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William J. Crump MD and R. Steve Fricker MPA

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Keeping Rural Medical Students Connected to their Roots: A “Home for the Holidays” Immersion Experience

William Crump, MD¹, R. Steve Fricker, MPA¹

Author Affiliations:

1. University of Louisville School of Medicine at Baptist Health Madisonville, Madisonville, KY

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Corresponding Author:

William J. Crump, MD
Associate Dean
University of Louisville School of Medicine
at Baptist Health Madisonville
200 Clinic Dr. 3rd North
Madisonville, KY 42431
Email: bill.crump@bhsi.com

Abstract

Introduction:

Preclinical medical students with an initial affinity for rural practice often experience urban disruption during training. Longer summer rural immersion experiences have been shown to be somewhat effective in keeping rural students connected to their rural roots. Some students cannot adapt their schedules to these longer experiences. In response, a brief practice experience near home during the winter break of the academic year was established.

Methods:

Nineteen detailed rural practice assessments were completed by preclinical medical students during school years 2009-2014 and essays and anonymous evaluations of the experience were analyzed.

Results:

All students reported the four components of the experience increased understanding of rural medicine and all but 2 reported it was relevant to their career objectives. These two, at this early stage in training, decided rural practice was not for them and subsequently chose sub-specialty training. Six of the 12 (50%) who have completed medical school chose a family medicine residency. The themes in the essay portion included insights into rural lifestyle, returning home, health system organization issues, and patient expectations and traditions.

Conclusions:

Initial experience with a “home for the holidays” approach for rural immersion of rural medical students was successful in reconnecting these students to their roots, and 17/19 (90%) reported their intention to choose rural practice.

Keywords: Medical Education, Rural, Affinity Model

Introduction

Despite recent efforts by many medical schools to increase class size, many rural areas remain underserved because most graduates are attracted to urban practice. To address this maldistribution, a rural focus is needed during medical education. (1) The affinity model suggests that more graduates would choose rural practice if more rural students were admitted to medical school. This model is based on the concept that those with a significant background in rural areas, such as being raised in a small town or receiving their higher education in such locales, may be more likely to have an affinity for rural and are more likely to choose to practice in rural areas. The model also suggests that it is important to continue to support this affinity throughout the students' education. (2)

Because so much of the students' experience during college and medical school is in urban areas, the strategy suggested in this model includes interventions to minimize the effects of "urban disruption." This phrase was initially used in the U.S. in the mid-1980s to describe the sense of dislocation that rural students experience when they move to an urban area with much less green space, a faster pace, and different accents and mannerisms among the resident population. (3)

A second phase of urban disruption may occur in some rural students where after months or years they become adapted to the new urban environment and have a sense of dislocation when they return to a rural area. Considered in the affinity model is the possibility that this second phase of urban disruption may explain why some rural medical students ultimately choose urban practice sites. (4) This disruption occurs as rural students become accustomed to big-city amenities and meet friends and future spouses who have urban roots.

A recent comprehensive review found 37 published articles in English from several nations that reported rural-based medical education efforts. (5) Although there were methodological issues with most of the publications, there was a clear trend toward a higher rate of subsequent rural practice among students who had part of their training in a rural area, and this was stronger with longer rural experiences.

An older comprehensive review reported the methods that have been used to optimize the affinity model. These have included focused rural admissions, curriculum designed to ensure exposure to rural issues and rural physicians during the preclinical years, regional rural clinical campuses, and rural residency training. (6) In Kentucky, the problem of rural underserved is especially acute, with almost two-thirds of counties designated as Health Professional Shortage Areas (HPSAs). Studies from both traditional medical schools in Kentucky support the applicability of the affinity model. (7-8)

A Rural Clinical Campus

To address this issue, in 1998 the University of Louisville established the Trover regional rural clinical campus (ULTC) in Madisonville, a town of 20,000 that is 150 miles southwest of the urban medical center in Louisville. The ULTC was a joint effort with the Trover Foundation (now Baptist Health Madisonville), a rural integrated health system with a large multispecialty clinic, smaller surrounding rural clinics and a regional tertiary care hospital. Trover's

involvement in rural education in Madisonville began in 1954, and was the site of the first family practice residency in the state and was the only community site for the required clinical surgery clerkship since the 1970s. (9-10)

