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History of the Campus

All or portions of 85% of Kentucky's counties are considered to be health professional shortage areas, having far too few primary care physicians. Despite a recent increase in the number of primary care physicians trained by U.S. medical schools, the number in non-urban areas has not changed over the last 20 years. The published literature shows clearly that doctors tend to set up practice in towns like those in which they train. The pipeline to the production of rural physicians begins with high school and continues through the retention of rural physicians in practice. This pipeline is described as "leaky," with many opportunities along the way for rural students to become attracted to big-city life during their education. Because of the "leaky pipeline" phenomenon, some medical schools now have regional rural campuses that provide an opportunity for students to spend the last two years of clinical medical school training in smaller towns.

Studies from the two traditional medical schools in Kentucky showed that there are some predictors of who will ultimately practice in rural areas in Kentucky. The study from the University of Kentucky (UK) supported the "affinity model" that suggests that a student who has a positive experience growing up in a small town is more likely to practice in a similar-size town. The study from the University of Louisville also supported the affinity model, but the mathematical model was better at predicting who would not ultimately practice in a rural area. The authors suggested that to make a significant impact, our medical schools would have to admit more of those from rural backgrounds, including some who are not currently applying. Although there are no published reports as yet, the Pikeville College School of Osteopathic Medicine (PCSOM) is an osteopathic initiative based on the affinity model, intended to produce physicians primarily for rural eastern Kentucky.

Education is a central element of Baptist Health Deaconess Madisonville (formerly Trover Health System), begun more than 60 years ago in Madisonville by brothers Loman and Faull Trover. As it has developed into a modern rural integrated health system with a large multi-specialty clinic and a regional tertiary care hospital, education remains in the core mission. Trover Heath System began the first Family Practice residency in the state in 1972, and 80% of the 267 graduates practice in rural areas. Over 50 years ago, the U of L Department of Surgery began the Surgery Project that places 4-6 third-year medical students (M-3) at Trover each 8 week block for their required general surgery rotation.

The next phase of rural medical education at Trover began with the collaboration with U of L that created the Off Campus Teaching Center in Madisonville. Begun in 1994 with a proclamation by Governor Brereton Jones, only summer programs were supported until 1998. During 1998-2000, the effort was supported by one-time equal contributions from U of L and Trover Health System. These contributions began the period of clinical campus activities, allowing rising third-year medical students to move from Louisville to Madisonville for their entire third and fourth years of training. During this period an on-site Associate Dean was recruited and the campus graduated 3 students, all entering FM residencies.

In 2000, the Madisonville program was continued through a special initiative from Governor Paul Patton's office using coal severance funds. During this time the Trover Campus further developed the pipeline activities,

including college premedical programs and a High School Rural Scholar Program. The high school program was developed in close collaboration and co-sponsored with the West Kentucky Area Health Education Center (WAHEC). This program placed students in health care settings in their hometowns and provided a virtual classroom to assist them with development of skills needed to increase their chances to enter and complete a premedical curriculum. Although there are other programs that give these rural students the opportunity to go to a big city for a similar experience, the negative message in these programs is that to do something really special in health care one must leave the rural area. The Trover Campus program reverses that process, bringing the classroom to the students, allowing them to discover the positive aspects of small town practice as they shadow health professionals in their hometowns. Also in 2000, an elective course in Rural Medicine for M-2 students was developed in collaboration with the KAFP.

In 2002, the campus graduated 5 students who entered primary care residencies (2 FM, 2 OB/Gyn, and 1 Peds). The High School Rural Scholar program was expanded to 15 students and the virtual classroom activities increased significantly in sophistication through collaboration with Murray State University. Students from 91 Kentucky counties and 26 states have participated in the Madisonville programs so far. The Trover Campus is unique and represents the best in collaboration between an urban medical center (U of L) with a commitment to train physicians who meet the state's needs and a rural integrated health system (Baptist Health Madisonville) with a 50-year experience in training students. In addition, the administrative infrastructure now includes an on-site Associate Dean, and other support staff. This allows the further development of the necessary pipeline activities for students beyond those at U of L.

Universities that have participated in the Trover Campus summer programs						
Murray State	University of Louisville	Eastern Kentucky				
Kentucky Wesleyan	Bellarmine	Transylvania				
Brescia	Centre College Campbellsville					
Western Kentucky	University of Kentucky	Madisonville Comm. College				

The campus does bring new costs. In addition to the personnel, the rural campus required new funding for video-conferencing equipment, as the Trover-based students receive all the same lectures as the Louisvillebased students in real-time by interactive video connections. Fortunately, no additional facilities were required because of the contribution of existing facilities by the Trover Foundation. With strong support from U of L, a proposal for Trover Campus funding was approved by the Council for Postsecondary Education for the 2002-2004 biennium, again funded by coal severance funds. Strong support from the Governor's office has continued since, with continuing coal severance funding. During the U of L Medical School accreditation visit in 2005, the LCME cited the regional Trover Campus among the 10 strengths of the entire School of Medicine, a remarkable statement rarely made by this organization. In 2013, a HRSA report conducted by the University of Colorado ranked the ULTC second among all 35 Rural Medical Education programs in the U.S. For the 2016-2018 biennium, the Trover Campus received a 30% decrease in coal severance funding. In 2018, all coal state severance funding ceased, and efforts to obtain new state funding were unsuccessful. The future of the campus depends on finding new sources of funding.

The Trover Campus has continued the development of all aspects of the rural education pipeline. This includes active involvement with the U of L admissions process to facilitate entry of more rural students. Almost 30 years of studies show that while students from rural backgrounds (and therefore much smaller high schools) have lower overall math and science scores on standardized tests, once they are admitted to medical school, they perform on par with their urban classmates. Using the affinity model, students from small towns (whether

or not they are designated Health Profession Shortage Areas) are more likely to choose small towns to practice. The Trover Campus exists to give those students another two years away from the "urban disruption" that may result in their being attracted to a big city. At the same time, the campus provides the one-to-one instruction that community-based programs offer. Activities will continue at the premedical and high school levels to facilitate the success of promising rural students to prepare them for admission to medical school. Following the findings of almost 40 years of experience with regional campuses in other states, the Trover Campus continues to place practicing physicians in Kentucky's smaller towns. This addresses the many health problems created by inadequate access to medical care. In addition, physician recruitment is a powerful economic engine for Kentucky's small towns. The Trover Campus Rural Pathways programs promote health careers at the high school and college levels, ultimately leading to more medical school applicants from small towns. This initiative is a unique collaboration, carefully crafted and proven, to assist development of Kentucky's rural areas into the CPE's vision of: "vibrant communities offering a standard of living unsurpassed by those in other states and nations."



U of L Trover Campus Classes of 2024, 2025 and 2027

1. RMAT (Rural Medicine Accelerated Track)

A small number of University of Louisville Trover Campus students have the option to be considered for the Rural Medicine Accelerated Track (RMAT), which leads to completion of their medical degree in a total of three years. The ULTC was the second such U.S. program to receive accreditation in 2011.

The track for completion of medical school in 3 years saves a year of time and tuition, allowing the ULTC RMAT graduate to start residency a year earlier. However, it is only for very motivated students who are sure they want to practice primary care in a small Kentucky town. It is a competitive process, with the decision

made after the student has demonstrated solid academic progress in the first 3 semesters of medical school and outstanding performance during the RMAT1 and RMAT2 sessions completed after the M-1 year.

The program has graduated 5 students so far and all are in rural practice near their hometowns. Two RMAT positions will continue to be offered each year.

Timing and Focus

- RMAT 1 4 week summer after M-1 year in rural practice near hometown. Continuity of care and detailed practice assessment
- RMAT 2 4 week summer after RMAT-1 in Madisonville. Adolescent health and county-wide health assessment
- RMAT 3 4 week rural community health rotation after M-2 year. Performance improvement in continuity care for uninsured, working poor.
- RMAT 4 6 week Acting Internship in Madisonville. Includes USMLE Step 2 CK prep
- RMAT 5 4 week rural Family Medicine clerkship at the end of the M-3 (final) year

2. Service Learning



Each summer since 2006, rising M-2 medical students at the Trover Campus have participated in experiential learning in an underserved area. Since 2008, the group included College Rural Scholar pre-medical students from rural towns who are interested in returning to this campus for their M-3 and M-4 years. The activity is called Preclinical Student Screening Teams (PSST).

In the summer of 2006, 2 local HPSA communities identified the provision of school physicals for 6th graders as an important need. Cost and access were the primary issues, with only one provider in each community providing the required sports physicals. In each case, the school-based family resource center communicated the need to their AHEC. The AHEC worked with community contacts to establish the best place and time for these exams.

Teams of preclinical and pre-medical students provide over 80 exams each summer, supervised by a family physician, with each team led by an experienced nurse at the health department site. Preparation includes training in community assessment, patient education, and age-specific history and physical examination skills. The preclinical (rising M-2) student conducts the individual assessment,

supervised in the room by the nurse, assisted by the pre-med student. Each 6th grader and parent is then accompanied to a patient education area for a customized session conducted by the pre-med student, assisted by AHEC staff. All medical issues are confirmed by the family physician and appropriate referrals arranged through the school nurse. Our experience with this community-based service learning laboratory was recently

published in the Journal of the Kentucky Medical Association. These community activities were paused in 2020 because of the pandemic, and were resumed in 2021.

3. Professional Identity Curriculum

Medical students learn not only how to act like their mentors but actually take on the identity of a physician. During the 2015-2016 academic year, the ULTC began a formal professional identity curriculum to facilitate this process. The year began with a baseline measure of empathy, and students at each level also completed a career eulogy as a reflective exercise. Each month, one of the scheduled Dean's Hour sessions is dedicated to a literature summary of development of



professional identity including concepts of cynicism and burnout. Then exercises of reflection, mindfulness and self-assessment are continued across the academic year. The curriculum continues with modifications based on student feedback. Longitudinal measures of empathy across all 4 years of medical school continue and initial results have been published.

4. Community Engagement

Community (Free) Clinic The Hopkins County Community Clinic was founded in April, 2004 to serve the working uninsured poor. A single evening session each week is staffed primarily by medical students, supervised on-site by volunteer local primary care physicians. The ULTC regional Dean serves as the medical director of the student directed clinic. A volunteer community board sets policy for the clinic. Since the advent of the ACA, our clinic also



serves the underinsured who have poor access to primary care. This experience can provide elective curriculum credit for the student who completes a performance improvement project. The in-person clinic was paused because of the pandemic in March 2020, re-started in June, and then transitioned to almost entirely telemedicine in September, 2020. We have included essays from students about this experience below.

Community Cardiovascular Screening

As we discovered that the population we seek to serve has trouble getting to our clinic, we began going to them in the summer of 2017. Directed by a steering committee of informal community leaders, we now do cardiovascular screening at the time and place chosen by those who know each subgroup. Our screenings are unique in that we do not choose the time and place, and each screened participant with a need can leave with an appointment to be seen at our community clinic within a week. Our long-term vision is to host clinics at natural gathering sites such as food banks and community events. This effort provides a real-world community medicine education for our students. These activities were paused because of the pandemic in March 2020. We resumed the screenings in June, 2021 and began temporary clinics on site during screenings at local food banks. These activities were noticed by the local newspaper, shown below.

Cody Robinette

As a medical student or physician, it may become easy to forget that after that 15-30 minute encounter with a patient that they lead full lives outside of the clinic or hospital after seeing many patients in a day. It may be easy to forget that they have problems that cannot be solved by a simple placement of an order. This is why I found my time working with a Community Health Worker (CHW) so rewarding. They were able to take time with patients and talk with them about additional issues or stressors that they are having and connect all aspects of their care in an attempt to have them work in unison. We do not see this side of patients all of the time as medical students or doctors. We may see a patient who is not eating well and ask them to eat healthier and not realize they do not have money for healthier food. We may see a patient no-show for an appointment and move on with our day and not realize they are having a difficult time with gas money. This was the role I was able to see a CHW play in a patients care.



With my time following a CHW I witnessed how they connected patients to community resources, and clinical education. One of the patients the CHW was working with did not have health insurance and was struggling with gas money to get around town and to appointments. The CHW was able to secure the patient Welcare and took the time to sit and go through the benefits of the insurance they have. With their new insurance they were able to receive monthly healthcare items that included anything from clothing to ibuprofen. They were also able to find the patient small opportunities in the community to receive immediate payment for short term access to gas money. This is an example of how a CHW can connect patients to community resources.

The same patient had trouble picking up prescription medications. The CHW was able to setup a delivery plan for the patient's prescriptions and would even do it herself if the pharmacy could not. Then the CHW said after the first delivery she would walk the patient through what each medication is for and system for which she could take her medications on time. This is an example of clinical education.

Finally, the CHW another patient the CHW worked with had trouble with their vision. This was a problem that had never came up at one of their doctor's appointment's because they had many other issues they were dealing with. The patient also knew they would have an issue paying for glasses or contacts. The CHW was working to find an affordable avenue for this patient to receive corrective lenses and connect them someone who could make that happen. This is an example of a CHW connecting clinical services.

My time spent with the CHW was very rewarding. In the clinic or hospital, we may see a small snippet of what patients are facing but, with my time with a CHW I was able to see how many different issues patients face that may never enter our mind. I was also able to see how I may implement different strategies as a physician to care for the whole of my future patients. The CHW's I worked with were able to connect different avenues in the community and healthcare system to promote better healthcare outcomes for patients and can be a valuable member of a healthcare team. The time I spent with them was invaluable.

Emma Doyle Improving Efficiency at a Free Health Clinic, Virtually Cost-Free



For the past two years I have volunteered as a medical student clinician at the Hopkins County Community Clinic, a free and reduced-cost clinic that serves the uninsured and underinsured population of Hopkins County Kentucky. We identify our patients at regular free cardiovascular health screenings, at which we ask participants about their health history, take their blood pressure, and take finger sticks for blood glucose and total cholesterol. Patients that express to us that they are in need of a primary care physician but have no or insufficient health insurance are directed to our clinic. We have also begun to incorporate a "mobile clinic" format, which allows us to see to patients' health concerns on the spot at screenings, with the help of an overseeing family physician who dials in remotely via Zoom. All operations of our clinic are funded solely by charitable donations, so any innovation in our clinic must not be associated with exorbitant monetary

cost. Future efficiency in our clinic's operations could be improved with simple, logistical changes, which will cost our clinic little to no extra funds.

First, efficiency could be improved at our cardiovascular health screenings with improvement of the screening form that forces volunteers not to forget to perform key steps of the screening. A recurrent problem to be fixed is that, when a participant's blood pressure reading is elevated, volunteers are expected to take a second blood pressure reading after several minutes have passed. When screenings become busy, remembering to do this final step becomes easy to forget. In order to help student volunteers to take the second blood pressure if needed, I suggest updating the screening form to include two blanks for blood pressure instead of one. This way, a blank on a form will alert students to the lack of completeness of the visit if the second blood pressure reading is forgotten.

Our screening form could also be improved by including a blank for the initials of the student who completed the each of the screenings. Our screening forms currently do not require participants to disclose their name. Often participants are only identified by a number. When several students are performing screenings, we often forget how many participants we have seen between us and what number the next participant is in line. Then, if our physician overseer has a question about one of the patient's screening forms, trying to identify to which patient the form belonged, and even which student saw that patient, becomes difficult. To remedy this issue, I suggest that blanks be added to the forms to identify the student who saw the patient, and that patients only be numbered in order they were seen by each individual student volunteer. For research purposes, each form could receive a separate number to be assigned later. This way physicians and students will ideally have much less confusion in communicating about participants following our cardiovascular screenings.

After the screenings are done, transporting our patients to our hospital's laboratory often becomes a challenge, especially when sending patients from the Salvation Army where many patients lack a car or means to purchase transportation. As a result, several patients have been lost to our care, simply because we cannot confirm that their kidney function is sufficient to be prescribed an ACE inhibitor, for example. Vouchers for city bus rides to the lab are available to those staying at the Salvation Army, but those vouchers are usually kept in the Salvation Army volunteers' offices. During screenings the vouchers physically out-of-reach and often go forgotten by both our and their volunteers. To make sure that Salvation Army screening participants are able to reach the laboratory, our volunteers might ask a Salvation Army volunteer for a stack of vouchers to keep on the screening table, to be given to volunteers that need them, along with the card we give with patients' blood pressure and glucose readings.

When conducting research about free health clinics that operate similarly to ours, the other students and I often read about a free clinic in Franklin County, Maine. Operations at that were associated with a significant decline in overall mortality throughout their county, so we have tried to model our own clinic after theirs to potentially achieve a similar result. However, subsequent research revealed that, after losing funding and shutting down operations at their clinic, all-cause mortality in Franklin County increased to the average state-wide mortality rate within just a few years. If our clinic is to continue to operate and provide benefit to Hopkins County, we must ensure that our funding will continue as long as possible. This will require continued commitment to the clinic by our sponsors as well as increased fundraising efforts from student volunteers. I have taken pride in my tenure so far at the Hopkins County Community Clinic and hope to see its success continue long after my graduation from the Trover regional medical school campus.

Jacob Lawrence

For my service-learning project, I partnered with a local health organization in Madisonville, Kentucky, wherein I coordinated with a community health worker to accompany them on a home visit with one of their clients. The community health worker program was created quite recently, being established by the ARCH Community Health Coalition within the last few years. The organization is based out of Hopkins County, KY and works to provide resources to underserved people in the surrounding region. The community health workers are trained professionals who provide patientbased support and outreach at no cost to the patient or local primary care centers; with this, they function to fill in the gaps in healthcare patients may experience during the interim between doctor's visits. Thanks to working with them, I was able to learn directly about what they do and the importance they can serve in a community. During my project time



specifically, I spent the afternoon with one of these workers while she made a home visit to a client – a gentleman with mental impairment who had lost his entire home during the tornado outbreak last year. This patient was staying in temporary housing while a new home was being constructed, which is where the community health worker and I met with him to reestablish contact with the program and obtain some updated information about his health, home status, and life in general. During this home visit, upcoming medical appointments were confirmed. In addition, a few health screenings – both the Personal Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) – were conducted. Following the visit, the importance of rural health outreach was discussed with the community health worker, along with more detailed explanation of their role.

While still in its infancy, this community health worker program functions to directly assist patients with access to healthcare and other important resources, acting in a similar, though much more intimate, role as hospital social workers. While other aspects of the organization may focus on community-wide targets, these community health workers benefit their community in a much more individualized manner. Although the impact may initially be small, I believe that any work in patient advocacy serves to move a community in a positive direction. Likewise, as I aspire to be a rural health physician, this experience was quite valuable to me to understand just how important the non-medical aspects of healthcare can be. Access to healthcare and helping patients know what resources they even have available play such a fundamental, but easily overlooked, part in health management. Likewise, this experience should also help guide my behavior in future practice with partnering with organizations like the ARCH Community Health Coalition in order to provide my patients with the best care as possible, both inside and outside of a clinic or hospital.

Tate Burris



I partnered with West Kentucky AHEC on a project to help educate high school students on the signs of opioid overdose, and what to do if they encounter it. For the project I went with two other medical students to the Hopkins County Career and Technical Center where we met with approximately 70 high school juniors and seniors split into two groups. We gave a PowerPoint presentation over what opioids are, what an overdose looks like, and how to administer naloxone to reverse opioids. We then ran through a simulation in which you were at a party and found your friends little brother unconscious surrounded by pills. We taught the students how to survey the scene, the importance of calling 911, how to evaluate the patient with what to look for with opioid overdose and showing them how to give naloxone with a trainer that we had. We then let the students try the simulation and practice administering naloxone. Mostly all the students

were very engaged and wanted to try the simulation. This project has a chance to make a good impact on this community. There is a heavy prevalence of opioid use in Hopkins County, both prescription and recreational, and sadly the number of younger kids getting their hands on these medicine and overdosing is increasing. I truly believe that now these kids that we talked to have a good idea of what an opioid overdose looks like, and they know what they need to do to help, and I believe that they could help save lives with this. This project has helped me understand the importance of educating people on certain signs of dangerous conditions, and that is something that I will take into my future practice.

