center Clinic  
Winchester, KS
Rhonda Green, MD  
Summit Clinic, Arkansas City, KS
Kathryn Hayes, MD  
Partners in Family Care, Mound Ridge, KS

Dave Hodgson, MD  
Washington Clinic, Washington, KS
Martin Klenda, MD  
Beloit Medical Center Beloit, KS
Michael Machen, MD  
Bluestem Medical, Quinter, KS
Mawdsley, MD  
Emporia, KS
Mary Beth Miller, MD  
Sheyenne County Clinic, St Francis, KS
Bob Moser, MD  
Greely County Health Services, Tribune, KS
Karen Nonhoff, MD  
United Methodist Mexican American Ministries  
Garden City, KS
Celeste Raines, MD  
New Frontiers Health Services, Oakley, KS
John Ryan, MD  
Community Physician Clinic, Marysville, KS
Daniel Sanchez, MD  
Plainville Medical Clinic LLP, Plainville, KS
Ronald Seggie, MD  
Pittsburg, KS
Tanya Williams, MD  
Family Practice Associates of Western Kansas  
Dodge City, KS
Richard Whitlow, MD  
Leavenworth, KS
Gary Yarborough, MD  
Parsons, KS

Adventures in Quinter...

I’ve had a great experience this summer and I’ve seen some interesting cases. One lady came in with pseudotumor cerebri - the CRNA performed a spinal tap to let off excess CSF and her opening pressure was 24 (normal is 10). This patient has to get spinal taps every five weeks to treat her severe headaches and nausea. One night in the ER we had a case of hemi facial dystonia, the patient couldn’t open her eyes or mouth. She was given IV valium and her symptoms started to improve within 30 seconds. In clinic I saw a case of autosomal dominant degenerative cerebellar disorder. I heard a split S2 heart sound on a teenager when I was doing an athletic physical. I’ve seen one memorable case of metabolic syndrome - this patient has the ‘apple shape’, she seriously looks like a barrel on pegs. The doctors I’m with perform a lot of colonoscopies and EGD’s, one patient had a text book example of Barrett’s esophagus.

I’ve also seen a nasty case of esophageal cancer. One afternoon Dr. Doug removed a pilomatrixoma (hair follicle tumor). It was about the size of a golf ball- pretty impressive. I’ve gotten to assist with a few C-sections and catch one baby. Just this morning, I got to see a full hysterectomy - this patient had an ovarian cyst the size of a grapefruit. The doctors out here definitely have a sense of humor and so do their patients. One lady I was interviewing told me that she had an unusual jaw condition called ‘dog jaw’ - she motioned me to feel her jaw. As soon as I touched her jaw she snapped her head toward me and started barking loudly in my face. I let out a scream and jumped away as she and Dr. Machen laughed at me - apparently they do that to all of the medical students!

Melinda McMurry