In the U.S., students enter the first year of four years of medical school (called the M-1 year) after receiving a college degree which is typically four years after graduation from high school. They spend the M-1 and M-2 years studying the basic sciences, and then progress to the M-3 and M-4 years where they do a series of clinical specialty rotations. The Trover Campus is a clinical campus, where interested rising M-3 students can move to Madisonville, completing all their M-3 and M-4 rotations in this rural area. Following the M-3 and M-4 years at either campus, students enter a residency training program of 3-5 years duration, depending on the specialty. Subspecialty fellowship training can be chosen after the first residency in a more general discipline is completed, or the physician can directly enter generalist practice after the first residency.

Prior to 2006, M-1 students at the urban Louisville campus could demonstrate interest in later moving to the rural Trover Campus by attending a 4 week summer program in Madisonville after their M-1 year. (11) Then during their M-2 year, they had the option of applying to be selected to move from Louisville to Madisonville for all of their M-3 and M-4 rotations. As we tried to reach our goal class size of 12 per year at the rural campus, we discovered urban disruption first-hand. In the early years, it was discovered that despite demonstrating interest by attending the Trover Campus summer programs, many rural M-1 and M-2 students were not returning to Madisonville for their clinical (M-3 and M-4) years. The result was that mostly urban students drawn to the one-to-one training model filled each entering M-3 class. Summaries of patient logs, evaluations, and test scores showed that the Trover Campus students' performance mirror the students who remain in Louisville and the students choosing not to return were aware of this. Rural students who chose to return to the rural campus placed a high value on the one student-to-one faculty style of clinical training and the greater number of procedures done by Trover Campus students. Anonymously reported surveys showed that for those rural students not choosing to return to the rural campus, the time spent in the urban Louisville environment for the basic science (M-1 and M-2) years, resulted in the waning of their rural affinity. They placed a higher value on big city amenities and living in a town with a large university. (4)

In 2006, dedicated admissions began, so that each student knew at the time of admission whether their default clinical campus was Louisville or Madisonville, but changes between campus assignments were allowed during the M-2 year. To maintain interest in their rural roots, it seemed that an educational activity during the M-1 year at the urban campus was necessary. This resulted in the development of a Rural Medicine elective (RME) taught by the Trover Campus dean that met the number of elective hours required for all M-1 students. Results showed that the classroom experience maintained, and on some measures, increased rural affinity. (12) It was hoped that an experiential "field trip" component could occasionally replace the urban classroom activities, but the distance to the rural sites and the packed schedules of the basic science years made this impractical.

In the U.S., preclinical students at that time typically had only a 10 week summer break after the M-1 year, and then a 10 day break in December and a 7 day break in March during the M-2

academic year. So the summer after the M-1 year was the only available time for rural immersion experiences. The summer option was problematic for some rural students, as they sought employment opportunities, usually in bench research, that required them to stay in Louisville. To try to mitigate the urban disruption for these students who could not have a summer rural immersion experience, a brief experience over the December break was designed.

By providing a detailed outline for the student to do a formal practice site assessment independently, the brief time in the practice could be efficient and the cost could be minimized by the student living at home for a week when no classes were scheduled. This “home for the holidays” strategy provided a scheduled opportunity to reconnect with the sense of place (13) that had previously been determined to be important for these students. This experience and the required report preparation also provided the 16 hour effort required to meet the M-2 elective requirement.

We report our experiences to assist those planning similar brief rural immersion experiences for preclinical (M-1 or M-2 equivalent) rural students based at urban campuses. Previously reported efforts with preclinical students were successful in maintaining student interest in rural health with summer activities that are typically 4 weeks in duration. (14-17) One report showed that a 3-day rural preceptorship for M-1 students had little effect on interest in rural practice. (18)

Method

The students were matched to a primary care site near home, starting with their suggestions and vetting the physicians through the Kentucky Academy of Family Physicians (KAFP) and Family Medicine department at the urban campus. A letter from the course director to the physician and office manager explained the elective, and follow-up communications with regional Area Health Education Center (AHEC) staff confirmed the dates and course objectives. Each student was provided the outline shown in Table 1 and given advice for on-line sources for county data. Each student spent a minimum of 3 half-days on site in the practice, shadowing the physician and interviewing the physician and staff using the outline in Table 2.