Tanner Smith

During my time on the Family Medicine rotation, I had the privilege to volunteer for free cardiovascular health screenings at local establishments. As a Trover Rural Track student, the program places a significant emphasis on preventative health screenings within the county, with a specific focus on affecting cardiovascular health. identifvina risk factors Alonaside administering health history and lifestyle questionnaires, we conduct blood pressure, cholesterol, and blood sugar measurements. Utilizing these metrics, we can pinpoint individuals at risk and guide them toward necessary care. Some individuals already have established primary care providers, while others require assistance in finding suitable healthcare, which may include connecting them with a Trover student for free healthcare services tailored to uninsured and underinsured patients.



Two locations where I volunteered to conduct CV screenings were the Salvation Army homeless shelter and Breaking Bread food pantry, both situated in Madisonville, Ky. The Salvation Army serves a population of displaced individuals, presenting an opportunity to offer assistance during their time of need. We visit the shelter twice monthly to conduct screenings, encountering many familiar faces each time. Beyond the satisfaction of identifying health risks and providing support, engaging in conversation with these individuals proves to be the highlight of my volunteer work. Listening to their stories is profoundly impactful and often precisely what they need most.

The Breaking Bread Food pantry serves as another venue for our CV health screenings, offering a monthly gathering for locals seeking hot meals and grocery items at no cost. Amidst their visit for sustenance, some individuals approach our table, allowing us to conduct screenings and identify potential cardiovascular risks.

Once again, engaging in meaningful conversation and offering assistance proves rewarding during these encounters.

The most significant takeaway from volunteering at such events isn't solely the impact we make on those we serve but the profound impact they have on us. What may initially seem like a brief screening session is imbued with meaningful conversations and compassionate connections that transcend mere minutes. Amidst the daily stressors of medical school, exams, and the weight of future decisions, these interactions provide an opportunity to momentarily escape, gain fresh perspectives, and reaffirm our commitment to becoming physicians. Looking ahead, amidst the specter of burnout and the demands of a compassionate medical practice, I aspire to return to volunteering at places like these, where I can once again be reminded of the individuals I am called to serve and care for daily.

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Getting to know UWC agencies Aug 19, 2023

By Jodi Camp Reporter jcamp@the-messenger.com



Hopkins County Community Clinic volunteer Ingy Winders, left, talks to third year University of Louisville medical students Ellie Jolly, center, and Karl Hempel as they do CV screenings on patients at the Madisonville Community College Health Fair.

Submitted photo

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The Hopkins County Community Clinic has been providing free primary care medical visits to the underinsured and uninsured since 2004.

The clinic is staffed by University of Louisville Trover Campus medical students and supervised by Medical Director Dr. Bill Crump.

"Some HCCC patients join because they don't quite qualify for Medicaid or are in a job with very high deductible insurance plans as their only option, and some are students who have aged out of their parent's coverage," said Crump.

The clinic has offered screenings and health checkups to patients at the brick-and-mortar location as well as mobile-free clinics around the community. Since COVID, they have had to transition to video and telephone visits.

Crump said the clinic has partnered with the United Way of the Coalfield to fund supplies which has allowed the students to increase the community screenings to provide free blood sugar, cholesterol, and blood pressure checks.

He said they have also been able to add portable clinics during the screening sessions, so if someone walks in with a medical need, they can be seen on the spot.

"We can order lab work and start or re-start the medications they need," said Crump. "Our students have gotten really good at choosing inexpensive medications that are often on the local pharmacy \$4 list."

Ingy Winders, a HCCC volunteer, said the students have a unique opportunity to interact with people in the community who face significant life struggles like homelessness, poverty, poor nutrition, loneliness, and other issues that could leave them feeling marginalized.

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ULTC Program Summaries

The following summary of the Trover Campus programs is organized by the nine objectives that guide program development.

Objective 1: Expose rural high school students to summer preceptorships in medical careers.

HIGH SCHOOL RURAL SCHOLARS



Medical students from rural communities are the most likely candidates to practice in a rural setting upon completion of training. The High School Rural Scholars (HSRS) program provides an early opportunity for rising seniors and recent high school graduates from a rural area with an interest in health careers to gain exposure to health professions.

HSRS divide their time between shadowing at Baptist Health Deaconess Madisonville and functional human anatomy tutorials at the UofL SOM Trover Campus (ULTC). They meet with current ULTC medical students to gain understanding of the life of a medical student. Students from Hopkins, McLean, Webster, Caldwell, and Muhlenberg counties are considered for the program. All five counties are rural and are designated as Health Profession Shortage Areas (HPSA). Students are evaluated by the health professionals shadowed and receive a small stipend for participating in the 1-week program. To date, 266 students have participated in this program. At the end of the program, students also receive a letter from the Dean of ULTC with individual comments on their performance that can be used for college admission and scholarship applications.

Surveys show that HSRS perceive that they have learned much about health professions during the program as well as positively changed their opinions about rural health care.

Objective 2: Support academic success of rural premedical students

COLLEGE RURAL SCHOLARS

The College Rural Scholar program was begun as a pilot in 2002. This program is designed for students from rural western Kentucky counties (PEPP and non-PEPP) who may be most likely to become physicians and return to similar communities. The students are nominated as early as their first term in college, and those selected become scholars the following summer. They receive a small academic scholarship during their last three years of college and participate in a three-week summer session each year.

The summer program in Madisonville includes academic enrichment, shadowing physicians, and a series of Rural Health Seminars (2). These scholars also receive mentoring from current M-3 and M-4 students in Madisonville. The goal is to facilitate academic success for the pre-medical students and provide tangible evidence to a medical school admissions committee that these



2024 PSST Teams – Preclinical and College Rural Scholar Students

Scholars have invested time in understanding the practical details of rural practice. Some are nominated for an early admission assurance option to U of L Medical School. Through July 2022, 110 students have participated. Nine former High School Rural Scholars have participated in the College Rural Scholar program, 41 CRS have graduated from medical school and 15 former CRS are in medical school.

Objective 3: Facilitate medical school admission of rural students

RURAL ADMISSION INITIATIVE

Students from rural counties even if not medically underserved have greater opportunities to receive mentoring from local physicians, which fosters interest in a medical career. The available literature supports the concept that medical students from small towns are more likely to practice in small towns after completion of their training. Frequently, they return not to their hometown, but one that is very similar. This finding is true even if their hometown had an adequate number of primary care physicians. In fact, in the most popular "affinity model", a student with good role models of small town practice would actually be more likely to choose small town practice later.

Another reason for providing special consideration in admissions for rural students, is based on possible academic disadvantages inherent in small town schools. Even in a town with an adequate number of physicians, small town schools lack the resources of larger towns and are historically weak in math and science education. This logically leads to slightly lower math and science college GPA and MCAT scores. This has been the finding of those medical schools that have a special rural admissions track. However, once admitted to medical school, these rural students perform on par with their classmates from larger cities.

Objective 4: Expose pre-clinical medical students to rural practice and community medicine

PREMATRICULATION PROGRAM

The summer Prematriculation Program is a three-week program designed to provide academic, clinical and community medicine exposure to students prior to the start of their first year of medical school at U of L.

Prematriculation students spend about ten hours per week in classroom activities including medical case studies, research, and discussions about health care needs in rural communities. Students are assigned to physician preceptors for shadowing opportunities for approximately fifteen hours per week in various settings, including small rural clinics, hospitals, and nursing home facilities.



2023 Prematriculation students

Students spend approximately fifteen hours per week assessing the health care provided in an assigned rural practice. A recent focus on health literacy assessment and patient motivation to change health habits has been added.

This program provides clinical exposure as well as a framework for students to evaluate their future medical practice before beginning their M-1 academic year (3). Participating students gain the experience of beginning

to think like practicing clinicians, as well as develop relationships with some of their classmates before medical school begins.

PRECLINICAL PROGRAM

To date, the summer Prematriculation program and Preclinical programs have allowed 360 M-1 and M-2 students to get an introduction to rural practice. At the point of the last published report, 90% of these students who had entered residencies chose primary care. In addition, since 1999 these students have completed a rural community assessment as part of their summer activities. The 3-week summer Preclinical Program is an opportunity for U of L medical students to gain clinical experience as well as learn to assess a rural site as a future practice opportunity prior to entering their M-2 academic year.



Students are involved in classroom activities that begin to prepare them for the clinical setting. This curriculum is hands-on training that teaches the students various clinical skills and the details of the physical examination. Physician preceptors provide shadowing opportunities. A focus on providing free school physical exams in the community has become the central learning laboratory for the program.

Preclinical Group Activities

Overview of Patient Evaluation Well Baby Exam Video Otoscopy Heart and Breath Sounds The Pelvic Exam Breast Exam Prostate/Rectal Exam Suturing Lab Sports Physical Exam



Objective 5: Provide a Rural Medicine Elective for students in the Louisville Medical Center.

RURAL MEDICINE ELECTIVE

The Rural Medicine Elective is a one credit-hour (16 contact hours) course offered by the University of Louisville School of Medicine for M-1 and M-2 students. Dr. Bill Crump is the course director, and the goal of this elective is to provide regular exposure to issues of rural practice while the students are in an urban environment. Occasional site visits to a rural practice sometimes replace the on-campus sessions. Topics discussed include the future of Medicaid, school-based clinics, residency training options to prepare for rural practice and detailed practice assessments, women's health in rural practice, making a rural practice financially successful, working with rural health departments, balancing personal and professional life, mental health care issues, working with nurse practitioners and physician assistants, children's health care, physicians as leaders in rural areas, the future of rural hospitals, rural scholarship and loan forgiveness options, and how to find and what to look for in a rural practice. Since 2000, 112 students have completed the M-2 experience. This curriculum option was also made available for first year medical students in 2002 and includes a "meet the rural docs." So far, 188 M-1s have completed this elective.

At the beginning and end of the nine-month course, a survey of attitudes and knowledge provides insight into the students' understanding of rural practice. Overall, students showed favorable impressions about physicians' practice in a rural area. Students believe that physicians in rural areas have the ability to make a positive impact in their communities both in health care and social leadership.

For the outdoor enthusiast, some of Kentucky's finest state parks are within an hour's drive, and Land Between the Lakes to the west offers 300 miles of undeveloped shoreline, with outstanding hunting, fishing, and hiking (www.lbl.org). (photo by Pam Carter)



Objective 6: Provide M-3 and M-4 clinical training.



TROVER CAMPUS M-3 AND M-4 ACADEMIC YEARS

The Trover Campus provides a small group of medical students the opportunity to complete their third and fourth years of medical school in Madisonville. After completing their first two years of basic sciences in Louisville, Trover Campus medical students move to Madisonville and complete all their clinical rotations there. Students are based within a rural integrated health system with a large tertiary care hospital Deaconess (Baptist Health Madisonville) providing open-heart surgery and most other services but can be in a truly rural setting with a 10 minute drive in any direction. Students participate virtually in the same classroom lectures as the Louisville campus students. Clinical rotations on the Trover Campus provide

the unique opportunity for one-on-one learning with an experienced clinician preceptor. The typical teaching group on rounds in an urban medical center is one faculty, 3-5 residents and fellows, and 4-6 medical students. At the Trover Campus, the typical group is one student per faculty, sometimes with a Family Medicine resident on the teaching service as well. The Trover students also experience the value of small group learning by participating in problem-based learning sessions twice a month, facilitated by the Trover Campus Associate Dean, a family physician.

Students indicate their interest in placement at the Trover Campus, apply, visit the campus, and are interviewed. The selection committee ranks the candidates and offers are made to the selected students. This process has drawn national attention, with publication of the Trover experience in premier peer-reviewed Journals (4,5).

Program Outcomes

The goal is for the quality of the Trover Campus M-3/M-4 medical training to meet or exceed the quality of the training available at the downtown Louisville campus. The curriculum, learning materials, evaluations, examinations, and grading system for the Trover Campus are identical to those used on-campus. In terms of

quantity, patient logs kept by Trover Campus students reveal that they see 2-4 times as many patients on most rotations as their on-campus colleagues, and record 2-10 times as many procedures. One measure of quality is the "paper and pencil" measure of National Board Examinations. On Step Two of the USMLE (United States Medical Licensing Exam), taken during the M-4 (last clinical year) of medical school, first time pass rates of Trover Campus students are comparable to those on campus. This campus has become a model for other newly developing regional campuses and the experience with the first 10 years was reported in the premier medical education journal <u>Academic Medicine (4)</u>.

Another pertinent measure of Trover Campus quality is the perception of how these graduates perform in subsequent residency training. The residency program directors of the programs having Trover Campus graduates are surveyed each year concerning their evaluation of Trover Campus graduates' performance. The summary reveals that the Trover Campus graduates show better scores when compared with non-Trover Campus graduates. The Directors note that the Trover Campus graduates are especially well-prepared in the categories of interview skills, oral presentations, overall patient management, clinical judgment, self-directed learning, and interactions with patients. Most Trover Campus graduates report that they matched to their first choice residency program.

Objective 7: Place Trover Campus graduates in specialties in proportions to meet Kentucky's needs (50% FM, 75% Primary Care, 90% Generalist - including General Surgery and Psychiatry).

Through 2024, 73 of 179 graduates (41%) have entered Family Medicine, 23 of 179 (13%) have entered OB/Gyn, 45 of 179 (28%) have entered Pediatrics, Internal Medicine or Med/Peds and 14 of 179 (8%) entered Surgery. This summarizes as 136 of 179 (76%) entering primary care residencies and 160 of 179 (89%) becoming Generalists (includes General Surgery and Psychiatry).

U of L Trover Campus celebrates 25 years

https://www.the-messenger.com/news/local/article_122b1380-75a1-502b-a3e2f91ef6a9a543.html

Medical School Trover Campus celebrates 25 years

By Jodi Camp Reporter jcamp@the-messenger.com

Jul 1, 2023

On Thursday, the University of Louisville Medical School Trover Campus celebrated its 25th anniversary by remembering its history and students.

Dr. Bill Crump, the associate dean of the Trover Campus started the celebration by telling the history of the Trover Clinic and how the Trover Campus began.

The clinic was started in 1954 by Dr. Loman Trover and Dr. Faull Trover. Loman was over the lab and radiology and Faull was the pediatrician. The brothers brought in other highly skilled medical professionals like John Haynes for orthopedics, Fred Scott the family doctor and Merle Mahr the surgeon.

In 1972, the clinic started bringing Louisville-based medical students to Madisonville for their 8-week surgery rotations. Crump said at that time, it was only the surgical students.

"That was something because they got to do stuff here, they weren't third in line," said Crump.

In 1974, they started the first family medicine residency in Kentucky, and in 1998, they started the Trover Campus. In 2011, Trover Campus was the second college to create a three-year accelerated Medical Program.

In 2013, more changes came to Trover Clinic when Baptist Health partnered with them, and in 2021 Deaconess Health joined the partnership.

Crump arrived to oversee the campus in 1998 when it was first started and has bene part of the campus ever since. Over the years, new programs were started to encourage rural medical practice with a high school program, a College Rural Scholars program, and more learning

opportunities for medical students. "Across those 25 years, I've seen 170 of our medical students graduate and eight times that many students be involved in our high school and college pathways programs," he said. "Many come back to visit and share with us stories of how they have made a difference in their communities across our commonwealth. It is very gratifying."



Associate Dean of the University of Louisville Trover Campus Medical School, Dr. Bill Crump, tells about the history and how the Trover Campus got started in Madisonville in 1998

Dr. Sarah Fisher, and OBGYN at BHDM, was part of several Trover Campus programs over the years and talked about what that time meant to her and her career.

"I am a graduate of multiple Trover Campus programs including my third and fourth year medical school rotations, and now I feel very privileged to work with our medical students," she said. "The Trover Campus here in Madisonville has been a vital part of my journey into medicine."

Fisher was introduced to the Trover Campus through the College Rural Scholars summer program.

"The three summers that I spent as a college rural scholar have made some lasting impressions on me," she said. "For one, I saw the importance of a small community. The experience here is like no other."

When she left to complete her residency, Fisher said she was scared but felt prepared to take care of patients because she had seen it done well at the Trover Clinic and she had actually been caring for patients herself through the free clinic.

"If I had not been part of the Trover Campus programs through the years, I'm sure that I would have been a decent physician eventually, however, with my training her, I feel I am more compassionate, I am more community inclusive, and overall a more successful provider," said Fisher.

The U of L Trover Campus has received several awards including the Association of American Medical Colleges RMC Community Engagement Award in 2014, the AAMC RMC Educational Innovation Award in 2020, and the American Academy Family Physicians Telemedicine for Free Clinic in 2022.

Crump said after looking back at some literature, he found that the Trover Campus was one of two regional medical school campuses in towns that had a population of less than 150,000.

The Trover Campus is ranked number two among 40 rural programs by the Health Resources and Services Administration.

The University of Louisville President Dr. Kim Schatzel, who has been president for five months, said being at the celebration was a fantastic opportunity to learn about the campus in Madisonville and how special it is.

"I feel so proud to be a part of it," she said.

Jodi Camp



Dr. Jeff Bumpous – Dean of the University of Louisville School of Medicine, Kennedy Breeding-Smith, M4 ULTC Medical Student, Dr. Kim Schatzel – President – University of Louisville and Dr. Bill Crump – Associate Dean – University of Louisville School of Medicine Trover Campus

Residencies Matched by Trover Campus Graduates							
	N = 179						
BHDM EM Residency	OB/GYN (12.8%)	Brody SOM					
Madisonville, KY (18)	Asheville, NC (2)	Greenville, NC					
Southern Illinois University (2)	Brody SOM	Indiana University					
Carbondale, IL	Greenville, NC (2)	Indianapolis, IN (2)					
Memorial Health	Good Samaritan	Virginia Commonwealth Univ.					
Savannan, GA	Cincinnati, OH (5)	Richmond, VA					
Anderson, SC	Louisville, KY (3)	Columbia, MO					
University of Cincinnati	University of Kentucky	Marshall University					
Cincinnati, OH	Lexington, KY	Huntington, WV					
Cabarrus	St Johns	University of Tennessee					
Concord, NC	St. Louis, MO	Memphis, TN (2)					
Evansville IN	Winston-Salem NC						
East Tennessee State	University of Tennessee	Vanderbilt University					
Johnson City, TN (3)	Knoxville, TN	Nashville, TN (2)					
St. Elizabeth	Geisinger Health System	East TN State University					
Edgewood, Ky (4)	Danville, PA	Johnson City, TN					
	St Louis MO	St. Vincent Hospital					
Dartmouth	Memorial Health Univ. Med Center	Nemours Childrens Hospital					
Concord, NH	Savannah, GA	Orlando, FL					
Univesity of Louisville Glasgow	St. Vincent Hospital Center	University of Kentucky					
Glasgow, KY	Indianapolis, IN	Lexington, KY					
Self Regional	University Hospital	Med/Peds (2.79%)					
Greenwood, SC	Columbia, MO	Medical University of SC					
	Memphis TN	Liniversity of Kentucky					
Phoebe Putney Hospital	Mercy St. Vincent Med Center	Lexinaton. KY					
Albany, GA	Toledo, OH	University Cincinnati Hospital					
University of Wisconsin	Medicine (12.29%)	Cincinnati, OH					
Baraboo, WI	Good Samaritan	University of Louisville					
Ft. Wayne Medical Education	Cincinnati, OH	Louisville, KY					
Fl. Wayne, IN Florida State University		San Diego Med Center					
Ft. Myers, FL	Keesler AFB Hospital	Surgery (7.82%)					
UPMC Medical Education	Biloxi, MS	University of Louisville					
Pittsburgh, PA	West Virginia SOM	Louisville, KY (2)					
McLennan County FM	Morgantown, WV	Good Samaritan					
Waco, TX	Mayo School of Graduate Medicine	Cincinnati, OH (2)					
Evansville IN (3)	Jacksonville, FL						
Wright State University	Lexinaton, KY (3)	Banner Good Samaritan					
Dayton, OH	Ohio State University	Phoenix, AZ					
John Peter Smith Hospital	Columbus, OH	University of Arkansas					
Ft. Worth, TX	Loyola Univ. Medical Center	Little Rock, AR					
Mountain AHEC	Maywood, IL	University of Indiana					
		Indianapolis, IN					
Lexinaton, KY (2)	University of Alabama Medical Center	Tampa, FL					
Tacoma Family Medicine	Birmingham, AL	University of Tennessee					
Tacoma , WA	Marshall University SOM	Chattanooga, TN					
Honor Health	Huntington, WV	Memorial Health - Univ. Med Center					
Scottsdale, AZ	Duke University Medical Center	Savannah, GA					
Marshall University (2)	Durnam, NC						
Ball Memorial Hospital	Vincennes, IN	Ochsner Health					
Muncie, IN	Portsmouth Naval Medical Center	New Orleans, LA					
UT St. Thomas Hospitals (5)	Portsmouth, VA	Brookwood Baptist Health					
Murfreesboro, TN	Lake Cumberland Reg. Hospital	Birmingham, AL					
Tallahasee Memorial Hospital	Somerset, KY	Psychiatry (2.79%)					
Lake Cumberland Hospital	Liniversity of Louisville	Hershey PA					
Somerset, KY	Louisville, KY	East TN State University					
Spartanburg Regional Healthcare	University of Texas SW	Johnson City, TN					
Spartanburg, SC	Dallas, TX	Memorial Health					
Mountain AHEC	University of Tennessee	Savannah, GA					
Pathology (1, 12%)	Linix of Alabama Medical Center	Grand Rapids MI					
University of South Alabama	Birmingham, AL	University of Florida					
Mobile, AL	University Hospitals	Gainesville, FL					
Virginia Commonwealth Univ.	Jackson, MS	Diagnostic Radiology (.56%)					
Richmond, VA	Dermatology (2.23%)	University of Louisville					
Orthopedics (1.12%)	Southern Illinois University	Louisville, KY					
Springfield II	East Carolina University	GR Education/Research					
Mt. Carmel Health System	Greenville, NC	Grand Rapids, MI					
Columbus, OH	University of Vermont	Mayo Clinic SOM					
Child Neurology (.56%)	Burlington, VT	Rochester, MN					
LSU School of Medicine	University of Missouri	Urology (.56%)					
New Orleans, LA	Columbia, MO Physical Medicine & Pohab (56%)						
	Albany Medical Center						

Albany, NY

*Percentages show the proportion of Trover Campus graduates who chose that specialty.
20



Class of 2023 graduates: Back row: Ashton Ausbrooks, Alyssa Hounshell, Micah Kaiser, Katie Wilmes, Will King Front row: Jonathan Smith, Pam Carter (former Student Support Coordinator), Chelsea Lancaster

Class of 2024 graduates: Back row: Jacob Lawson, Emma Doyle, Kennedy Breeding-Smith, Caitlin Jones, Maria Shields, Taryn Miracle, Cody Robinette Front row: Blake Edmonson, Pam Carter (former Student Support Coordinator), Brad Watson



Objective 8: Provide each of the Trover Campus teaching departments an opportunity to have at least 8 student rotations per year, with compensation to the teaching faculty.

Recruiting and then retaining physicians for a large multi-specialty group in a town of 20,000 is a challenge. Ideally, the Baptist Health Madisonville organization recruits those who are comfortable living in a small town and share a common culture with western Kentuckians. When sometimes only two physicians in a specialty must share all call, it takes someone special to stay with such a group. From the beginning, Trover Health System had placed a very high value on teaching, and the funding for the Trover Campus has allowed a reasonable reward for those clinician teachers who accept responsibility for assuring adequate exposure for required clerkships. The Baptist Health system has continued this focus on education in Madisonville. The faculty has taken this responsibility seriously, and the Trover Campus activities are viewed as a positive for recruiting and retaining clinician faculty for Madisonville. An innovative teaching skills process for faculty has been instituted and published in the Journal of Kentucky Medical Association.

Objective 9: Place at least 50% of graduates into practice in small Kentucky towns.

The purpose of the Trover Campus is:

By providing first-class medical education in a small Kentucky town, place more graduating medical students in practice in small Kentucky towns.

Nationally, 2% of medical students report plans for rural practice. The five oldest rural programs in the U.S. report that about 40% of their graduates are in rural practice. Of the ULTC graduates in established practice, 51% initially chose rural practice. Of those from rural Kentucky, 48% are now in rural Kentucky practice.

Publications

(1)Crump WJ, Fricker RS, Flick, KF, Gerwe-Wickham K, Greenwell, K, Willen KL. A Rural Pathways Program for High School Students: Reinforcing a Sense of Place. Family Medicine. 2014; 46(9): 713-717.

(2)Whittington CP, Crump WJ, Fricker, RS. An invitation to walk a mile in their shoes: a rural immersion experience for college pre-medical students. Journal of Regional Medical School Campuses. 2019;1(5). doi:10.24926/jrmc.v1i5.1565.

(3)Crump WJ, Fricker, RS. A Medical School Prematriculation Program for Rural Students: Staying Connected With Place, Cultivating a Special Connection With People. Teaching and Learning in Medicine. 2015; 27(4): 422-430.

(4)Crump WJ, Fricker RS, Ziegler C, Wiegman DL, Rowland ML. Rural Track Training Based at a Small Regional Campus: Equivalency of Training, Residency Choice, and Practice Location of Graduates. Academic Medicine. 2013; 88(8): 112-1128

(5)Crump WJ, Fricker RS, Ziegler CH, Wiegman DL. Increasing the Rural Physician Workforce: A Potential Role for Small Rural Medical School Campuses. The Journal of Rural Health. 2016; 32(3):254-259.

University of Louisville Trover Campus Graduates' Kentucky Practice Locations



Kentucky Practice Locations							
Albany	Edgewood (2)	Hazard	Madisonville (6)	Paducah (5)			
Annville	Florence	Henderson (2)	Morehead	Pikeville			
Benton	Frankfort	Hopkinsville (2)	Mt. Vernon	Powderly			
Berea (2)	Georgetown	Leitchfield	Murray (6)	Princeton			
Bowling Green (2)	Greensburg	Lexington (7)	Nortonville	Somerset			
Cadiz	Grethel	London	Olive Hill	Walton			
Calvert City	Harold	Louisville (12)	Owensboro (6)	Whitesburg			
Danville				Winchester			



Dr. Carey Dodds (2023 and 2024) and Dr. Jimmy Dodds (2023)were awarded the "Golden Apple" teaching award by the ULTC students

Awards



Dr. Sarah Fisher was awarded the "Couldn't have made it without you" award for 2023 by the ULTC students



Dr. B.N. Sreekumar was awarded the "Golden Apple" award for 2023 by the ULTC students





Dr. Kristin Wickham and Dr. Reagan Gilley were awarded the "Couldn't have made it without you" award for 2024 by the ULTC students

Reflections.....

Clinical students are encouraged to write reflective essays putting their experiences into perspective. We share some of these here.

Tate Burris

I chose to watch the video on autism. The main reason I chose to watch the video on autism is because of how autism gets portrayed most of the time to the public. When the public hears about autism, they immediately think about the kids who don't talk, won't make eye contact, and are overall very difficult to take care of. I know from personal experiences with family members that have autism, that this is not always the case, and I wanted to hear personal experiences from other families that have children with autism. What stood out to me from the video was that each of the children that were highlighted were very different in how they presented. Some presented early in life, some not until they were in their 30's, some were completely non-verbal, while others could communicate very well. It really opens your eyes to the fact that autism really is a spectrum, and you can't treat every kid with autism the same. One of the parents said something



during the video that really stood out to me. She said that it was important for her kid to trust the people that were trying to take care of him, and what really helps with that is the doctor talking to him and letting him be a part of his own care. That really stood out, because I have seen doctors who when there are visiting with a child who has autism, they only talk to the parents, and I always thought that seemed odd. After seeing this video, I understand the importance of talking to your patients with autism because it helps build that trust with them, and in doing so makes for a better doctor patient relationship. As someone who plans to go into outpatient family medicine, I know that I will be taking care of people who have autism. After seeing the video, it has shown me the importance of making sure to build that trust with the patients, as well as their caregivers. It has also helped remind me the difficulties that come with taking care of people with autism and the struggles that the families deal with. Because of this it has reminded me of the importance of knowing what support groups and resources are available in my community for these families and I plan on make sure the families that I take care of get plugged into these groups to get they help that they need.

Taryn Miracle – Ball of Compassion



"I would stay in the car from daylight to dark and dark to daylight. That's how I knew how much time went by." She was a child when her dad left her in the car while visiting "friends' houses," now presumed to be drug houses. She also endured emotional abuse from her father and mother, recalling that she had once been locked in a closet while they stood outside laughing. Throughout the next few years, she would come home and find her intoxicated men in her bed. While she denies sexual trauma, the insecurity of a safe place to sleep likely weighed heavily on her eight-year-old self. This history of detachment would propagate throughout her adult relationships, leading her to abusive and dependent men who would eventually contribute to her substance use and to the diagnosis of borderline personality disorder. Substance use would lead to drug charges, and drug charges would lead to a court-ordered rehabilitation program where she would lose contact with her four-year-old son, the same age she was when her dad first left her unattended in a vehicle. She would be immersed in sadness and grief for this temporary loss of contact, so much so, that she would be willing to admit that she wanted to take her own life.

This was the course of Cassie's (not her real name) life that would land her under my care during my psychiatric rotation of my third year of medical school. I remember standing in the sunshine in her room, listening to her story, just overcome with disbelief, empathy, sadness, and anger. Truthfully, I was deeply disturbed by the things she lived through, and I wasn't sure how to respond to some of the things she shared. Still, she was open and honest, even sharing something with me that she had never shared with anyone else. When I asked her if she had ever attempted suicide, she said "no." After a couple minutes, she shared, "I've actually never told anyone about this before, but I did a *bowl* of meth a few months ago, trying to kill myself." I had no idea what a "bowl of meth" was and it wasn't until I shared it in our treatment team meeting and one of the social workers corrected me, that I realized she had actually said a "*ball* of meth."

In that moment, the gravity of the situation weighed on me. This woman had been through more in her lifetime than most people could ever imagine. That's what I learned from her: I have no idea what patients have been through or are going through by looking at them or reading their charts. Before I met Cassie, when I skimmed her chart, my first thought was that she might be using this to get out of court-ordered rehab. I made a split-second judgement, based on the patient's chart, that was completely inaccurate and unnecessary. I became ashamed that I initially had these thoughts. Even more perplexing was that I might have still felt this way if she hadn't shared her trauma with me. Should a patient's history affect the amount of compassion I exude? No. If I pride myself on being empathetic and compassionate, I need to pride myself on doing that for *every* patient, even when they're not cooperative, even when I'm frustrated and burnt out, even when they won't take responsibility for their health.

It's so easy to get pulled into the cynical culture of medicine, where healthcare professionals complain and lose hope. However, the truth is, we've been given an opportunity that not very many people experience. It's the unique opportunity to display compassion to every patient, regardless of their health and regardless of their history. Some people, like Cassie, have never been shown compassion or love from others. Not everyone is blessed with amazing parents and a wonderful support system. I went home that weekend and thanked my parents for always showing me love and care, because I had never realized the rarity. This patient was a wake-up call for me to remain open-minded, unbiased, and compassionate. Even if I only impact one patient's life with this concept, it will be one person who might turn hopelessness into hopefulness.

Cody Robinette

Mrs. Doe is a 63-year-old female who was admitted to the behavioral health unit the night prior to me arriving in the morning. She came to the emergency room for suicidal ideation, depression, and anxiety. The first morning that I went into her room and interviewed her, she was nauseous. She explained that she was dealing with gastroparesis the past few weeks which was causing the nausea and vomiting. She also said she has a long history of diabetes and many other health conditions. We talked for 45 minutes to go through her history. She described a traumatic childhood in which her father and uncles sexually assaulted her. She also detailed a physically abusive relationship with her first husband prior to his passing. She then told me about how she found a "perfect husband" and how she had to cope with his murder. Finally, we talked about her current situation in which 12 other people live with her in a single wide trailer. These are friends



of her daughters and in that trailer, she witnesses domestic violence and others who have depression and

anxiety. While this whole conversation took place talking about all of these life events of hers, she never really talked about herself. She always focused on the someone or something else. She then detailed how she wanted to commit her own suicide. She talked about lighting her trailer on fire after she had removed everyone else from the trailer. Mrs. Doe stated she would sit and watch TV as the trailer burned, and her loved ones watched.

After a conversation with Dr. Gilley about the interview we talked about maladaptive coping strategies and an external locus of control. After this conversation the interview with Mrs. Doe made much more sense. The long stories that she told that always seemed to include everyone but herself, the dramatic scene of her suicide, and her current living situation. Mrs. Doe has been through many traumatic events throughout her life, even at such a young age. These events caused an arrest of development of her coping strategies and now has issues dealing with events occurring in her life even at the age of 63. She had lost control of her life due to these events. The events and maladaptive coping strategies lead to episodes of depression which turned into a terrible cycle. The first meeting now made much more sense. I felt sad for Mrs. Doe. At that initial meeting she felt as if she didn't have control over her own home. I observed a woman who was tired of everything she had been through.

The knowledge that I have gained in this encounter can be used later in my career as a PCP. Understanding that trauma in life, especially at such a young age can affect people years down the road. All forms of trauma, though it may not be talked about publicly a lot, is common and occurs to a lot of people. I will be able to take my experience and new understanding to my future patients. I will be able to better communicate with them and understand their needs while I meet with them. In subsequent meetings with Mrs. Doe I was able to see short therapy sessions from Dr. Gilley and Dr. Abubucker teaching coping strategies and the benefit that therapy can have even in a short time. This experience also reinforced to me that you never know what someone has been through. This will not only make me a better physician but a better person by keeping this in mind daily.

Nita Nair - Still Human



"I'm not planning my daughter's funeral." Alex's (not her real name) mother was on Facetime, holding back tears as she stared through the phone at Alex in her hospital scrubs. "You won't have to. I just need to go back home," replied Alex as she looked down at her IV. "Then you're not coming back here. You're a drug addict, and there's fentanyl here. I don't even know where you've hid it," cried Alex's mom. I was standing quietly beside my attending, Dr. G, as he mediated the conversation between Alex and her mother. I watched as Dr. G navigated the tension between the two, validating the fears of Alex's mother while also explaining the illness her daughter was battling. Alex was only 29 years old. She was intelligent, articulate, and held a stable job at a bank. Dr. G explained to me how these patients are often the most worrisome, as they can hide their illness well. Alex had been struggling with addiction to opioids for the past three years.

Her mother had no idea until a few days ago when Alex collapsed in her kitchen. She had held her daughter in her arms while frantically calling 911, and this was the first time they had spoken since the accidental overdose.

Over the past few days, Alex had been receiving treatment for opioid withdrawal. Dr. G and I had been seeing her each day, guiding her through the process, and discussing next steps with her. We hoped that Alex would be open to receiving inpatient treatment in the behavioral health unit where I was rotating, but we quickly learned that she was set on returning home. We warned her of the risks of a future overdose – that it could

lead to permanent brain damage or even death. She nodded her head in understanding and explained that she would never touch opioids again, but that she just wanted to pursue outpatient treatment. We feared this meant she was still in the early stages of change. Alex's mother clearly felt the same way.

After Alex's mother hung up the call, Dr. G explained to Alex that she needed a safe place to go before the hospitalist could discharge her. "My mom is just mad right now. I'll call her later tonight, and I'm sure she'll let me come home," Alex reassured. As Dr. G and I walked out of the room, we wished Alex all the best. She smiled and thanked us.

I felt uneasy about letting Alex leave the hospital. A part of me wanted to turn back around and convince her to stay and get inpatient treatment. I knew what statistics predicted would likely happen when Alex returned home. My heart not only hurt for Alex, but also her mother. I wondered whether Alex's interaction with us was purely transactional, or if she truly wanted to go home and start her road to recovery. I discussed these thoughts with Dr. G. "I know this felt different from sending someone else home with diabetes or hypertension pills," he said, "but, when you think about it, it really isn't all that different." "We can only guide patients and educate them on their options, but at the end of the day, it's up to them to decide what to do." That made sense to me. Substance use disorder isn't all that different from other chronic medical conditions. But I realized that it felt different because it has an arguably more complex interplay of personal, familial, and societal factors. I had witnessed the layers of this diagnosis first-hand in the intensely heated conversation between Alex and her mother.

Before moving on to see the next patient, Dr. G said something about our experience with Alex that resonated with me. He explained how our negative emotions regarding sending Alex home are a good sign. "It means we're still human," he said. Those words left a lasting impression on me. It helped me reframe the weight I was feeling from being unable to control the outcome in a more positive light. I truly cared about Alex's wellbeing, and that was worth something.

Going forward, I hope to take what I've learned from my encounter with Alex and apply it to my practice as a future physician. While it's painful to accept that we cannot control every aspect of a patient's recovery, I understand that my role as a future physician is to offer resources and support in the most suitable way and hope for the best outcome. I have also learned to acknowledge my own limitations as a future provider. The encounter with Alex not only taught me more about myself, but also deepened my understanding of the complexities of substance use disorder. I saw that recovery from addiction is a unique path for everyone, and that acknowledging and respecting this diversity is essential. Furthermore, Alex's high level of functioning and her ability to conceal her addiction from her family highlighted the stigmatized nature of substance abuse. It reinforced the idea that addiction can affect anyone, irrespective of their external success. Meanwhile, it emphasized the necessity of considering not just the medical aspects, but the emotional and familial dynamics as well. My encounter with Alex deepened my appreciation for the nuanced nature of substance use disorder and strengthened my commitment to approaching healthcare with empathy, respect, and a holistic perspective, recognizing that every patient's journey to recovery is a unique and profoundly human experience.

The following pages are Publications by ULTC Students:



SYMBOLISM OF THE COVER

When I was asked to paint the cover art for this book, I thought about what "Pathways to [Reaching] Patients" meant to me. Often our patients are readily reaching out to us, with a vibrant story of their illness and their life leading up to their illness, if only we take the time and energy to listen. With that thought in mind, I was reminded of Michelangelo's "The Creation of Adam." In that painting, Michelangelo portrays God with a fully extended finger reaching to Adam, and Adam with a limp, almost aloof finger, signifying that the Divine is readily available to Adam if only he takes the effort to reach out. In the cover art I decided to reference "The Creation of Adam," positioning a student physician in the place of Adam, meaning that a student needs only to be curious and to listen to find the patient with which they are presented. Learning to reach the patient is the "pathway" to becoming a physician, so I placed a pathway extending from the point at which the student's and patient's fingers should find each other. Above the pathway is a raincloud, which signifies transformation in traditional Western painting, as symbolism of a sort of baptism. If we as medical students learn to find our patients, we are slowly transformed, sometimes in ways that we did not expect, to the empathetic, healing physician that we entered medical school to become in the first place.

Emma Doyle, Trover Rural Campus M-4 Medical Student

PREFACE

There are a great number of books written by practicing physicians recounting the fascinating stories of their patients, and I think I have read most. I've also written several of my own. The inspiration for this collection of patient stories came from my summer sessions with college pre-med students and medical students very early in their training that are called "Friday morning reflections." With no agenda beyond encouraging them to observe their preceptors closely as they interacted with patients, I was struck with how quickly they discovered the power of empathy. They were almost universally impressed with how much each doc knew of their patients' stories, and couldn't imagine how they might do this someday. They also quickly picked up the difference when a doc, usually an "ologist," didn't invest energy in knowing the patient, and the visit was more like an oil change in a quick lube.

Someone early in my career got me keeping a journal and writing patient stories, and after more than 40 years of practice and teaching, it was time to pass it on. In my Associate Dean role at a rural regional medical school campus, I had frequent contact with our third- and fourth-year clinical students. We also had summer programs for carefully selected college students called College Rural Scholars (CRS), a "Prematric" program for students just before they began medical school, and a Preclinical program for students between their first and second year of medical school. As I developed a professional identity curriculum in an attempt to slow the loss in empathy I saw as my graduates began their family medicine residency at our campus, the power of narrative medicine cried out from every reference I found.