Table 1: Rural Community Assessment

<p>DESCRIBE THE COUNTY. Show the comparison to the state and national figures when relevant. Simple tables are preferable to full sentences for numerical data.</p> <p>Geography</p> <p> Area (square miles): bigger or smaller than nearby counties?</p> <p>Where is the county in the state</p> <p> How does the county compare to other counties in the same region</p> <p> Compare and contrast <i>communities within</i> the county</p> <p> How do you define community? (jot your thoughts down <i>before</i> you first go)</p> <p> What is it?</p> <p> How do you know?</p> <p> How do the locals define community?</p> <p> How many incorporated towns are there in the county?</p> <p> Where are they?</p>

How are they identified?

What other areas do locals refer to as communities in the county?

How do their health needs differ from one another?

How are they alike?

Health (use tables, compare to KY and US)

Morbidity

Mortality

Years of Productive Life Lost (YPPL)

Number eligible for Medicaid

Number receiving Medicaid

Number of uninsured

EPSDT (well-child) Data (hint: check out the public health department)

Immunizations rates

Population (use tables, compare to KY and US)

Gender

Age

Race/Ethnicity

Poverty

Education (use tables, compare to KY and US)

Education Levels

School System

Types of schools

Ratio of teachers to students

Youth Services Centers/Family Resource Centers

Numbers of students

Numbers of students on free lunch program

Absenteeism

Economy/Industry

Health Care Services

What is the provider mix for the county? Specifically, which specialties are there every day and which have visiting clinics? How many docs of each specialty are present? How many NPs and PAs and where are they located?

Describe the numbers and kinds of services available within the county (Doctors' offices, hospitals, ambulance, nursing homes, assisted living, pharmacies, dentists, etc.)

Where are patients referred for specialty care that is not available in the county? How far away is each referral hospital?

Table 2: Rural Practice Assessment

Your goal is to understand in depth what it would be like to practice in this site. Don't be surprised if the objective (statistics) and subjective views differ. Then lastly there is a conclusion section where you pull it all together.

Ask the rural doc(s) to agree/disagree with the following statements, get them to elaborate why, and record their comments. As you listen to their responses, consider how you would answer. (Adapted from AAFP publication "Rural Family Practice"):

1. My family and I enjoy a rural lifestyle.
2. I am willing to assume a position of leadership in the community.
3. I am willing to take an active role in civic and community groups.
4. I can handle the intermingling of my personal and professional roles.
5. I enjoy a closely-knit community.
6. I enjoy being involved in patients' lives.
7. I want to fulfill a vital community need.
8. I am challenged by rural health issues and see myself as an agent for change.
9. I am skilled at developing good working relationships with other health professionals.
10. I am adept at developing linkages between physicians and facilities.
11. I don't mind long hours when there's a balance in my life.
12. I believe that rural practice will give me back more than I put in.

Ask the rural doc(s) or their staff these questions about the rural practice environment:

1. What is the population of the service area of the practice, including the drawing area?
2. What is the primary care physician-population ratio?
3. What is the number of current office visits per provider per day?
4. What percentage of the practice is paid by Medicare? Medicaid? Other carriers?
5. How is emergency and hospital care done?
6. How often are you on call? Who shares call with you?
7. Who makes staffing decisions in the office?
8. What ancillary care services are provided in the office (e.g. lab, x-ray)?
9. How do/would nurse practitioners or physician assistants work here?
10. What would you change about your practice if you could?

CONCLUSIONS

1. What do you think are the important health features of the situation faced by the community where this practice site is located?
2. What has your assigned practice done to address these features?
3. Which other entities in the community are addressing these same features?
4. What ways could the practice change to address these features?
5. What would most attract you to practice here?
6. What would need to change to attract you to practice here?
7. What more would you like to know about this practice site and community?

Each student sent a draft report, usually about 8 pages, to the course director several days before the winter semester of the M-2 year began, and feedback was provided. The student gave an oral

summary of their report in Louisville in a group setting after the semester began. The course director prepared a spread sheet that compared the sites to those from previous years' elective sessions and this formed the basis of the second group meeting during the second month of the second semester. At the end of this session, the students completed an anonymous evaluation. The study was determined to be exempt by the Baptist Health Madisonville (formerly Trover Health System) IRB.