On the M-3 Psychiatry clerkship, an essay describing a particularly touching patient interaction was required. I found myself engrossed in these tales, but wishing that there was more depth of understanding of the pa-

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tient's life prior to the crisis of hospital admission. I found a publication that reported that M-1 medical students tended to report the patient's story, while M-3s were more focused on quickly categorizing the patient's illness into a diagnosis in the current version of whatever coding system was in vogue. In short, curiosity had become replaced by diagnostic efficiency. Knowing that development of this categorization skill was required to be successful during the time crunch of residency training, I set out to provide time and reward for my students at all levels to breathe in the full patient story before it was too late.

The essays in this book are the products of a gentle outline provided to the students to produce a rich patient story given 45 minutes for an interview in a rural clinical environment. As a less structured view, they were also asked to produce a 55-word story about one patient they saw during each precepting session. There are also essays from M-3 students on their Psychiatry clerkship and a few M-4 recollections. Each chapter was carefully curated, but this categorization is more for the casual reader than anything more substantive. Each chapter begins with an essay that provides a broad gestalt of the topic, often by a physician faculty or community practitioner.

The essays are only lightly copy edited, allowing colloquialisms to survive. Almost all the students are themselves from rural Kentucky, and shared idioms were only slightly sifted to more standard usage. Student- assigned pseudonyms or the patient's initials were kept intact, and any potentially identifying information was changed or removed. Almost all essays included the names of the patient's family members and friends, and, remarkably, the names of their pets. These were also anonymized.

These patient stories tell much more about the students' views than just the intricacies of their patients' lives. Even with what some might consider mundane details of everyday Kentucky life, the students discovered the magic of true understanding that is the nidus for empathy. I hope you enjoy them as much as I did.

Bill Crump, M.D.

FOREWORD

IN THE VAST TAPESTRY OF human experiences, there exist stories that are both profound and humble, tales that unfold within the rural corners of our world. Within <u>Pathways to Patients</u>, these narratives are the voices of medical students and rural medical faculty who have traversed the path less taken, discovering a remarkable truth: the challenges they face in underserved areas become the catalyst for personal growth, forging them into new doctors equipped with unparalleled empathy and unwavering determination.

In these pages, students and new doctors embark on a transformative journey where they are welcomed into the lives and hearts of their patients, becoming intertwined in the fabric of their communities. While the details of these stories are changed or omitted to protect patient identities, the core human experience shines through. These accounts show the difficulties and triumphs that shape young doctors, molding them into professionals ready to confront the realities and intricacies of providing healthcare in underserved areas. The profound weight of such encounters elicits deep introspection.

As graduates of the Trover Rural Scholars Program of the University of Louisville, we were fortunate to learn from experienced faculty who taught us how to overcome challenges and provide quality medical care to underserved populations. The program celebrated its 25th anniversary in 2023. Over the years, our fellow graduates have taken the knowledge and skills we gained to rural communities throughout Kentucky and the United States. Many chapters in <u>Pathways to Patients</u> begin with the stories of physicians who have returned to this community in Madisonville, Kentucky, to practice and help teach a new generation of physicians.

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This book contains stories of students and young doctors that encapsulate the joy of saving lives, the solace in bringing relief to suffering, and the privilege of supporting populations that are often overlooked. You will also find stories of personal growth that come with the most difficult of experiences, such as in Chapter 3 "Lessons in Resilience." These stories remind us that the rewards of practicing medicine in underserved rural areas extend far beyond professional satisfaction. They breathe life into our collective purpose, reminding us of what we value most.

May these stories inspire and ignite a flame within all who read them, kindling a passion for creating a world where access to quality healthcare knows no boundaries.

> Dr. Whitney Gilley and Dr. Reagan Gilley Regional Affiliate Clinical Faculty, ULSOM Department of Psychiatry and Behavioral Sciences 2013 graduates of ULSOM Trover Rural Track

REFLECTIONS FROM MADISONVILLE

Prologue

Each summer since 1998, rising second year medical students in the University of Louisville Trover Rural Track, have completed the Preclinical Program in Madisonville, KY. This includes tutoring in physical exams before they assist with school physical exams in nearby underserved counties, as well as participating in group sessions learning clinical reasoning skills in a problem-based learning style. The third component is precepting with local physical as with a focus on patient stories. We discuss published literature that demonstrates evidence that once the third year begins, students focus more on categorizing illness than on gathering the meaning of the illness from the human being in front of them. As a vehicle for reflection, each student submits a 55-word essay during the program describing a particularly important interaction from the precepting sessions. The stories below are from summer 2022.

Bill Crump, MD, Associate Dean, ULSOM Trover Campus

"You Only Live Once" By James Dodds

"I quit smoking 10 years ago but something just brought me back"

She has had a valve replacement, double bypass, and severe coronary heart disease. Her heart disease is getting much worse, rapidly worse since she started smoking again.

"Ya know doc, at some point you have to realize it's bad and live your life".

"Wonderful" By Caitlan Jones

"I feel wonderful!" She didn't look wonderful. She is 99 pounds, skin and bones. She stands, barely. The doctor uttered "Susan, I know something is

wrong, your family knows it, and deep down you know it. If you keep wasting away, there won't be a few months. We must figure out what's wrong."

"The Empathy of a Teacher" By Summer Sparks

A busy resident allows me to shadow her. I respond yes ma'am when she asks me a question. She asks me not to call her that because it makes her feel old. She makes me comfortable and less apprehensive. She remembers what it is like to know so little. Her empathy extends beyond her patients.

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"The Couple" By Bradley Watson

As they watched each other take turns with the doctor, they spoke for each other without hesitation. They even finished each other's sentences and knew each other's medications. As they left, they held hands down the hall, almost 50 years of doctor visits together now.

"A Sippy Cup of Mountain Dew" By Cierra Woodcock

Five of her ten siblings and her parents died from heart disease. Three hundred pounds, 4 stents, and a quadruple bypass later, nothing seems to change and no intention to do so. I suppose when you grow up on a sippy cup of Mountain Dew, knowing better doesn't mean doing better.



James Dodds is from Madisonville, KY. He is a Trover Rural Track student at the University of Louisville School of Medicine.



Caitlan Jones is from Greenville, KY. She completed the College Rural Scholar Program at the Trover Campus prior to medical school. She is currently in the Rural Medicine Accelerated Track (RMAT) at the Trover medical campus having completed eight weeks of Family Medicine clerkship training prior to starting her second year of medical school.



Summer Sparks is from Greenville, KY. She completed the College Rural Scholar Program at the Trover Campus prior to medical school. She is currently a Trover Rural Track student at the University of Louisville School of Medicine.



Bradley Watson is from Bardstown, KY. He is currently in the Rural Medicine Accelerated Track (RMAT) at the Trover medical campus having already completed eight weeks of Family Medicine clerkship training prior to starting his second year of medical school.



Cierra Woodcock is from Bee Spring, KY. She completed the College Rural Scholar Program at the Trover Campus prior to medical school. She is currently a Trover Rural Track student at the University of Louisville School of Medicine.

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In the first two years of medical school, we are taught in blocks. Each block consists of physiology, pathology, and pharmacology related to one body system. Master the cardiovascular system, pass the test, move on to the gastrointestinal system, and repeat. With rigid lines demarcating one organ system from another, it is easy to forget the body's complex interconnectedness. Changing one thing will create a ripple effect that has the possibility of presenting in all other systems. A simple respiratory infection can cause muscle aches and pains from constant coughing and, if left untreated, may find its way into the central nervous system wreaking havoc on the host's entire body.

How poorly I grasped this interconnectedness on my first clerkship of third year. I was rotating on the inpatient psychiatric ward in our community hospital. I saw the embodiment of interconnectedness in the form of a 22-year-old patient named LJ (not her real name) presenting with suicidal ideation.

LJ was sitting cross-legged on her bed when I

introduced myself as a member of her care team. She seemed to be in a bright mood, a contrast from the usual patient on the ward. When I began her interview, I saw the full picture of the young woman sitting in front of me. As LJ began recounting the events of the last two months, her demeanor became gloomier with each life event she described leading up to her stay on the psychiatric ward.

Two months ago, LJ woke with pelvic cramping. She was four months pregnant and excited at the prospect of having a child. "This baby was going to be something that was mine," she said. However, as the day continued, the cramps grew more intense, and she decided to visit the emergency room. She was informed she was having a miscarriage and was sent home to follow up with her obstetrical provider. With a complete lack of support from family members and friends, she was left alone to mourn the shattered view of her future. "I felt like

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While reflecting on LJ's story I was left with one question: could the suicide attempt have been prevented? As physicians, it is easy to focus on the immediate problem in front of us. To put it into the language of a firstyear medical student, we are tempted to stay in the boundaries of one's block. But staying within such rigid margins prevents physicians from seeing the big picture.

a failure. I didn't want to make the situation worse by complaining, and at the same time I didn't really know who I could talk to. I began isolating myself."

LJ's tears flowed that day with me in her room. Though I personally had never endured anything so severe, her pain was palpable. My heart ached for her and the utter isolation she was feeling. LJ explained that she put on a happy face during follow up appointments and presented herself as a woman who was dealing with the loss in healthy ways, thinking that things would eventually get better if she pushed through the pain. This ultimately led to a suicide attempt that landed LJ in the psychiatric ward.

While reflecting on LJ's story I was left with one question: could the suicide attempt have been prevented? As physicians, it is easy to focus on the immediate problem in front of us. To put it into the language of a first-year medical student, we are tempted to stay in the boundaries of one's block. But staying within such rigid margins prevents physicians from seeing the big picture. Though I was not there during LJ's treatment, I was wondering if she would even be standing in front of me in the psych ward had any physician on her care team stepped beyond the blocks of physical care and touched base with her feelings post miscarriage.

Through this experience, I began to "unblock" my perception of patient care. I began to understand that illness is not demarcated into neat lines and categories. The best medical care pays attention to the borders and where each block bleeds into the next. LJ's trauma was not only physical but equally psychological. As future physicians we must understand that, unlike our curriculum, illness does not follow a blocked schedule. It is vital to see the patient as a whole rather than individual pieces, pathologies, or body systems. We risk some pieces falling through the cracks in order to focus on other pieces. Sharing that suffering with LJ opened my eyes, but maybe more importantly, it opened my heart and unblocked my mind. A mindset I will carry with me for the rest of my career.



Kennedy Breeding is a third-year medical student at the ULSOM Trover Campus in Madisonville. Her hometown is Whitesburg, KY.

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BY MEGHAN CAWOOD, MS2; SHAINA MAGNESS, MS2; RILEY ERIKSEN, MS2; EMILY AMYX, MS2



INCREASING THE FAMILY MEDICINE SCOPE OF PRACTICE TO REDUCE MATERNAL MORTALITY: A STUDENT VIEW

PROLOGUE

As part of the University of Louisville Trover Rural Track based in Madisonville, Kentucky,12 first year medical students complete a monthly elective facilitated by their Dean that covers the important practical issues of small town practice.3 In the session dedicated to obstetrical care, students explore the joys and obstacles of providing full scope care within a Family Practice in a small town. As a way to find some of the joys when their local hospital doesn't include deliveries, they review an older article promoting a "prenatal care only" with shared care option.4 Four rising second year medical students

completing the summer preclinical program in Madisonville,⁵ were tasked with producing a literature review as background for a new third-year student project providing home blood pressure monitors to postpartum patients. Almost immediately, they saw the obvious role that family physicians could, and perhaps should fill, in addressing the dramatic increase in American maternal mortality. What follows is their position paper.

> - William Crump, MD, Associate Dean, ULSOM Trover Campus

This literature review explores the reasons for the increase in maternal mortality in the United States and offers possible solutions to bridge the gap in healthcare for postpartum patients. We address three issues: maternal deaths related to hypertension, maternal deaths related to mental illness, and the opportunity for family physicians to increase their scope of practice and reduce maternal mortality. The U.S. is known for its high quality specialists and research programs.6 In spite of this, the maternal mortality rate in the U.S. is triple the rate of other developed nations 7 at 32.9 deaths per 100,000 live births in 2021,8 and continues to rise.^{8.9} Approximately 80% of maternal



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deaths are cardiovascular, many of which are related to hypertension.¹⁰⁻¹³ The importance of measuring blood pressure before and throughout pregnancy has been well studied.^{10,14} but hypertension measurement and management following delivery has not.^{15,16} Another common problem seen is postpartum depression which occurs in approximately 10-20% of new mothers ^{17,10} and presents up to 1 year following delivery.¹⁷ By increasing the scope of practice of family physicians, we believe that these issues can be addressed and mortality reduced.

Hypertension

Not much is known about the natural history of blood pressure in the first year postpartum. According to the American College of Obstetricians and Gynecologists (ACOG) guidelines, patients who have a history of hypertension should have their blood pressure monitored for at least 72 hours postpartum, and again 7-10 days after childbirth.²⁰ The limited measurements following delivery are concerning due to the risk of developing postpartum preeclampsia up to 6 weeks after delivery.^{21,22} Throughout the first week following delivery, maternal blood pressures can rise to values of >150 mmHg over >100 mmHg ²³; these hypertensive numbers are the primary cause of hospital readmissions postpartum.^{12,23,24} A study of 3988 women from the U.S. showed that of the 5.7% of patients that were diagnosed with postpartum preeclampsia, 66% had to be readmitted following discharge.²⁵ A 2019 study of 55 patients with a history of hypertension showed that 53% of these patients, after being discharged, required further treatment due to blood pressure exacerbations within 6 weeks postpartum.23 Increased monitoring and treatment postpartum can allow greater control of hypertension, which will reduce the chance of cardiovascular complications.²³ This 2019 study also showed that providing a home blood pressure monitor, education, and

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telehealth visits every 48 hours resulted in a reduction of the number of readmissions over a span of 42-days postpartum.²⁵ Not only were hospital readmissions reduced, but 84% of patients in the study reported that they preferred the convenience of the telehealth visits in blood pressure management rather than going into a clinic.²¹

Mental Health

Another concern for maternal mortality is postpartum depression. Depressive symptoms include changes in appetite and sleep, fatigue, difficulty concentrating, and suicidal ideation.^{17,26,27} A topic review in 2019 reported that 15% of new mothers experience depression.¹⁶ Another review of 14 publications from 2021 showed that 11% of maternal deaths between 2008-2017 were due to mental health conditions, and of those deaths, 63% were by suicide.28 There are also more general unmet mental health needs that should be addressed, including mental health screenings prenatally and emphasis on screenings postnatally.21 ACOG recently published guidelines that emphasize the importance of screening throughout pregnancy as well as postpartum. Implementation of these guidelines will assist physicians, including Primary Care Providers (PCPs), in improving detection, follow-up monitoring, and treatment of postpartum depression.27 With these guidelines in place for all physicians, mental health screenings can be further enhanced by utilizing a PCP who has a longitudinal relationship with the patient and knows them well.17 A review of 14 articles showed that screening for postpartum depression with direct contact to a trusted PCP increased recognition and diagnosis 2-3 fold, which resulted in better treatment outcomes overall.17

Shared Care Model

One method that improves care overall is known as "shared care", in which the patient can have consistent prenatal, postpartum, and newborn care from two or more physicians.4 With the shared care model, the patient has a continuation of care with her local family physician while also establishing care early in pregnancy with an obstetrician who manages the delivery. This allows more opportunities for monitoring, screening, and discussing concerns with the pregnancy.4.29 A qualitative study done in urban Canada using staff-selected participants showed that women who received shared care during their prenatal visits by both an obstetrician and a family physician reported having the highest quality of care.29 Another study of a single physician's 16 patients conducted over a 4 year span showed that the shared care model not only increases prenatal care access, but also increases patient compliance.4 Additionally, having a PCP who is familiar with the postpartum patient's health preceding, during, and following pregnancy allows for a seamless transition between the obstetrician and PCP, ensuring continuity of care.4,21,29

Telemedicine

Following the COVID-19 pandemic, there has been a shift to telemedicine which has resulted in more convenient prenatal care visits and increased patient satisfaction.^{12,22,23,30,31} A study that compared 378 virtual-care OB patients to 795 traditional-care OB patients in the U.S. showed that satisfaction of care was significantly higher in the virtual-care OB patients due to increased convenience, while satisfaction in all other aspects of care was equivalent to traditional in-person visits.32 Since obstetricians had great success in using telemedicine and virtual visits were favored, increasing access to obstetricians or, as we suggest, family physicians, would provide great benefit to the patient, especially following delivery. In standard obstetrical care, postpartum visits are traditionally scheduled between 2-6 weeks

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following birth,^{12,10} and blood pressure monitoring and postpartum depression screenings are not routine outside of those office visits,¹⁵ Increasing the postpartum telehealth visits that focus on at-home blood pressure monitoring ²² and virtual depression management ³³ may decrease the occurrence of severe preeclampsia and mental health related deaths, respectively.

Family Physician Role

Most family physicians are comfortable with basic perinatal care, including the management and treatment of blood pressure and depression.21 A 2005 study of a sample of every third active member of the Washington Academy of Family Physicians with a 60.9% response rate showed that only 18% of well-child visits and 10% of prenatal visits were conducted by family physicians.18 This represents many missed blood pressure and depression screening opportunities. A 2023 editorial on maternal mortality addressed the importance of pediatricians in screening postpartum patients during the well-child visit and referring any major findings to the patient's obstetrician.34 However, increasing the family physician's role in this multidisciplinary care for both the infant and postpartum patient can reduce the need for these referrals. Family physicians assuming a more prominent role in perinatal care can improve outcomes for patients by allowing for more effective management of both hypertension and depression, reducing cardiovascular complications and mental health related deaths postpartum. Therefore, we posit there is untapped potential for family physicians' involvement in perinatal care based on their ability to provide continuity of care, disease management, education, mental health support, preventative care, shared care, and telehealth visits before, during, and beyond pregnancy.^{21,22}



We believe that increasing the family physician's routine scope of practice to include perinatal care will reduce maternal mortality.

Conclusion

We believe that increasing the family physician's routine scope of practice to include perinatal care will reduce maternal mortality. We acknowledge that there are obstacles to enhancing the family physician's scope of practice and involvement in perinatal care. These include cost of professional liability insurance, employment of physicians by health systems focused only on short-term revenue, group practice credentialing, and variation among the curricula of residency training programs. These obstacles provide us, as medical students, with an opportunity to commit ourselves to their resolution. We encourage all medical students interested in family medicine to contact us to help spread this movement. We assert that by recognizing this opportunity and encouraging a larger role for family physicians in perinatal care, maternal mortality will decline nationwide.

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BY EMMA C. DOYLE, BLAKE S. EDMONSON, AND WILLIAM J. CRUMP, MD



NOVEL PRACTICE ARRANGEMENTS FOR THE NEXT GENERATION OF PRIMARY CARE PHYSICIANS

Prologue

Kids these days... As I prepared my talk to the primary care interest groups at the ULSOM on the future of primary care, I couldn't help but decry some of the negative changes that I've seen over my forty-plus years of practice. Over 100 mostly M-Is and M-2s attended and stayed awake, so I guess they could understand how reminiscing might be pertinent. I told them as I began practice, I admitted my own patients to the hospital and made daily rounds on them. With low overhead and my receptionist doing all the billing, my nurse and I could easily get through the 15-18 scheduled patients as well as 2-3 call-ins each day and still get to our kids' events every evening. As I walked down the hall from room to room, I could dictate a very brief note into my portable "Dictaphone," and first thing the next morning I could sign the printed dictation in just a few minutes. The notes were for doctors to facilitate good care.

It wasn't actually the EMR that changed everything. It was Medicare's escalating demands for what had to be included in the note in order to pay me less every year for the visit. Other insurers followed suit. Billing became a sub-specialty and staff overhead rose, so that most primary care docs were up to 26-28 patients a day to make ends meet. The result was 8 minutes spent with each patient, which was no way to practice medicine. Then the EMR added "transcriptionist" to my job description which was the death knell for the true generalist. There was not enough time to make hospital rounds, so strangers were managing my admitted patients. Then not enough time for call-ins for acute problems, ergo the rise of urgent cares, again by strangers. And I was still finishing EMR notes instead of attending my Grandkids' evening events.

Ask any patient. Our "system" is broken. Barbara Starfield's landmark work 20 years ago compared a primary care visit begun at the same place with a visit with the same person over time. Not only were outpatient costs 2-3 times higher without continuity of doc, but also more ED visits and hospitalizations. Patient satisfaction was remarkably better with continuity of doc. This isn't rocket science. Who do you want to take care of you when an acute illness sidelines you or results in hospitalization? In my humble opinion, health insurance is the problem.

Having also worked with medical students for almost 40 years, I am not surprised when every year I see many who are family docs at heart choose a sub-specialty because they just don't want to work on a treadmill fueled by 8-minute visits. Rather than continue to curse the darkness, I had two of my M-4 students doing an independent study elective with me investigate rural innovative practice arrangements that allow for little dependence on a brick-and-mortar clinic and a very lean staff facilitated by more telemedicine visits. Direct primary care (DPC) is the ultimate model, breaking free entirely from the health insurance shackles. The full-time DPC practice may have only 500-600 active patients, and the average time with each patient is almost 35 minutes. It is also "continuity urgent care" like the old days. Critics will say this is elitism, as the FM in traditional practice has 1800 active patients, and if everyone does DPC, who will care for the other 1200? My considered response is that DPC may allow for many more of those "FMs at heart" to stay with FM to take care of the population. And maybe instead of sliding into hospitalist or ED positions, more of those choosing FM will practice the way I did in the past. Most developed countries have 80% primary care and 20% subspecialists. The U.S. has the reverse. The DPC option may be a way to balance things.

When I finished my talk to the students, there was a long line to ask me questions about DPC and telemedicine. I invite you to enjoy the M-4 students' report on what the future might look like. I plan to be practicing part time when I see it, so I can get finished on time to attend my Great Grandkids' evening events.

Bill Crump, MD

Imagine you are a rural family physician. On today's schedule are 25 patients, each with 15-minute appointments. An important procedure was not approved by a patient's insurance. You call the insurance company to get the procedure approved. You wait on hold for 45 minutes, thinking of all your patients queuing in the waiting room while you listen to a selection of "calming" elevator music. Or, you have just finished a preventative appointment, only for the patient to confide in you that she is seriously considering ending her life. This patient deserves all your attention, but you cannot help remembering all the patients in line after this one. These are real situations I experienced on my family medicine clerkship that made me seriously consider not applying to a family medicine residency. Luckily, I found out that primary care can exist outside the mainstream insurance-based delivery model. Here, we discuss alternative models that students and residents could consider when favoring quality over quantity of care.



Direct Primary Care

Direct primary care (DPC) is a model that allows physicians to forego dealings with insurance companies by being paid directly by their patients. The basics of a DPC practice are:

- Patients pay physicians directly as a recurring membership fee that covers most or all services.
- Patients are not charged per-visit out-of-pocket amounts greater than the equivalent of their recurring fee for usual primary care services.
- Government and private insurance are not billed for primary care services provided.

The benefits of DPC are related to the severance of the relationship between physician and third-party payer. First, the physician can format their delivery of care however they see fit. The physician may choose to provide only in-person or virtual service, or a combination of both. Some physicians even choose to provide house calls for severely disabled patients. Second, because aspects of the clinical note are only required in a complex structure by third-party payers, a DPC physician may document

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their services however they wish. An EMR may or may not be needed, and there is no need to document irrelevant negative findings. Third, with no need to generate a required Relative Unit Value (RVU) goal, a DPC physician is free to see fewer patients per day while spending more time with each patient. Most DPC physicians spend an average of 35 minutes with each patient, compared with an average of 8 minutes for all PCPs (2). Finally, DPC physicians are more available to patients. DPC patients with urgent needs are typically managed, often virtually, the same day, rather than going to urgent care or waiting for days or weeks to be seen in the traditional model.

DPC also demonstrates substantial financial benefits for the patient and physician. DPC patients pay an average monthly fee of \$74 for services. These patients then spend less overall for healthcare, spending up to 85% less outof-pocket than their traditional care counterparts². The reason for lower total costs to patients is that, with increased access to primary care, DPC members experience 40% fewer ER visits and 25.54% fewer hospital admissions¹, where co-pays drive the cost of healthcare up for non-DPC members. DPC physicians have higher incomes as well, earning an average salary of \$487,000, compared with an average salary at the time of \$223,000 for other PCPs³. DPC physicians also see several non-monetary benefits: 98% reported increased quality of care, 97% reported improved relationships with patients, 88% reported less time spent on paperwork, and 99% reported an increase in their overall work satisfaction¹. The data suggests that DPC can be a clear benefit for all.

One criticism of DPC is that it could reduce access to care. A lighter schedule and a much smaller practice panel reduces the number of patients a DPC physician serves, and a membership fee excludes patients that are unable to afford the fee. However, if the freedom provided by DPC attracts more students to primary care, thus improving the primary care workforce, they may make up for the difference. In urban areas, DPC is supported by well-insured, affluent patients. In rural areas, membership fees might be paid by small employers to recruit and retain their underinsured employees. If the DPC physician can respond quickly to relatively minor but urgent needs, this may also keep the

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patient at work. For blue-collar workers who do not receive paid sick leave, this is a win-win.

To find out how DPC fares in rural settings, we sent a survey to several rural DPC Coalition member physicians. We received answers from Dr. Robert Rosborough⁴ (Silverton, Oregon, population 10,558), Dr. Shane Patterson⁵ (San Andreas, California, population 3.729), Dr. Lara Briseno Kenney⁶ (Leeton, Missouri, population 530), Dr. Joel Schumacher⁷ (Plymouth, Indiana, population 10,384), and Dr. Noemi Adame⁸ (Culver, Indiana, population 1,129). We also incorporate advice from Dr. Susan Wasson, who gave a presentation at the Association of American Physicians and Surgeons Thrive, Not Just Survive Workshop in 2014 about how to build a rural DPC practice.9 Summaries of the answers we received will follow.

1. What made you decide to switch from traditional practice to DPC?

Seeing 20-25 patients every workday is not quality care, despite the number of "quality measures" that are fulfilled. The amount of paperwork that a traditional physician must complete does not improve care and leaves less time to address complex health issues and preventative care. Corporate demands for productivity seem never to be fulfilled anyway, leaving physicians burned out due to stress and moral injury. DPC is more patient centered because, as Dr. Rosborough puts it, "time is the most valuable commodity in patient care."

2. What barriers did you need to overcome as you were building your DPC practice?

The main barriers to building a DPC practice are financial. A physician building a 100% DPC practice should be ready to wait for months before they generate a regular salary. Start-up costs include procuring an office if desired, computer systems, and medical equipment, which can cost around \$20,000. Start-up costs for a purely telemedicine practice could be as low as \$5,000. Ongoing overhead costs can be closer to 25% rather than the 50-60% that has become routine in traditional practice. Dr. Schumacher suggests starting without the bells and whistles that patients don't always need, and perhaps working another part-time job as the DPC practice is built. Some reported few financial barriers at all, however, due to the large number of patients in their area desiring a better alternative to traditional primary care.

3. What format do you use for DPC?

Most physicians we surveyed own their own building, commonly 50+-year-old houses, sometimes adjacent to their own homes. Some have other clinicians and staff working with them, including MAs and RNs. Others have no staff at all. All the responding physicians involve telemedicine, which provides their patients increased access to physicians, sometimes 24/7. Telemedicine is most often employed when a hands-on physical exam is unnecessary or impractical, and occasionally when deciding whether a patient requires immediate emergency services. Some physicians make house calls when their patients are unable to travel or temporarily out-of-town. The delivery format of DPC varies from practice to practice, tailored to best fit the needs of each physician and patient population.

4. How financially viable is rural DPC? What changes have you made to make your DPC practice viable?

All responding family physicians reported that their rural practices have been solidly viable, many even reporting that they earn a higher salary with DPC. To keep DPC financially viable, the family physicians suggested keeping overhead low however possible. They also suggested that the best places to set up a DPC practice are those with little pre-existing primary care availability, where many patients have high-deductible insurance plans, and places where the physician already has name recognition. Some physicians also supplement their income by having contracts with local small companies that pay for their employees' memberships. Dr. Adame, a pediatrician, takes another approach. She reports more financial resistance to building a DPC practice in pediatrics than in family medicine. She charges higher membership fees, which helps her provide more services in her clinic, as well as keep costs lower for her pro bono members.

5. What is your strategy for marketing your practice?

All our responders pointed to word-of-mouth as by far the best marketing strategy for rural DPC. Some used no other marketing strategy at all. Many also market their practice sparsely on social media or search engine ads, simply for their names to appear when primary care services are searched online by prospective patients. Dr. Schumacher also sponsored two town hall meetings to make the community aware of his new DPC practice before he opened.

6. How would you describe the patient population of your current practice?

The patient population of a DPC practice consists of newborns to

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people in their 90's. The population is about half "blue collar" and "white collar." More than half of their patient populations consist of patients with traditional health insurance. The proportion of uninsured patients varied from about 10-50%. For pediatrics, almost all members hold private insurance plans, but choose DPC practice for the benefits gleaned from more personalized care.

7. What barriers do patients have when accessing care from your practice?

The only barrier to a patient's experience in accessing DPC care is cost, which can be augmented depending on the scope of services provided at the DPC practice. All responders reported minimal or no barriers to accessing care once patients become members. At each practice, patients have 24-hour access to a physician, either by call, text, email, or even same-day office visits. Dr. Kenney reports that the only barrier to care she sees is helping her patients understand that primary healthcare can be affordable.

8. How has your quality of life changed after leaving traditional practice to start DPC practice?

All surveyed physicians report that their quality of life is remarkably improved in DPC. They cited no longer having to sacrifice their hobbies, never having to miss a child's sports game, and even reversing plans to leave the U.S. to practice elsewhere. These DPC physicians also feel more fulfilled in their work in that they can adequately attend to all their patients' needs, sometimes providing services that would not have been possible in traditional models.

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frustrated and angry as they were in traditional practice.

 What differences do you see in patient satisfaction and outcomes between traditional practice and DPC?

Responding DPC physicians report that patients are undoubtedly happier with their care. They feel they are treated like family and trust their physicians. They do not suspect that their physicians are tricking them into spending more money or wasting their time. DPC physicians have also noticed better health outcomes among their patients. Because DPC physicians have more time available to counsel on lifestyle modification, their patients engage in increased exercise, weight loss, and smoking cessation. Dr. Rosborough also notes that his patients with diabetes have lower average hemoglobin Alc levels. Dr. Adame reports that she is seeing her patients' families choose her as their pediatrician because they specifically want her care, not just because she happens to be in-network with their insurance plan.

10. What advice would you give to a physician considering starting their own DPC practice? What do you wish you had known before you started?

Responders advise that a student or resident should be debt-free before starting a DPC practice. There is obviously no "sign-on" bonus as is typical in signing contracts with corporate practice groups. DPC can earn the physician more revenue in the long run, but the physician must have enough money saved to support living expenses while building their practice. Also, our responders advise building a panel of patients in your area for about 4-5 years in a traditional model before starting a DPC practice. This will give the physician name recognition in the area, which is invaluable in rural DPC. Most corporate practice groups would not have a negative view of this initial time with them and a switch later since the primary revenue for them is the continuing referrals for subspecialty care, lab, and imaging. Once practice patterns are established during the corporate 4-5 year "fellowship," they are likely to continue once the physician leaves for the DPC. DPC physicians should be open to other forms of income, including renting out part of their building, having contracts to provide care for small companies or schools, or holding other part-time jobs, especially as the practice is first being built. One responder suggests having an "exit plan" in case of an emergency by setting up the practice to be able to "function without you" if the physician must take a temporary leave of absence. Finally, anyone who is at least 80% sure they want to start a DPC practice should start the practice; they do not need to have "all the details figured out." Many resources are available for physicians to help build a DPC practice, including joining the DPC Alliance and finding a mentor, and going to the DPC summit to learn more,

Telemedicine with occasional need for a building and staff

Access to care can also be improved by providing mostly or all-telemedicine services. Baptist Health's CMIO, family physician Dr. Brett Oliver, advises physicians to use telemedicine to provide care to rural populations from wherever they live and work. He also points to many new technologies that will allow physicians to monitor their patients remotely, including wearable devices that measure patients' vital signs, artificial intelligence that can answer routine patient messages, and even facial recognition software that can accurately measure a patient's blood hemoglobin,

creatinine, and other values. Telemedicine using advanced technologies has already proved effective in managing patients with diabetes, noting lower hemoglobin AIC levels and lower costs to patients, as well as more efficient consults between family physicians and psychiatrists (12). When worked into a DPC or traditional practice, telemedicine would reduce overhead costs for the physician, eliminating the need to pay for a large office building, auxiliary staff, and medical equipment needed for traditional in-person practice, all of which could lower the membership fee needed to support DPC, or increase net profit for the traditional practitioner, allowing more time to be spent with each patient because of a smaller panel size needed to support overhead costs.

Hybrid Model

In Kentucky, we found only six DPC Coalition member practices, all in metro areas (13). Using the advice of others that have built rural DPC practices, a new hybrid DPC practice is being considered here in rural Madisonville as an extension of a local studentdirected free health clinic. This teaching practice will target two populations: individuals who can afford to pay their own membership fees and have a need for prompt continuity care, and workers at small local companies or agencies who might cost share the membership fee to minimize lost work hours and facilitate recruitment and retention. The DPC practice could remain affiliated with the local practice group, and brief notes and orders for lab and imaging could remain in their EMR. Insured patients will use their insurance to cover sub-specialty consultations as well as lab and imaging, and low-income uninsured patients will use the existing payment options with the local hospital. The monthly membership fee can be kept low because of minimal overhead costs and will give

access via return telephone, text, email, or EMR portal to a physician during daytime hours. Quick, simple advice will come within minutes, a telemedicine visit within hours, and an in-person visit within 24 hours of contact. As needed, a physician will meet patients at their places of work, including spaces designated for healthcare by employers. The goal of the practice is to allow students to see first-hand how DPC can give rural patients an alternative form of healthcare that will not be hindered by requirements set by third-party payers.

Many staunch advocates for DPC question the feasibility of a hybrid of DPC within a corporate practice group. It will require a payment contract not based on traditional overhead costs and RVUs, but this might be attractive if it allows the group to recruit new primary care physicians and therefore generate more non-primary care

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BY EMMA DOYLE

A WHIRLWIND OF AN EXPERIENCE **Prologue**

The Family Medicine clerkship at ULSOM requires some community service experience that includes a brief reflective piece. Below is Emma Doyle's piece that is noteworthy. I of course had been familiar with Habitat for Humanity in their role building simple homes for lower income families for many years. But it wasn't until I was asked to speak at an event that I first understood how the local group included health care cost management in the sessions for those picking up the keys to their new house. The first man I met as I walked in their airplane hangar-style facility turned out to be the husband of our beloved facilitator of the cardiovascular screening sessions we do at local food banks. She was a retired youth minister, and she employed all of her 90-pound presence to cajole folks into letting us stick their fingers and take their BP. Even more impressive is when she makes it clear to the person in line behind the person stepping over to our table that our client will be allowed to return to exactly their place in line.

The next person I met was the Habitat Director, who of course had coached my son-in law in baseball and travelled with the youth group that included several of my children over the years. But it was when I turned to the photos on the wall as we waited for the last new homeowners to arrive that I felt I was home. Among all the smiling faces being handed keys in front of new houses, I saw a photo of an older man who looked really familiar. It took a few seconds, but then it dawned. It was Jimmy Carter, then Governor of Georgia when I was in high school who tapped my uncle to serve as Attorney General. And I hear he had another career after that.

As I gave my prepared talk on "Managing Your Health Care" to the group, three of my students sat in the back with smiles that said they couldn't wait to do their part where they meet with each family individually. Emma had done a lot of preparation for this session, and anyone who would like to see her simple yet elegant summary of where and when to seek care, please just let me know. Drink in her enthusiasm for community engagement below.

William J. Crump, MD, Associate Dean, ULSOM Trover Campus

In December 2021, an F5 tornado struck the community of Dawson Springs, Kentucky. The area was ravaged by the storm, and many homes were lost in the aftermath. Many Dawson Springs residents are still without permanent housing, which makes maintaining their physical health all that much more difficult. Governor Andy Beshear recently allocated \$80 million of aid to the community to help them rebuild. Habitat for Humanity is helping the effort by building homes in available lots for those in need. In addition to the housing effort, Habitat for Humanity recently hosted a presentation for those receiving keys for their new homes

where a local family physician taught participants how to reduce costs for their health care. I was able to participate by writing a handout that guided participants to decide whether they would best be served by a visit to their primary care physician's office, an urgent care, or an emergency department if they had various symptoms. I also screened participants for cardiovascular risk factors and taught them how they might mitigate their risk, thereby saving money on more acute health care. Finally, I directed interested participants to our local studentrun free clinic, the Hopkins County Community Clinic, if they needed a PCP and were under-insured.

During the presentation, I met a few patients who did not know that the emergency room was not always their best option for seeking healthcare, especially if they did not have insurance. Several thought that the best way to save money was to hold off seeing a doctor for as long as possible, hoping they would not become sick. We were able to teach them that the most money is saved by having a regular primary care physician that knew the patient and how best to manage their problems, which would help mitigate acute and emergency costs in the long run. In addition, we shared with participants that they could quickly receive care at our free clinic if they did not have



adequate health insurance. I left the presentation feeling confident that our participants gained knowledge and resources that would help them to save health care costs while they prepared for new permanent housing.

In the future, I hope to use the experience I gained from participating in this project to inform and shape the implementation of my own community health interventions. Community health is important to me, and I would like to continue using my skills to improve community-wide health wherever I practice. Now I realize that cost is often one of the most significant barriers patients face in getting the

care they need. I also learned that a community health intervention must physically meet patients in the community, not expect patients to come to a secondary location. If our presentation were held at an auditorium in the hospital, we would have had few if any participants due to concerns of time and cost associated with extra travel. Finally, I learned that a community health intervention can be especially effective if tailored to the specific needs of the community. The December 10 tornado posed a unique health crisis to the Dawson Springs community, and projects related to improving health after the disaster had to be specific enough to target those who were affected the most.



Emma Doyle is from Glasgow, KY and completed college at the University of Louisville. She chose the Trover Campus for her clinical years to understand rural medicine first-hand. In her spare time, she enjoys writing and multimedia visual arts.



William J. Crump, MD, graduated from the University of Georgia and completed his MD degree at Vanderbilt in 1979. He then completed a Family Medicine residency at UAB and a faculty development fellowship at UNC Chapel Hill. He has served as the Associate Dean at the University of Louisville Trover Campus in Madisonville since 1998. Having recently stopped delivering babies, he now has begun work on a series of books about medical lessons that could be learned from history, with the first set published as the *Healing Savannah* trilogy.

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SUMMER 2023

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ARTIST SPOTLIGHT SERIES BY WILLIAM J. CRUMP, MD

Excerpted from Savannah's Hoodoo Doctor: **The Tyranny of Dogma**

I had spent my professional life teaching medical students and residents the clinical reasoning process. This is a complex set of branching decisions called the iterative process, and is the same branching logic as a series of zeros and ones used by modern digital computers. Years before I had even started teaching, a group of educational psychologists spent prolonged time with experienced

The hoodoo spiritual component of illness brought by enslaved West Africans melded nicely with the Christian traditions of sin and forgiveness brought by the Europeans.

clinicians and dissected their decisionmaking. The process had become second nature to these physicians, and they were not even aware of what they were doing. An experienced clinician starts out with the age, sex, ethnicity, and presenting complaint of their patient. Almost subconsciously, the physician considers a list of hypotheses that might be an answer to the question of why the patient is having their symptoms. While a rookie might ask a rote list of questions, the experienced clinician asks the high-specificity questions pertinent only to their hypotheses. This

results in a ranking of probabilities that drives the portions of the physical exam to be done. Again, a beginner might do a head-to-toe physical exam, not really focused on the findings. The experienced clinician uses the physical exam only to support or refute his working hypotheses. Armed now with a short, ranked list of the most probable causes, the clinician uses lab and imaging only to confirm.