The 19 students reported here are all of the rising M-2 students over a six year period that were assigned to move to the rural Trover Campus for the M-3 and M-4 years but could not attend the summer activities in Madisonville after the M-1 year because of summer employment in Louisville.

Results

All 19 students were from rural backgrounds. Thirteen of 19 (68%) were women, 6 were married, and 3 had children. Of those who have completed medical school; 6 of the 12 (50%) have chosen Family Medicine residencies. This compares to 43% in Family Medicine who completed a 4-week rural immersion after the M-1 year, 29% who had no preclinical rural immersion experience prior to their two clinical years at the Trover Campus, and 8% for those who attended the urban clinical campus. (19) The only student who has completed residency is in small town practice and the other 18 are still in residency or medical school. A previous report from this medical school showed a similar distribution of Family Medicine residency choice and subsequent rural practice. (20) At the conclusion of the experience, 17 of the 19 (90%) indicated that they were planning to practice in a rural area. Figure 1 shows the sites along with a population density state map. Table 3 shows the evaluation results and Table 4 shows how the students perceived their home counties and the individual practices.

Figure 1
Kentucky Population Density by Census Tract
with Location of Practice Site Assessment

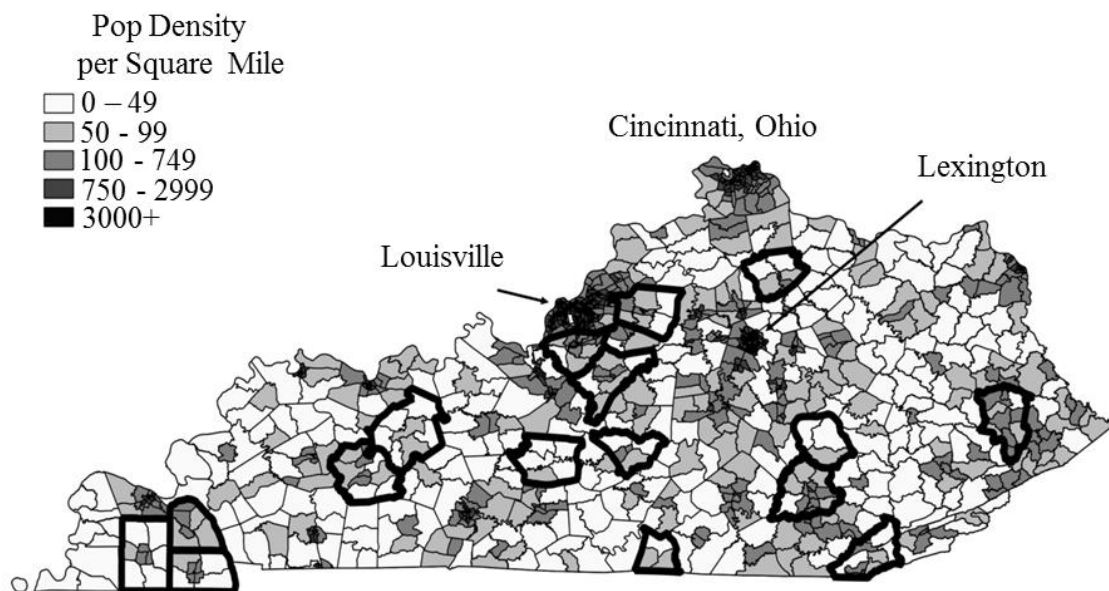


Table 3: Practice Site Assessment Results
n = 16[†]

The following increased my understanding of rural medicine	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
County Assessment (the statistics)				8 (50%)	8 (50%)
Rural Doc/Staff interviews				8 (50%)	8 (50%)
Shadowing the rural doc seeing patients				5 (31%)	11(69%)
Writing the site report				8 (50%)	8 (50%)
My understanding of the realities of practicing in a rural area is increased				5 (31%)	11(69%)
The content of the elective was relevant to my career objectives			2 (12%)	3 (19%)	11 (69%)

[†]Missing data on 3 students.