This last was the most difficult to get modern learners to understand. This means that tests should only be ordered to confirm the pretest probability, not to be the answer. My learners that incorporated this concept went on to be those with the most productive clinical lives. Some never got the concept. They became narrowly focused sub-sub-specialists in disciplines where diagnostic errors were tolerated, as most of their patients arrived with a diagnosis already made.

The hoodoo spiritual component of illness brought by enslaved West Africans melded nicely with the Christian traditions of sin and forgiveness brought by the Europeans. The rich Native American understanding of the Great Spirit and the importance of respect for the earth and its bounty easily fit into the development of the West African hoodoo way of understanding.

During my residency in the 1980s, American medicine had

unknowingly discovered a hoodoo corollary in the understanding of illness, then called the biopsychosocial model. Espoused by the early founders of my specialty of family medicine, this concept distinguished our specialty from all the others that developed over the next thirty years. A founding father of this specialty was Dr. S, who was my mentor during residency. His explanations of this model were twofold. First, he taught me that one cannot begin to understand the difference between disease and illness without truly understanding what it's like to be that patient. A minor physiological abnormality may become a debilitating illness in the context of stress, loneliness, and illness behaviors learned in childhood. Alternatively, a major malfunction of anatomy or physiology may not even be perceived as an

illness in another person with psychic and social resilience. The second key concept is that the way a disease presents is fundamentally shaped by the culture, psychological state, and especially the spiritual tradition of that individual. Merely to

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reach into the pharmacopeia of medications available at the time and choose the drug recommended by an expert who doesn't know my patient would not lead to healing. I had to wonder if in the Gullah culture I would be considered a hoodoo doctor.

This model was the basis of the fundamental concept woven throughout Dr. S's writings that he explained to me personally during our residency orientation. Full of myself as a recent grad of a prestigious southern medical school and much attuned to the national controversy about whether this new specialty was different enough from any existing to deserve board certification, I asked him, "How would you define the specialty of family practice?" (He preferred this term to "family medicine" until the day he died).

He sat back, puffed a couple of times on his pipe, and then leaned forward and spoke with complete conviction. "A family doctor," he said, "is that modern medical practitioner who carries the responsibility for helping with any problem brought by the suffering patient." How many times over my forty years of practice had I recalled that day, and even now I can see that scene of upholstered chairs and his huge desk and bookshelves in that refurbished insurance building on 20th Street down the hill from University Hospital.

When I spent thirty minutes with

a patient pained more by their son's repeated drug use than by their arthritis, I was always struck by the fact that in order to be paid I had to force human misery into a disease-specific code. This was like coding Edvard Munch's tortured painting "The Scream" as a kind of mouth issue or Van Gogh's "Starry Night" as a sky issue.

So, in hoodoo medicine as for the specialty of family medicine, the most powerful healer is comfortable working with both natural and spiritual illnesses. The Gullah herbalist is part of a family tradition, not shared by most of the population. But for both spiritual healers and conjurers, family traditions were not enough. These two specialty practitioners must have received a "call" to healing, something that could not be obtained by merit or family connections. Generally, this calling bestowed on these hoodoo practitioners a value to society much greater than the herbalist.

This is not so different from the modern family physician. One must understand the role of the occult in some cultures, but must be expert in both natural and spiritual illnesses. And a sense of being called to medicine is of real value on long days of sharing human misery.

The importance of culture was brought home when I worked 60- hour weekends as a moonlighting resident at a typically quiet one-room small town emergency department. Settling in for the night, I heard a commotion all the way down the hall from the call room. The tiny hallway outside the treatment room was packed with about twenty people, mostly men, all reeking of alcohol and tobacco, and all talking at once.

One said loudly: "Hey, there's the doc! Let's see what he do."

It seemed hopeless to try to get them to calm down, so I just stepped into the treatment room with the nurse and closed the door behind us. Sitting on the table was a young man wearing a "Hell on Wheels" tee-shirt and grease-stained jeans, sporting the same odors as all of his support people outside. He was covered from head to toe with deep scratches. His shirt was in shreds and the jeans had a few new rips as well.

Many possible explanations went through my head, but I decided to simply ask, "So, what happened?"

He said, "Doc, I got myself a wildcat!"

Wondering who in fact got whom, I got him to calm down a bit and he told the complete story. He and some friends were working on his car, about thirty yards from the house near a wooded area. At some point the wildcat appeared. Apparently, fueled by America's best domestic beer, all the men decided to rush the cat. Instead of turning and running, this cat leapt on my patient. It was difficult for him to turn loose of the cat. Almost afraid to ask, I did anyway. "How did the

wrestling match end?"

"I don't remember much, but one of my buddies got that cat good and I rolled away from him and decided I should come here."

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I assumed that the group in the hall had good aim even when inebriated and that someone had shot the cat. I knew that this was unusual behavior for a wild animal. Rabies was clearly in the differential diagnosis, and we would need the animal's head to send to the state lab in order to keep our patient from having to undergo a very long and potentially painful series of injections. I gathered all my bravery, and stepped into the hall.

I should have known better, but I asked, "Will someone tell me what happened?"

As I walked back to the call room, I reflected that nobody would ever believe this story.

At least twenty versions of the story, all with slurred speech and occasional saliva-spewing, happened next. I tried again. "So who killed the cat?"

Now there were only six people talking at the same time. The one thing they agreed on was that the dead cat was now in the parking lot, as they had brought it from the scene.

Again, I made the false assumption that maybe just going to see the dead cat would be the best way to get an answer. We stepped out the back of the emergency room. Across from the loading dock where ambulances pulled up, there they were. There was a crowd of at least another forty people in a circle shouting and gesturing. Even though we were outside, the smells were the same, and there were many more voices. There in the center was the carcass, which looked to me as if it could be a true wildcat. But the thing that caught my attention was the skull. It was completely flattened and fragmented into at least ten pieces. The face was indistinguishable.

The man with the largest and reddest face spoke louder than everyone else. "Doc, I got him!"

Over the next fifteen minutes, interspersed with genital and scatological references that I had not previously encountered, I heard a truly remarkable account. Although the deadly blow seemed to be when this gentleman struck the cat over the head with the transmission that they were going to install in the car, the entire group had grabbed whatever tool was nearby and begun pummeling the creature. I guess it was good that no one had a gun, as some human might have been shot by mistake. This part of the story ended with another crew member pointing at the cat and posing the question "Doc, he be dead, right?"

I didn't have to have a DVM degree to make this pronouncement, but now I had a real dilemma. I asked the ringleader to finish cutting off the cat's head and put it in a large plastic bag so we could send it to the state lab. I couldn't bear to stay and watch this operation, though I'm sure it was quite a sight. But the fact was, we were not going to get anything useful from the state lab, probably.

There was nothing to be done now except to clean all the scratches, give the patient a tetanus shot, and make him an appointment the next day at the local health department. As I walked back to the call room, I reflected that nobody would ever believe this story. As I lay there trying to get to sleep, it was at least thirty minutes before the din in the hallway outside the emergency room subsided. I could only imagine what their next destination would sound and smell like. Another culture, indeed.

Excerpted and modified from Crump WJ, Savannah's Hoodoo Doctor: The Tyranny of Dogma, with permission.



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Evolution of a Student-Directed Free Clinic: Two Decades of Community Engagement at a Small Regional Campus

William J. Crump, M.D.; Alyssa S. Hounshell, BS; Micah B. Kaiser, BS; Kathleen M. Wilmes, BS DOI: https://doi.org/10.24926/jrmc.vXiX.XXX Journal of Regional Medical Campuses, Vol. *6*, Issue 1 (2023)

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Published by University of Minnesota Libraries Publishing



Volume 6, Issue 1 (2023)

Evolution of a Student-Directed Free Clinic: Two Decades of Community Engagement at a Small Regional Campus

William J. Crump, M.D.; Alyssa S. Hounshell, BS; Micah B. Kaiser, BS; Kathleen M. Wilmes, BS

Abstract

This report summarizes the 20-year evolution of community engagement at a small regional rural campus. The process includes establishing a student-directed free clinic and its transition through the wider availability of Medicaid expansion. Next came the transition to telemedicine care during the Covid pandemic and eventually to a recurring pop-up mobile clinic at a local homeless shelter. Invitations from the host community then resulted in conducting health screenings at local food banks with portable clinics planned there as well. At each stage we were directed by community steering committees and advisory councils, and we discuss their roles. We found that it is important to go where and when we are invited rather than making these choices based on our convenience. We provide details of student perspectives, planning, and finances for those who are considering similar activities.

Background

Student-directed free clinics have a long tradition. As of a 2007 report, there were 49 medical schools that had at least one student-run clinic. The average clinic had 16 student volunteers a week, and most incorporated preclinical students. Most clinics treated both acute and chronic conditions and were usually funded by private grants, with an average annual budget of \$12000.1 A 2014 update reported 86 schools with 208 student-run free clinics with chronic care of diabetes and hypertension being the routine.² The University of Iowa recently reported a multidisciplinary student-run clinic that began in a mobile van and developed into rotating sessions at nine fixed locations within a 50-mile radius. Continuity was not a priority, with 6% of patients returning for care.³ Continuity of student provider was not possible in most of these clinics and was recognized as a deficiency. A recent report summarized the early implementation of telemedicine in these clinics.⁴ Most reports support positive patient satisfaction,⁵ some lower costs,^{6,7} and positive student satisfaction.5

History of our free clinic

Shortly after the regional rural campus began in 1998,8 a few students expressed interest in beginning a student-directed free clinic in the small host town, similar to what they experienced during their first two years of medical school on the urban main campus. By the time these students became comfortable with managing their time on clinical rotations, most were already focused on audition rotations and interviewing for the match, so no sustained effort was established. The host health system had a 40-year tradition of community-based education and community engagement, and some leaders expressed interest in taking the lead for such a student clinic. The clinic and hospital also had a long tradition of providing gratis care to the low income uninsured of the region, so the main purpose of any new clinic would be for the benefit of the students. The regional dean had been involved with studentdirected free clinics at two previous medical schools, including several false starts, and was convinced that

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a successful effort would require strong student leadership rather than just that from the health system. When physicians perceived that they were already providing unreimbursed care in their office which was most efficient for them, only a wide-eyed enthusiastic student could interest them in working evening hours precepting them in a much less efficient environment.

Plans for such a clinic accelerated in 2003 with the arrival on the clinical regional campus of a nontraditional M-3, who in a life before medical school had successfully organized community efforts. He, the regional dean, and an M-4 leader recruited key community leaders to serve on a steering committee. The group included a tax specialist CPA, and within 3 months the new entity was established as a 501(c)(3) that provided tax advantages for contributors. The students did a search of public sources that estimated 6000 uninsured county citizens. We used the financial maximum used by surrounding free clinics of 165% of poverty for family size and required documentation that someone in the household was employed. Almost all children in low-income families in our region were covered by Medicaid and capacity of local providers for them was adequate, so we limited our care to adults. From the beginning, the students committed to continuity of student provider as much as possible.

The steering committee was enlarged to include known local individual and corporate benefactors, and then transitioned to a board of directors. Fundraising was very effective with annual golf scrambles and galas, and at the height of activities the clinic budget was \$280,000. As the target population found us, we increased from three hours every Thursday night and added a full-day Tuesday session staffed by a paid APRN. We then hired a full-time executive director, part-time nurse, and a part-time medication assistance advocate. The campus regional dean, a family physician in active practice, served as volunteer medical director. Very few visits were for acute care, focusing on longitudinal management of chronic conditions. The clinic used a simple electronic health record. For medications, inexpensive formulary medications at local chain pharmacies and pharmaceutical company Patient Assistance Programs (PAP) were used.

The host health system provided a brick-and-mortar clinic for \$1 per year rent and free basic lab and imaging for those below 165% of poverty. Health system subspecialist physicians agreed to see a few consults in their office when the request was approved by the free clinic medical director, and the hospital assisted with getting indigent care application approval for expensive imaging and procedures. Each visit was reviewed by the entire class of M-3s twice per month with the regional dean, with a performance improvement focus, as part of "Dean's Hour." The effort evolved into a voluntary longitudinal elective that provided two to four weeks' elective credit, depending on the time spent by the individual student. In the 18 years since full student involvement began, only one student chose not to be involved.

By developing detailed protocols and working with an experienced part-time paid nurse, we were able to spread out visits and actively manage most conditions via telephone. This allowed us to provide longitudinal care for about 1600 patients. With full implementation of the Affordable Care Act in 2014, most of our patients received Medicaid coverage. We facilitated their applications and assisted with transitioning their care to a local PCP, many of whom were in our local family medicine residency. In 2015, the clinic board considered closing the clinic but ultimately decided to continue, enlarging the scope to the underinsured. Most free clinics in our region ceased operation. The regional dean, a member of the clinic board, advocated for continuing the clinic because of its educational value. Many of the formerly uninsured in our region who had incomes higher than the Medicaid maximum subsequently enrolled in the state insurance exchange. To minimize their premium, many chose plans that had out-ofpocket costs ranging from \$5000 to \$12000 per year. Health system staff were finding that these patients were not seeking primary care because of the cost, resulting in emergency department visits for medium acuity issues, many resulting in unpaid debt.

Again, the free clinic board considered alternatives, and ultimately decided to waive the financial screen that formerly was required and see anyone not covered by Medicare, with a \$10 co-pay for the visit. This still required a financial screen to be done by the health system for free lab and imaging, but removed

DOI: https://doi.org/10.24926/jrmc.ADDHERE

one step that could be a barrier to prompt access to care. For patients newly covered by Medicaid with needs that couldn't wait until they could get an appointment with a PCP, we provided transition care. About a year later, with the turnover of some board members, they voted to waive the co-pay entirely.

In 2019, the clinic had settled into getting about five new patients per month and caring for 60 longitudinal patients. The staff was trimmed down to just one part-time paid nurse and one Thursday evening session with all volunteers, and the budget decreased to about \$20000, with greatly scaled down fundraising efforts. The patient volume was adequate for longitudinal training purposes of the eight M-3s based at the regional campus, and many students reported that it was key in their choice of specialty, with almost 50% choosing family medicine and another 25% choosing general internal medicine.

When the health system clinics closed to in-person visits because of the COVID pandemic in March, 2020, the free clinic did the same. We re-opened in August, but many of our former patients were wary of getting out for any reason. We contacted them all, and for the approximately 30 who did, we used an in-person visit with COVID protocol to introduce their new M-3 student PCP, do ECGs to assess for LVH as outlined in our hypertension protocol, and explained the telemedicine option to them. Using the same model used by the local family medicine residency,⁹ the students were trained in telemedicine and each established a dialer account so that calls would appear on the patient's phone as coming from the clinic. Regular clinic sessions were set, and appointments made in the EHR as previous in-person visits were. Telemedicine stations were set up in private rooms in the medical school training wing, and the regional dean supervised each encounter and interacted with each patient at the end of the telemedicine visit.

The students adapted quickly and became very comfortable with the telemedicine process. In July, 2021, when it was time for the new M-3s to assume the PCP role, the now M-4s completed a "warm handoff" of each patient, often connecting in for a portion of their patient's first telemedicine visit with the new M-3. We encountered similar problems reported from our residency, with about 30% of patients found not to have video capability on their phones and another 30% having inadequate internet connections to support video.9 When video was not possible, these visits were completed as audio-only telephone visits. Funded by the local Area Health Education Center, we mailed each patient a high quality scale, automated BP machine, pulse oximeter, and thermometer for a total "home visit" equipment cost of \$95. When video was possible, the students learned to have the patients point their phone at the instruments, allowing the vital signs to be listed in the "objective" portion of the visit note. They could also determine if cardiac rhythm was regular by listening as the BP machine beeped with each heartbeat as the automated cuff slowly deflated. Basic skin, musculoskeletal, and gross neurological exams could be performed, and a few students demonstrated and then observed the patient doing simple physical therapy maneuvers for common complaints like rotator cuff tendonitis and plantar fasciitis.

This telemedicine care has continued to the present, with patients reporting that their needs were being met.¹⁰ As happens each year, a few patients became eligible for Medicare or got a new job with good insurance coverage, leaving about 25 active patients, resulting in each M-3 acting as PCP for two to four patients. With no personnel costs and much decreased "slip and fall" (general liability) insurance costs, the total budget is now \$8000. This is completely offset each year by a grant from the city government, supplemented by student-managed fundraisers of a fun run and a cookout outside the host hospital supported by volunteer campus staff.

The regular chart review continues, with ongoing reinforcement of protocol use for hypertension, diabetes, and hyperlipidemia and adaptation as changes occur with new medications available by PAP. A staff member of the regional campus has assumed the role of volunteer administrator, assisting with prescription refills and PAP forms between visits. At the end of each visit, the student sends a draft progress note to the regional dean who digitally marks up needed changes, the student places the revised note in the EHR, and the dean signs each note, prescription, and lab or imaging request. Because of repeated COVID waves, the clinic has not resumed in-person visits and is accepting new patients on a limited basis until the team returns to

DOI: https://doi.org/10.24926/jrmc.ADDHERE

our brick-and-mortar clinic when the pandemic recedes.

History of community cardiovascular screening

The regional campus has supported summer pathways programs since 1996, and since 2002, this has included college, pre-M-1 (Prematriculation) and post M-1 (Preclinical) students in service learning.¹¹⁻¹³ During each summer session, students completed a community needs assessment in two adjacent underserved counties including key informant interviews¹⁴ and outlined the effort for the next summer. Several of the college students returned each summer, providing some continuity to the implementation. The community input highlighted a lack of providers for the school physical exams required before kindergarten and sixth grade, as well as sports physical exams required annually. To address this need, the rising M-2 preclinical students receive an eight-hour tutorial on the physical examination. The larger group including the college students worked in teams led by a preclinical student with each team responsible to prepare for the sessions by researching common responses to history questions and physical exam, and simple lab abnormalities likely to be encountered in this population. The group took the anticipatory guidance script from the previous summer and adjusted it as needed.

The physical exam sessions were held in health department facilities in contiguous underserved counties only when we were invited.11 Their staff chose the date and time and an experienced nurse worked with each preclinical student in their exam room. The preclinical student progressed from observing to performing the exam early in each threehour session. The students were supervised by the regional dean or another family physician who saw each patient with medical needs. An established referral process through the school-based nurses provided continuing care as needed. The college students were responsible for setting up props in the anticipatory guidance (AG) room. The college student assisted in the exam room and then walked with the school child to the AG room. Because they had been present in the exam room, they could provide individualized AG to each child while the parent was in a separate room providing feedback on the process to a staff person. Approximately 80 physical exams were completed each summer since 2006.

In 2016, leaders of the county that hosted the regional rural campus expressed concern about the high rate of cardiovascular disease (CVD). A panel of informal leaders met with the summer pathways students and together they designed a CVD screening program based on the Franklin County Maine project that had been reported from a rural county with demographics and socioeconomic profile very similar to the campus host county.15 This led to the formation of a county advisory council with the members shown in the table who established a recurring schedule of student-performed CVD screening at community events, churches, and food pantries.¹⁶ Early in the process, we determined that to be effective our screening stations needed to be close to where those to be screened were already waiting for another purpose, with food pantries by far the most successful. An individual health risk summary was completed with student assistance, and a finger stick for blood glucose and total cholesterol and a BP check were offered.

Prior to the pandemic, our goal was have any person screened who had needs and no PCP leave with an appointment time at the next free clinic session as an add-on. The story of an individual patient as described below was subsequently made into a widely distributed short video by the host health system, promoting the value of community screening. Perhaps not surprisingly, only about half of the patients directed to the free clinic actually came to their appointment despite it only being a few days hence. We discovered the obvious obstacle that the small van city bus route had a stop near the clinic, but stopped running at 5 PM. To maximize the participation of our working volunteers, we began clinic at 5:00. We met with the city council and plans were underway to extend the bus service hours on the Thursday evenings that we had clinic just as we had to stop our in-person clinics because of COVID. When the food pantries stopped serving in-house meals and had volunteers deliver the baskets of food to the recipients' car, removing any organized waiting area, we stopped CVD screening. At the same time almost all in-person community events were paused. We look forward to resuming CVD screening at our

DOI: https://doi.org/10.24926/jrmc.ADDHERE

usual community sites when the pandemic has receded.

Homeless shelter experience

Just prior to the first wave of COVID in spring 2020, we had been invited to do CVD screening in the only homeless shelter in our small town that was managed by the Salvation Army. The facility provided a warm lunch for the 21 sleep-over residents as well as anyone else in the community who came just for the meal. Although small, the CVD screening effort produced almost 60% with abnormal screening values, even if they were under current treatment for diabetes, hypertension, or dyslipidemia. The vast majority listed the name of a local PCP on the risk summary, but most reported no recent visit. This resulted in some frustration among the students, as our protocol only allowed us to urge these patients to see their PCP soon. Students learned that the chaotic life that resulted in attending a homeless shelter likely precluded the clients from making and keeping appointments with their PCPs who were already too busy.

When those at the shelter who had no PCP and had needs requested our care, we scheduled telemedicine visits during our next regular clinic session. As we tried to make our routine follow-up call confirming the date and time, we quickly learned that although most of this population had cell phones, they had limited minutes, no video, and no voice mail. Even though at the screening we had given them a card with the date, time, and clinic phone number shown, they rarely would answer our call. This could have been because our services were no longer a priority for them, or an attempt to save their minutes for friends and family, or any of the myriad of social upheavals that they encountered in everyday life.

After some discussion at Dean's Hour, we decided to launch the "clinic without walls" that had been approved by the clinic board just before the COVID pandemic began. Instead of scheduling those who needed clinic care, we began providing care on the spot. We took the equivalent of the home telemedicine package that we had mailed to our regular free clinic patients to the shelter. This and a stethoscope provided the essential equipment for a basic primary care visit. When the student had

completed the visit, a telemedicine connection was established with the regional dean who acted as supervising physician. The student presented the patient in their presence, and the three agreed on an initial plan. This usually involved basic lab and sometimes imaging, and the city bus had stops at the shelter and host health system clinic lab. After this step was completed, the dean saw the patient inperson at the shelter at a time convenient for all. Needed prescriptions were approved and called into a local pharmacy that had a nearby bus stop either using the \$4 list or Salvation Army vouchers.

Next, we discovered a group of patients at the shelter who had a PCP but either didn't know they still had Medicaid coverage, had health exchange coverage with a high deductible, or simply couldn't navigate their way through the Medicaid application process. We decided to provide them bridge care while connecting them with the contractor working with the host health system to complete the Medicaid application process. This required getting beyond the "here's the contractor's phone number, call them" approach suggested by the contractor. By including shelter staff and active facilitation by a motivated student advocate, this process was more likely to be successful. This provided a mechanism for students to experience first-hand the social determinants of health and learn the role of patient navigator, the next logical step in our experiential curriculum development.¹⁰ The case studies and student comments below give a first-person account of that learning process, and a formal study showed that students reported that even with free clinic care, their patients could not find their way to free local cancer screening procedures and still needed help navigating the health system outside of the free clinic.¹⁰

Student comments

My experience at our free clinic gave me the opportunity to truly take care of patients as my own. It helped me begin to develop my professional identity. It was an invaluable experience that will help me be more prepared for residency. M-4, matched to FM residency

Working as a student clinic director at the longitudinal free clinic and participating in community cardiovascular screenings allowed me to put what I

DOI: https://doi.org/10.24926/jrmc.ADDHERE

had learned into action, educate patients on important health risks, and see firsthand the socioeconomic determinants of health in my patients' lives.

M-4, matched to dermatology residency

This experience gave me insight into taking care of patients who face several obstacles to obtaining medical care. My patient lacked transportation, but also was unable to take the city bus because she did not have a car seat for her three small children and nobody to watch them. She did not have finances to pay for medications. I have a better understanding why so many people who lack resources seek medical care in the emergency room.

As a medical student, it is important to be able to talk to patients, and often patient contact time in the clinic setting is limited and students do not have time to take full histories on a patient. This experience allowed me to gain confidence in my ability to take a medical history, perform a physical exam, order the appropriate lab work, and choose appropriate medications. This encounter also allowed me to build rapport with a new patient and provide follow up care.

M-3, planning an emergency medicine career

As we learn in our medical training, much of pediatrics is monitoring developmental milestones, safety concerns, diet, and anticipatory guidance. Children are often overlooked in settings such as free clinics because most children are eligible for Medicaid. However, with the average pediatrician visit being only 15-30 minutes long, there is still a need for coaching parents outside of the doctor's office. Encountering children in a homeless shelter gives a glimpse into barriers to pediatric care presented by a lack of transportation, lack of reliable income of caregivers, unstable family groupings, and lack of social support.

M-3, planning a pediatrics career

Case Studies

Case 1

Prior to the pandemic, a 47-year-old man presented to our CVD screening on Thursday afternoon. He was unemployed and uninsured, and had been newly hired for a maintenance job to begin in two weeks. He reported a history of "mild" diabetes and hypertension, but had not been taking medication for

DOI: https://doi.org/10.24926/jrmc.ADDHERE

"a long time" because of finances. He could not remember if he had ever had his cholesterol checked. His BP was 230/110 and on repeat was 215/105. His random finger stick blood sugar (FSBS) was 210, and his total cholesterol was 220. He had no symptoms, and was given an add-on appointment to our free clinic later that evening. At that visit, his BP was in the same range and his FSBS was 230. His physical exam was unremarkable and he reported no medication allergies. He was given a lab request to be drawn the next morning and instructed not to fill his prescriptions until we checked those results but then to start the medications immediately. He was given prescriptions for Lisinopril/HCTZ of 20/12.5 once per day, metformin 500 mg twice per day and simvastatin 20 mg at bedtime, all available on the \$4 list.

The next day his lab showed a normal complete metabolic profile except for BS of 216 with creatinine of 0.7, an HgbA1c of 8.2, and a total cholesterol of 220 with an LDL of 130 and an HDL of 35. His student PCP called him with the results and suggested he fill the prescriptions, which he did. He was seen for a nurse visit in two days and returned to free clinic a week later. He remained asymptomatic, his BP was 150/95, and FSBS was 140. He was seen again for a nurse visit in four days and a free clinic visit in a week. He remained asymptomatic and BP was 140/85 and FSBS was 120. He presented for his pre-employment physical the next day, and he called us very happy that he was approved to start work on time. He was seen for two more brief free clinic visits before his insurance was in effect, and on the last visit his BP was 132/82 and FSBS 110. We assisted his transition to his new PCP and he again expressed his appreciation for our timely and inexpensive while effective care.

Case 2

While hosting a CVD screening at the homeless shelter, a 43-year-old woman asked if we could help her get restarted on her medications for hypertension, depression, reflux, asthma, and swelling in her legs. Her heart rate was 88 and blood pressure was 154/103 with a large adult cuff, with no thigh cuff available. She reported a height of 5 feet 3 inches and a weight of 300 pounds. After doing a complete H and P, I presented the patient to the supervising physician. We ordered a CMP, CBC, nonfasting lipid panel, TSH, HbA1C, urinalysis, BNP, and

urine pregnancy test, which she had done the next day, all normal. She was found to have one more month of Medicaid coverage, but she was unaware of this. We started her back on several medications listed at her last primary care visit, which included Lisinopril 5 mg, PO, QHS, Bupropion SR 150mg, PO, BID, and Famotidine 40mg, PO, PRN. These were filled with shelter staff assistance. We planned to see her in two weeks at the shelter.

Case 3

During adult cardiovascular screenings at a homeless shelter, we were informed by staff that there was a family currently residing at the shelter who had children ages five, four, and eight months and the staff was concerned that the mother did not seem to be attentive. The female caretaker was found in fact not to be their mother but their father's girlfriend. Discussion with her and brief interview and physical exam of the children showed some diet, developmental, and hygiene concerns. We reviewed basic hygiene and infant dietary needs. We discussed infant milestones and the importance of tummy time, safe sleep practices, and nasal suctioning with saline drops for runny nose/congestion, as well as ageappropriate calming measures. We confirmed that the children had a local source of care and had wellchild appointments already scheduled and offered to see the children at the shelter or return a call if the caretaker had concerns.

Table 1: Advisory Council Positions

President, City-County Economic Development Director, Housing Authority Co-Director, Saturday Session Food Bank Pastor, Prominent Black Congregation Director, Weekday Food Bank President, Local Community College Business Liaison, Regional Jobs Program

Conclusion

As our host community health care access evolves, so must our student-directed community-based care. Telemedicine and homeless shelter care will likely continue, and portable clinics at food pantries when these resumes will likely be our next addition. The concepts of community medicine and engagement are best learned with sleeves rolled up during service

DOI: https://doi.org/10.24926/jrmc.ADDHERE

learning. Key lessons learned are that community steering committees and advisory councils are necessary and health events need to be where and when suggested by those connected to the target audience. We offer this summary of our journey to others who are considering taking concepts of community medicine into their host communities.

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An Eight-Week Rural Surgical Clerkship: Does It Help to Produce More Rural Physicians? James A. Dodds; Caitlan S. Jones; James Bradley Watson; William J. Crump, M.D. DOI: https://doi.org/10.24926/jrmc.v6i3.5090 Journal of Regional Medical Campuses, Vol. *3*, Issue 3 (2023)

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Volume 6, Issue 3 (2023)

Journal of Regional Medical Campuses

Original Reports

An Eight-Week Rural Surgical Clerkship:

Does It Help to Produce More Rural

Physicians?

James A. Dodds; Caitlan S. Jones; James Bradley Watson; William J. Crump, M.D.

Abstract

Purpose:

The purpose of our study was to determine what effect an eight-week rural surgical clerkship rotation during the third year of medical school has on future practice site location.

Methods:

We report the subsequent practice site for 95 third-year medical students who completed an eight-week rural surgical clerkship from 2013-2016 compared to a cohort from the same time who completed this clerkship on the urban campus, matched by year and specialty chosen.

Findings:

On first analysis, there is a significant correlation (p=.0026) between rural clerkship and subsequent rural practice. With secondary analysis, all but one of the students in the rural clerkship group who chose rural practice were rural track students completing most of both clinical years in the rural setting.

Conclusions:

As found previously, longer duration rural exposures are associated with more frequent subsequent rural practice, but we found no such association for the eight-week rural surgical clerkship. The previous report of positive attitude changes among urban-based medical students completing this rural clerkship may help them understand rural patients seeking their care in an urban setting, but such attitude changes are not adequate to affect the complex decision of practice choice. Future studies of rural exposures during medical school should focus on intermediate duration exposures as well as different specialty clerkships beyond surgery and seek an association with subsequent practice site location.

Introduction:

Most estimates of the United States' shortage of physicians are significant, with one projecting a shortage of between 37,000 and 124,000 physicians within the 12-year period beginning in 2019.¹ Rural locations and residents will be affected disproportionally, with 60% of the 7,200 federally designated health professional shortage areas considered rural.² Twenty percent of the US population lives in rural communities, with only nine percent of physicians practicing in these areas.³ This disproportionate distribution of physicians may explain some of the age-adjusted mortality rate that is 12.1% higher for rural residents 25-64 years of age than urban residents.⁴

Previous studies have not clarified the minimum or optimum duration of rural immersion that is needed

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to affect future rural practice choice significantly.⁵ The Rural Physician Associate Program (RPAP) at the University of Minnesota Medical School is a ninemonth rural integrated clerkship. This program showed that more RPAP graduates practice within the same state as their training, in primary care, in family medicine, and in rural areas than non-RPAP graduates.⁶ However, this program was nine-months in duration and primarily focused on nurturing students' interest in primary care with the intent of practicing rurally. The Michigan State Upper Peninsula program includes two years of preclinical basic science courses at Michigan State's main urban campus, and the final two clinical years at a rural site. A 30-year longitudinal look at this model found that students in this rural track were more likely to choose primary care or rural in-need specialty, practice in a rural location, and practice in a Health Professional Shortage Area compared with all other Michigan State graduates.⁷ The University of Louisville Trover Campus (ULTC) is a similar program in rural Madisonville, Kentucky. It also showed that students in the rural track were more likely to choose family medicine or other primary care specialties, and to practice in a rural location post-residency.⁸ Rural training programs such as these are important in providing the next generations of physicians who could address the rural physician shortage. The previous report from our study site showed positive changes in attitudes towards rural medical practice among urban-based medical students completing an eight-week rural surgical clerkship.9 These included a more positive perception after the clerkship of comfortable rural living, availability of quality services, rural community support, and local medical resources. The goal of the current study was to determine if an eight-week rural surgical clerkship would result in more visiting students choosing rural practice. The three student authors who are currently in the rural track have spent two summers at the rural campus and have completed one academic year at the urban campus. We predicted prior to data analysis that we would find a positive effect on later rural practice. If our prediction is correct, this short immersion model could influence a large group of urban-based medical students to choose rural practice, addressing the physician shortage in rural areas.

Methods: <u>Rural Site</u>

The rural campus hosting the rural surgery clerkship is in a town of 20,000 that is 160 miles southwest of the main urban campus. The campus was designed for ten to 12 students in each class to complete their third- and fourth-year rotations in a rural setting, termed the rural track. These students complete the first two academic years at the urban campus, then move to the rural campus for the final two. In addition to these students, students based at the urban campus have an opportunity to complete their eight-week required surgery clerkship in this rural setting. These students complete all other clerkships at the urban campus.

Rural Surgery Clerkship Description

The two-day orientation was the same at both sites, provided virtually to the rural site. Weekly grand rounds were also shared virtually. Lectures were given separately at each campus by their onsite faculty, approximately two hours each weekday. The rural clerkship follows an apprenticeship model with one to two students working with each faculty. This includes accompanying faculty in the office, on hospital rounds, and in the operating room. In the operating room at the rural campus, students are typically the second assistant and are actively involved in all procedures. Students at the rural campus write a note on each patient they see on daily rounds. As a result, the rural campus is described as providing more hands-on experience. Scores on cumulative clerkship examinations and final grades are comparable to those of the urban surgery clerkship students.

Subjects

During 2013-2016, there were 95 students who completed their eight-week surgery clerkship in the rural setting. Each student was matched by specialty and year to 95 students who completed their eightweek surgery clerkship in the urban setting. Students still in residency or fellowship were excluded from the analysis. Of the 95 students completing the clerkship at the rural site, 28 were in the rural track. The host hospital IRB approved the study as exempt.

Procedures

Current practice sites were found using the AMA database, local hospital directories, and the specific physicians' professional networking site. Eight physicians in the database whose current practice location could not be found, or who were still in residency or fellowship, were excluded from this study along with their matched counterpart. A chi square was used to compare the study groups and by convention, p<.05 was set for significance.

Rural-Urban Continuum Codes (RUCC) were used to define current practice sites as metropolitan or not. A score of one to three was considered Urban and a score of four to nine was considered rural.¹⁰

Results:

At the time of the study in summer 2022, of the 95 students who completed the surgery clerkship at the rural site, 17 (18%) were practicing in a rural area while only five (5%) of the 95 matched students who completed no rotations at the rural site were practicing in a rural area (chi-square = 9.04, p=.0026) (Table 1). Table 2 shows the distribution of rural hometowns among the three groups. Table 3 shows that 16 of the 17 students shown in Table 1 who ultimately chose rural practice were participating in the rural track. Table 3 also shows that, of the 28 rural track students included in Table 1, 16 of the 28 (57%) rural track students chose rural practice. Only one of the 67 urban track students who completed only their eight-week surgery clerkship in the rural site was currently practicing in a rural area. Table 4 shows the specialty choice among those completing the rural surgery rotation.

	Rural Surgical Clerkship N=95	Urban Matched Surgical Clerkship N=95
Current Rural Practice	17 (18%)	4 (4%)
Current Urban Practice	78 (82%)	91 (96%)
Chi-Square Stats	(Chi Square = 9.04 CI:95%, p=.0026)	

Table 1: Percentages of physicians who are practicing in a Rural area (RUCC code 4-9) or Urban area (RUCC code 1-3) that completed their Rural surgery rotation vs the matched individuals who completed their rotation in an urban area.

	Rural Surgery Clerkship N=93	Urban Matched Surgery Clerkship N=93	Total Medical School Class N=634
Rural Hometown	40 (44%)	18 (20%)	159 (25%)
Urban Hometown	53 (56%)	75 (80%)	475 (75%)

Table 2: Number of students from Rural/Urban areas that participated in the Rural Surgery Clerkship, the matched students from the Urban Surgery Clerkship, and then the entire ULSOM class of graduation years 2013-2017. Two students from the urban clerkship didn't have their hometowns listed and therefore were excluded from this table along with their matched rural cohort students.

	Rural Track Students N=28	Urban Matched Surgical Clerkship (N=28)
Current Rural Practice	16 (57%)	0 (0%)
Current Urban Practice	12 (43%)	28 (100%)
Chi-Square Stats	Unable to Run with Zero	

Table 3: Percentages of physicians that completed the Rural Track vs the matched individuals who completed their rotation in an urban area.

Specialty	# Practicing N=95
Family Medicine	22 (23%)
Internal Medicine	16 (17%)
Pediatrics	11 (12%)
OB-GYN	8 (9%)
Emergency Medicine	7 (7%)
Neurology	5 (5%)
General Surgery	4 (4%)
Orthopedic Surgery	4 (4%)
Anesthesiology	3 (3%)
Psychiatry	3 (3%)
Radiation Oncology	2 (2%)
Radiology	2 (2%)
Med-Peds	2 (2%)
Physical Medicine & Rehabilitation	2 (2%)
Dermatology	1 (1%)
Ophthalmology	1 (1%)
Pathology	1 (1%)
Otolaryngology	1 (1%)
Urology	1 (1%)

Table 4: Specialties of the students who participated in the rural surgery clerkship from the graduation years 2014-2017.

Discussion:

An overall comparison would first appear to show that the changed attitudes in urban campus students previously shown from this site⁹ resulted in more urban campus students choosing to practice in a rural site. But after removing the 28 rural track students and comparing only non-rural track students, there were too few who chose rural practice regardless of

where they did their surgery clerkship to detect any difference. So, we were unable to find what we predicted. It is possible that using a larger sample size could show a subtle difference.

A recent study from New Zealand compared a shorter length immersion program (five-week), longer length immersion program (33-week), or no immersion program, and their effects on intended practice site rurality. Those with a longer immersion program exposure were 6.4 times more likely to choose rural practice.¹¹ Our analysis shows that even eight weeks of a clinically strong rotation in a rural environment is not enough for a student in an urban medical school to commit to practicing in a rural environment in the future. However, it has been shown that eight to 20 months in the rural area is enough to make a difference.^{8,12,13}

As previous reports from the rural track at this site showed,⁵ we also found that 57% of the 28 rural track students chose rural practice compared to 0% of the 28 specialty-matched urban track students (Table 3). Similarly, previous similar reports from truly rural campuses show the same results.^{12,13} Our data supports these previous studies that a longer rural immersion experience is needed to affect practice choice.

Limitations:

Practice site choice post-residency is complex, and dependent on many factors other than medical school education experiences.¹⁴ These include rurality of hometown, marital status, job availability, family location, and proximity to residency training site. As shown in Table 2, a much larger percentage of students from a rural hometown completed their surgical clerkship in the rural setting. This suggests that those from a rural hometown are more likely to complete their surgical rotation in a rural environment. Since they are more likely to practice in a rural environment, this could be a confounding variable in our study, and it is possible that a much larger study might allow for detecting this effect. In a previous study from this site, a longer rural immersion was the strongest association with rural practice, even after controlling for rural upbringing and family medicine specialty.⁵ Even so, only 19% of the variance in practice choice was explained by their

multivariate model. Like many rural states, even the urban campus of our medical school has almost five times as many students from rural backgrounds as the national medical school average, and is reflective of the statewide population distribution. Since this is a powerful predictor of subsequent rural practice, our results are only generalizable to similar medical schools.