Table 4: Themes in Report Conclusions
n=19**1) Rural lifestyle**

Personally, the greatest attraction I found ... was the family-friendly practice. Her son had a playroom on the second floor of the office, and the school bus picked him up and dropped him off there on a daily basis. Having your own practice allows you to schedule your own hours and “be your own boss”, however, it also forces you to be on call for twenty four hours a day.

Being from a small town ... close to a big city, I appreciate the best of both worlds. Living and working in a small town offers many benefits of a close-knit community, while any social and entertaining event is possible to attend within a ... reasonable commute. This is the type of situation that I will seek to begin a primary care practice.

The close-knit community you experience in rural areas is something the urban setting just cannot afford. Being able to form personal relationships with patients, and engage them outside of the office is hard to accomplish in a sprawling city. This all feeds back into the idea that in a rural setting, you get more in the way of satisfaction than you put in.

Shorter, less hectic commutes appeal to me. But one tiny thing that always astonishes me is being able to look in the sky on a clear night and see stars fill every inch of the sky. Living in a city robs you of this pleasure. Though most people would find this inconsequential, it reminds me of the pleasures you can find only in a rural community.

I believe I might benefit even more from practicing in a place... like this than patients will benefit from my care. I've long believed I should apply my abilities where they are needed most.

I would like to know more about how the physicians personally deal with being such iconic or even revered members of a smaller community. Anonymity can be a gift or a curse. It must be ascertained by each individual just how much anonymity, recognition, and the proper balance of those with personal life is necessary for a high quality of life.

2) **Returning home**

This area is my home; thus, I have ties here and am very attracted to practicing in this locale. I don't feel as if there is much that needs to change to further attract me back to practice here.

I want to practice here in the future. It is my home and the idea of going home to practice medicine appeals to me. I feel like I know everything I need to know about both this practice and this community.

My parents are from here, and I have always associated it with warm family gatherings and a close-knit community. Most of my family still lives here, and even though I did not grow up here, everyone seems to know who I am. (student lived with her grandmother during the experience)

Proximity to family would be the main draw to practicing here as both my husband's and my families reside here and we grew up in and around this area.

Practicing where you were raised adds more pressure and difficulty because everyone has a preconceived notion. (student subsequently chose a sub-specialty requiring an urban practice environment)

Having grown up here, I already have many close contacts in the county. That in itself is incentive to practice here. Having learned about all the benefits of working in a rural health clinic, I'd certainly love to be a part of that.

Obviously I love my hometown but I am not sure I want to live and work there forever. (student did not do subsequent rural rotations and chose a sub-specialty)

Nothing would need to be changed to attract me to the area, and nothing would prevent me from wanting to practice here.

Being near my friends, family and community would be great. I like living where I am now, but long term I really like the area because it will always be "home".

I have family here, so that's the biggest draw. I'd love to stay close to my parents so that my children can be close to their grandparents. I also think it's a beautiful area, and I really want to make an impact on the health and well-being of the community I grew up in.

3) **Health system organization**

Is the current consolidation of medical resources here the best way? It seems it has helped the

medical professionals maintain manageable schedules that could improve their performance... but is it the best way to provide care for the area?

Currently, our hospital does not allow Family Physicians to practice obstetrics (Full Spectrum Family Medicine). This would have to change in order for me to consider practicing medicine here, as I currently plan on completing a family medicine residency with a high OB volume and then fellowship training in Obstetrics, with the ultimate goal of having a practice focused on Women's and Children's Health.

The practice was a little hectic, and the doctor stayed very busy throughout the day. I would not want to be in a private practice setting by myself.

Due to my interest in obstetrics, the hospital would need to add a maternity ward.

I have questions about... the finances of owning and operating a private practice and the benefits and pitfalls of such a business venture.

As for this specific practice, I really like the way it's run. By that I mean I like some of the programs they offer, like home visits every other week and extended hours three days a week. Both of these programs really help the community access care. I also like that this site is part of a federal primary care repayment program.

I think the need for more PCPs in this area will be the same or even greater than it is now, so I don't think I'd have to worry about having enough patients to keep me busy.

4) Concerns about patient expectations/traditions

So many seem to be unwilling to change from the old ways of only going to see the doctor when sick, despite the fact that working as a team with the doctor could make a positive difference in their health.(student chose a sub-specialty)

This community seems to look at the newer doctors as less knowledgeable than the ones that are close to retirement simply because they practice in a different way. (student chose a sub-specialty)

I would prefer to have fewer patients seeking narcotics. It is very troubling that drug abuse has grown to be such a problem in this community, and the numbers that came to the clinic were much higher than I anticipated. (student chose pediatrics)

Discussion

The affinity model asserts that providing experiences for rural medical students in rural areas with effective role models would have the strongest effect on maintaining student interest during medical school training in urban areas. With very little unscheduled time in the lives of these urban-based preclinical students, these experiences are largely confined to summer activities. The brief elective reported here is intended to keep the existing interest high during the academic year, and minimize urban disruption during the preclinical years while re-connecting these

students to their sense of place. The descriptions of the sites by the students clearly showed a new understanding of medical care in their hometown region and a continuing affective investment in the areas where they spent their earlier years.

Initial results support that this experience was effective, with a 21% increase in Family Medicine choice over those with no preclinical rural immersion experience. All but two of the students had their initial rural connections reinforced. These two students, early in their training, had already begun to look outward to more urban environments. Measuring the definitive effect of this experience on practice choice will be delayed until all the students choose a practice site in 3-6 years. The proportion choosing Family Medicine does mirror results from our earlier pathways programs, and 50-67% of those earlier program participants chose rural practice compared to 8% who were based only at the urban campus. (19) The ultimate outcome measure of this experience will be how many choose a rural practice, and maybe near home.

Limitations

The constraints of medical education resulted in some limitations on the ability to be more confident in the findings. To minimize selection bias, an ideal arrangement would have been to randomize rural students with an interest in rural practice to either this experience or a control group, a study unlikely to occur. The most highly self-selected group included those who chose both the 4 week rural immersion after the M-1 year and the full two years at the rural clinical campus, and in earlier studies done in this medical school population their percentage of Family Medicine choice was 43%. This brief immersion and the rural clinical campus experience resulted in 50% choosing Family Medicine, which given the small numbers is essentially the same. This finding supports the value of the brief immersion experience in maintaining the urban-based rural students' interest in the specialty that in the U.S. makes up the large majority of physicians choosing rural practice. Family Medicine is an imperfect interim proxy for ultimate rural practice choice, but a multivariate analysis of 1091 graduates from both of the ULSOM campuses over an eight year period showed an association with an odds ratio of 5.08 [2.88-8.98], $p < .0001$, between Family Medicine choice and ultimate rural practice. (21)

Likewise, the student's stated intent to choose rural practice (as 90% of these students did) is important, but the ultimate practice site chosen is definitive, and this information for these students will be delayed another 3-6 years until after residency training is completed. A recent report from an adjacent rural state with a very similar rural medical student population did show an association between the rural medical student's prediction of rural practice with later rural practice with an odds ratio of 1.93 [1.05-3.53], $p < .05$. (22)

The practicalities of rural medical education also dictated the other primary limitation of our study, that of small sample size. In Kentucky, most of the counties classified as Health Professional Shortage Areas would be moved out of that classification if just 1-2 physicians would locate there and stay. So for this state, and many rural regions, small numbers matter. This report is best conceptualized as a descriptive study of a particular group of medical students from one medical school. Generalizability must be limited to a similar population. The availability of the practice site assessment outline may facilitate replication by other medical schools. Pooling of data from similar programs from many different schools would be useful. We are working

with like-minded groups in the National Rural Health Association's (NRHA) Rural Medical Educators (RME) group and the Association of American Medical Colleges' (AAMC) Group on Regional Medical Campuses (GRMC) to build this collaboration, and would welcome more international collaborators.

Conclusion

We describe here the first 6 years of this brief rural exposure model as a way to strengthen the rural student's ties to home during the academic year spent in an urban environment. This experience provides the student with a close view of rural practice, after having completed 3 semesters of schoolwork at the urban Louisville campus. Our initial outcomes are encouraging, with evidence that an elective experience like this can keep rural students focused on their roots. However, much more study is needed, and the effort provides a new cohort of students each year that can be tracked through medical school and residency to practice site choice and further into retention, an effort that is ongoing at our campus.

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