Future Studies and Recommendations:

Future Studies of intermediate durations of rural immersion would be beneficial, somewhere between the eight-week program as done here and other established nine-month programs. The specialtymatched control group is a tedious but powerful methodology that has not been reported previously and could be useful in future studies. Future studies may also look at the effect of different specialties included in the rural immersion for the urban campus students. For instance, an eight-week rural rotation in Family Medicine might be more likely to increase affinity for rural practice. Also, maximizing rural residency experiences after a student has made a career choice might be more effective. This could be facilitated by creating more rural track residencies and making rural immersions during urban-based residencies more attractive. This could be done by engaging communities to provide pleasant housing and free entrance fees to local attractions as well as a living stipend for the rural experiences.

Almost all studies that report rural practice outcomes have included students who have expressed some interest in rural medicine at the outset. An important area of study is to identify what factors are at play in students who have never considered rural practice but might be swayed. These include the personal and social factors discussed above and it might be useful to discover the relative power of each. For instance, an urban-raised spouse with a positive childhood experience at a rural summer camp who can work from home might influence the physician to consider a rural practice site.

Conclusions:

As found previously in studies from this site and other similar rural programs, eight to 20 months' duration of immersion makes rural practice choice more likely, while our eight-week rural surgical clerkship did not.

The positive changes in attitudes among urban based students after the rural clerkship reported from this site previously may make it easier to understand the needs of the rural patients who travel to see them. These attitudes may also make these urban physicians more willing to provide outreach clinics or telehealth care to rural patients. Our results support that longer duration immersion, however, is needed to affect practice site choice.

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Perceptions of Social Determinants of Health in a Student-Led Free Clinic: Do Students See Things Differently From Their Patients?

Sarah R. Parker, BS; William J. Crump, MD DOI: https://doi.org/10.24926/jrmc.v5i1.4384 Journal of Regional Medical Campuses, Vol. 5, Issue 1 (2022)

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Published by University of Minnesota Libraries Publishing



Volume 5, Issue 1 (2022)

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Abstract

Understanding a patient's social determinants of health (SDOH) needs is an important component of medical care. To better understand how well future physicians are aware of these needs, student primary care providers (PCPs) at a student-led free clinic in the upper southeastern United States surveyed 15 patients via telemedicine between October 2020 and January 2021 concerning their SDOH needs. They addressed 17 SDOH items using a 10-point Likert scale. Prior to administering the survey to patients, student PCPs were asked to complete the survey to predict each individual patient's responses. The average difference between student and patient responses ranged from 1.3 to 3.8 for each SDOH item, and patients expressed a higher need than the student PCPs did for health services navigation, health insurance limitations, and education options and affordability. We conclude that even this group of motivated medical students providing continuity care could benefit from a more formal curriculum addressing SDOH.

INTRODUCTION

There is mounting evidence that supports the need to screen and manage so-called social diagnoses in primary care.¹ Patients who struggle to address social determinants of health (SDOH) needs (eg, financial, food, or housing insecurity; lack of transportation; interpersonal violence) have worse health outcomes, including higher rates of developing chronic diseases such as diabetes and hypertension.^{2,3} One solution to overcome these barriers is the use of patient navigators. A patient navigator is a member of the health care team whose purpose is to make social diagnoses and connect patients to appropriate resources to meet their needs. The use of patient navigators first grew out of the need for timely care and follow-up for cancer patients, and patient navigators have since been used to manage chronic diseases. Patient navigation programs are effective in increasing rates of preventative screening and completions of scheduled medical care.4.5 Though medical students are trained to assess the impact of medical diseases on patients' lives, little is taught about how to uncover and act on SDOH needs. There is little evidence available about how well doctors know their patients' social situations, and much of the evidence that is available shows that doctors are not very good at predicting many aspects of a patient's social needs.⁶ This study focused on how well medical students can predict their free clinic patients' SDOH needs, with the goal of providing the background for a program for students to act as patient navigators themselves. The research question here is the following: Despite previous typical medical visits with students in the PCP role, are the students' perceptions of patients' SDOH needs different from the needs expressed by the patients in a survey? If so, in which topic areas are the perceptions farthest apart? Since so little is known about this topic, this can be considered a descriptive, or hypothesisgenerating, study.

METHODS

The community's free clinic is directed and staffed by third-year medical students and supervised by the dean at a regional rural medical school campus in the upper southeastern United States.^{7,8} Established in

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2004, the clinic serves the local county population of approximately 45,000 (with a host town population of 20,000) and provides free care for patients who are uninsured or underinsured. Due to the COVID-19 pandemic, all clinic services transitioned to telemedicine in September 2020, and each student was assigned a cohort of patients to care for throughout the school year as the patients' primary care provider (PCP). All 7 third-year medical students participating in patient care for that academic year agreed to participate. The patient–student doctor relationships provided an excellent opportunity to assess patients for SDOH needs.

A 10-point Likert-scale survey was developed for 17 different areas of SDOH need and interactions with the medical system. This research came out of a community improvement project with the American Academy of Family Physicians (AAFP); one goal of this project was to better understand how medical students could act as patient navigators. Rather than use previously validated but narrow instruments, we developed a broader instrument that included issues such as interactions with the medical system, the free clinic's role within this system, and an understanding of a patient's insurance history.9-11 An initial small field study showed that the survey accomplished its goals. A 10-point Likert scale was used because the answers tended to be clustered at one end of a narrower scale on the small field test.

We included questions regarding how these patients ended up at the free clinic: What interactions in the medical world led them to the clinic, and how were they doing under the clinic's care? How had insurance costs or costs accrued due to not having insurance affected them previously? We included questions related to the affordability of medications and access to phone and internet services to understand how patients rated the clinic's ability to find affordable medications for them and reach them remotely during the pandemic via telephone or webcam. Because there is a local community college, we also wanted to understand how patients understood their options for furthering their education and if finances played a role in their decision. Finally, given the increased amount of political polarization across the United States and the effect on medical mistrustwhich has been increasingly more apparent throughout the COVID-19 pandemic and due to racial

unrest-we wanted to understand how our patients perceive local government and law enforcement. Each student had at least 2 interactions with their patient population prior to surveying, with the initial "new patient" interactions taking place in person in late July through August 2020. Surveying occurred in October through December 2020. The clinic is entirely student run, so it is likely most students had multiple other interactions with patients via telephone or video call, such as scheduling appointments, communicating lab results, ensuring that prescriptions could be filled, and discussing any paperwork needs to fulfill requirements for prescription drug-sponsored payment assistance programs. In reviewing the literature about how well physicians understand their patients' SDOH needs, the few studies we found made it clear that there are often gaps in physicians' understanding, which we wanted to investigate.¹²⁻¹⁵ Furthermore, we thought it would be an educational experience for understanding the needs of our own patient group in a formal manner.

From October 2020 through January 2021, student PCPs completed the surveys, which asked them to answer the questions as if they were one of their assigned patients. Next, each student administered the same survey to each of their assigned patients via a telephone call or video visit. Comments were allowed for each item. The 15 patients were surveyed by 7 students, with an average of 2 patient responses per student: each student had at least 1 patient response, with a maximum of 4 patient responses per student. The students were 85% White. One student was from South Asia, 71% of students were female, the average student age was 26, and all of the students had attended high schools in the same state as the campus where the study took place. Data from the patient and student survey responses were de-identified, matched as individuals, and ranked in areas of SDOH needed most by patients and perceived by students. The difference between patients' responses and the students' perceived needs for each individual patient was calculated for each patient-student response and averaged overall for each SDOH topic. No statistical testing was done, as this was a descriptive study. The project was approved by the host hospital Institutional Review Board as exempt.
RESULTS

Patient Responses

Individual patient responses varied widely. Table 1 shows the numbers and percentages of patients in each age range and with specific chronic diseases. Figure 1 shows patients' responses to SDOH needs, with statements with the highest need scored as a Likert score of 10 and those with the least need assigned a score of 1. Based on overall averages, we found the following areas to be the ones with the most need:

1. Navigation, in response to the statement "I worry about finding my way around the health system outside of HCCC (eg, other doctor appointments, dentist offices, health insurance coverage, the hospital)."

2. Health insurance, in response to the statement "The health insurance I have (or lack of health insurance) prevents me from getting affordable medical care."

3. Education options and affordability, in response to the statement "I feel that I have affordable options to continue my education if I want (for myself and my family)."

Common Themes in Comments

Many patients feared the surprise medical bills they might get if they needed urgent or emergent care. Some were upset that needed subspecialist visits were not covered by their insurance. Several did not regularly get dental care or preventative services outside the clinic (eg, colonoscopy, mammogram, Pap smear), even if free sources of these services were intermittently available. Patients were also concerned about out-of-pocket costs. Many had no insurance: some had insurance, but deductibles were so large that the insurance was of little value to them (eg, 1 patient had a deductible of \$5,000). Some patients reported that they would see subspecialists if they had insurance coverage. Most were not interested in continuing their education, and at least 3 felt that continuing their education would be too expensive. Overall, there was at least 1 individual patient who identified each of the categories of food insecurity, financial stress, job security, or housing as significant stresses, even though community resources were available.

Student Responses

As shown in Figure 2, the areas of need perceived to be the greatest were the following:

- Education options, in response to the statement "I feel that [my patients] have affordable options to continue [their] education if [they] want."
- Phone/internet access, in response to the statement "[My patients] have trouble with phone service and/or internet services."
- Insurance limitations, in response to the statement "The health insurance [my patients] have (or lack of health insurance) prevents [them] from getting affordable medical care." There was also wide variability among the students' perceptions of their patients' needs.

Common Themes in Student Comments Most student PCPs expressed that continuing education was not a manageable option for most of their patients due to disinterest, inability to afford to pursue an education, or feasibility within work schedule. Comments pertaining to phone and internet access noted that while most patients had access to a cell phone (though not all), some had no internet service or the internet connection was often poor during telemedicine visits that took place during the COVID-19 year. Students reported that not all patients had smartphones with the capability to have video connections.

Most student PCPs expressed that a lack of insurance or, if they had insurance, high deductibles kept their patients from getting affordable care outside of the capabilities of the clinic, such as screening colonoscopies and mammograms. Other student PCPs reported that because their patients had no insurance, the community clinic was the only option in terms of medical care. Overall, students expressed that the clinic was not enough to meet patients' full medical needs.

Patient-Student Response Difference

As shown in Table 2, the areas of greatest difference between student PCPs' perceptions' of needs and patients' reported needs concerned food access, activity options, and insurance limitations. As this was a descriptive study, no statistical testing was done. Students were more concerned than their patients about patients' access to affordable food and physical

DOI: https://doi.org/10.24926/jrmc.v5i1.4384

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activity. Patients felt that insurance limitations were a more restricting factor than did their student PCPs.

DISCUSSION

The goal of this project was to understand how well medical students understand the SDOH needs of their free clinic patients. Our findings show that the student PCPs' perceptions of patient needs often do not match the patients' perceptions. In our case, prior to this study, students at the rural health campus learned about SDOH through student-led community cardiovascular screenings. Each class of medical students was tasked with designing and implementing these screenings as an attempt to uncover populations within the community in need of chronic disease management.

In addition, as part of the case-based medical teaching, students were often directed to think about how medical costs and lifestyle factors play a role in medical management. In most standard medical student curriculum and clinical experiences, students are evaluated on their ability to express empathy and understanding of a patient's social limitations. On almost all standardized patient exams, students are expected to ask something along the lines of, "How does your illness affect your life?" Although students are expected to include a "review of systems" in all patient encounters, this provides a limited view of a patient's social well-being. By teaching students a systematic approach to asking about social determinants, medical schools can ensure student physicians are better prepared to build stronger doctor-patient relationships in the future. If they can lay the framework for discussing social issues, students may be more prepared to identify and potentially build resource networks for their patients. Understanding what community resources can address individual patient needs is an evolving process, and by incorporating an SDOH interview format into patient interactions, students can become more knowledgeable about the context of the medical care they provide.

As a result of this project, we attempted to incorporate the "student as patient navigator" role at the local family medicine residency clinic. Students would screen patients who frequently missed appointments, as identified by the clinic's licensed clinical social worker. Logistically, this approach was not feasible because of communication barriers with these patients. As a second attempt at incorporating a patient navigator, the students have incorporated the SDOH screening into the cardiovascular screening at a local Salvation Army shelter. Through this process, students will learn SDOH experientially while managing patients who may have insurance and even a PCP but cannot access care because they are homeless. In the future, after this experiential learning, a similar study could be done to evaluate if students' awareness of their patients' SDOH needs has changed.

LIMITATIONS AND STRENGTHS

As with any small study, generalizability must be limited to similar students, patients, and environments. By necessity, our surveys were not conducted in person, and we did not use a patientwritten survey. In addition, for matching patient and student answers, our surveys had to be nonanonymous. For the sake of reproducibility and clinical use, it would be easier to use a validated survey such as the AAFP Social Needs Screening Tool, but for the purposes of education in survey creation and patient-physician relationship building, we wanted to include a more extensive list of issues.

Although student PCPs were encouraged to frame the questions with language that was unassuming about patient needs, our patients may have given more socially acceptable answers. Our study was also limited to third-year medical students, and it is possible that those with more clinical experience would better predict their patients' SDOH responses. Given the small sample size of students, we did not try to find whether any student groups predicted patients' responses more closely than others. A key strength of our study was the complete matching of student PCP and patient responses. We did not find another published study with that design.

CONCLUSION

Most medical students choose their career with the goal of relieving the burden of disease. The complex reality of coordinating medical care is that often the most difficult problems are those that stem from social determinants of health issues. Coordination with a team of health professionals is required to take care of one patient, and a rich system of services outside the office is needed to care for a whole

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DOI: https://doi.org/10.24926/jrmc.v5i1.4384
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Journal of Regional Medical Campuses, Vol. 5, Issue 1

community. Our study shows that without a structured experience, even motivated medical students providing continuity care are unlikely to predict what is most important to their patients. As innovations in medical education are planned, acting as a patient navigator for patients seen in continuity could be a valuable addition to a medical student's education.

Acknowledgments

We appreciate the active participation of the entire student SDOH Working Group: Matthew Barber, Toni S. Carter, VD Clark, Allison B. Engelbrecht, Talitha H. Jones, and Sravya Veligandla. We also thank Kendall Denny and Steve Fricker for data management.

This project was completed as a part of the American Academy of Family Physicians Family Medicine Leads Emerging Leader Institute.

Table	1. Stud	y Popu	lation (N	√ = 15)
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Age		Patients with hypertension (%)	Patients with diabetes mellitus	Patients with hyperlipidemia	
Age range	Patients in age range (%)				
40-50	4 (27)	10 (66.7)	9 (60)	10 (66.7)	
51-60	5 (33)		Seried South		
61-65	6 (40)	_			

The proportion of patients with hypertension, diabetes mellitus, and hyperlipidemia is included to describe the population. It is clear from the literature that high SDOH need is associated with increases in population prevalence of chronic diseases.¹⁻²



Social Determinant of Health Issues 1=Least SDOH Need 10=Most SDOH Need Categories marked with * have been reverse sco

- Sec corresponding number on figure
 If English is your second language: it is often difficult for me to understand and use medical services
 If English is your second language: it is often difficult for me to understand and use medical services
 I to vory about finding my way around the health system outside of HCCC. (e.g. other doctor appointments,
 denits of tices, health insurance coverage, the hospital)
 The health insurance I have (or lack of health insurance) prevents me from getting affordable medical care
 the health insurance I have (or lack of health insurance) prevents me from getting affordable medical care
 the health insurance three (or lack of health insurance) prevents me from getting affordable medical care
 the second of the second secon

The box-and-whisker plot represents the degree of patient-reported SDOH needs on a Likert scale of 1 to 10 on the y-axis. Each numbered SDOH statement is shown on the x-axis and written in full below the plot. For example, Statement 2 is represented by the boxand-whisker plot with an average Likert scale response of 6.9 (indicated by the x), a median of 7.5, a minimum of 1, and a maximum of 10.

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DOI: https://doi.org/10.24926/jrmc.v5i1.4384

Journal of Regional Medical Campuses, Vol. 5, Issue 1



A longitudinal look at individual resident preferences to prevent burnout: Which matter the most?

William J. Crump, M.D.; Craig Ziegler, Ph.D.; Douglas J. Hatler, M.D.; Paul C. Shahidi, M.D. DOI: https://doi.org/10.24926/jrmc.v7i2.5651 Journal of Regional Medical Campuses, Vol. 7, Issue 2 (2024)

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Published by University of Minnesota Libraries Publishing



Volume 7, Issue 2 (2024)

A longitudinal look at individual resident preferences to prevent burnout: Which

matter the most?

William J. Crump, M.D.; Craig Ziegler, Ph.D.; Douglas J. Hatler, M.D.; Paul C. Shahidi, M.D.

Abstract

Background and Objectives

Burnout among residents-in-training is being reported more frequently. Previous studies have shown that lower measures of emotional intelligence, mindfulness, emotional regulation, and gratitude earlier in residency were associated with higher burnout scores later. Many studies have reported interventions intended to lessen burnout but not chosen by the residents with variable results on subsequent burnout measures. This paper reports an individually paired longitudinal analysis of strategies ranked by the resident as important with a subsequent burnout measure.

Methods

From 2017 through 2021, 32 residents completed a survey ranking their preference of ten approaches to preventing burnout at the beginning of the academic year. Then they later completed a burnout survey at the end of each year.

Results

With a usable response rate of 94% and calculating Spearman's Correlation, residents completing their first year of training after medical school (PG-1) who gave a higher rank to a workplace supporting their personal values (p=.016), self-care (p=.031), and administrative support (p=.046) showed less burnout at the end of the year. PG-3s (those completing their third year of training after medical school) who gave a higher rank to spending time with family and friends (p=.002) showed less burnout. For all three years, the most powerful correlation was with adopting a healthy philosophical outlook (p=.014, .008, <.001).

Conclusions

In this group of residents, the correlations of preferred strategies for lessening burnout differed by training level. Rather than faculty choosing an intervention, we propose these ten strategies as a potential menu, allowing the individual resident to focus on their preferences working with a mentor. Group discussion of methods used by individual residents to adopt a healthy philosophical outlook would also be helpful.

INTRODUCTION

Most studies show that burnout increases during residency training and is characterized by depersonalization, emotional exhaustion, loss of a sense of personal accomplishment, and rising cynicism.^{1,2} The source of burnout during residency is described as an environment of high job demands in the setting of low individual autonomy.³⁻⁵ In a previous longitudinal study, burnout measures at graduation were worse for those with lower measures of emotional intelligence, mindfulness, and gratitude earlier in residency.⁶ A cross-sectional study of PG-1s as they began residency showed that those reporting restful sleep and physical activity had lower

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burnout scores.⁵ In another longitudinal study, a measure of emotional regulation done on residency entry was correlated with concurrent measures of burnout, and also with burnout at the beginning of the PG-2 and PG-3 year.7

In our residents, we have shown a linear trend of increasing burnout across the three years of residency and that burnout increased before empathy decreased.⁸ We also studied paired individual measures of empathy longitudinally, and remarkably found that within the means there were subsets of residents who did not change empathy scores and some that actually showed longitudinal increases.⁹ This led us to postulate that there may be different strategies preferred by some residents that lessen burnout and may promote resilience, and our previous focus groups led us to consider that these strategies may differ by training level.⁹ Our goal in this study was to determine if the ranking of burnout mitigation strategies by individual residents predicts their individual burnout scores longitudinally during residency training.

METHODS

Our residency was begun in 1971 and is located in a town of 20,000 in a rural area in the upper southeast United States, with six residents in each year, with no other residencies in town.¹⁰ The site is also host for our regional rural medical school campus, with the main campus in a metropolitan community 160 miles away.11

From 2017 through 2021, 34 residents completed a paper survey during a regular administrative meeting at the beginning of the academic year asking them to rank the value of ten approaches to preventing burnout using a survey adapted from previous publications (see Table 1).^{12,13} Separately, they later completed a previously validated single question burnout survey at the end of each PG year that asked them to choose one of five statements reporting increasing burnout (see Table 2).14-20 We used the single-item burnout measure rather than the full Maslach Inventory to increase the completion rate²¹ and avoid the licensure cost. We used this survey in our project rather than some other brief measures because it focused on emotional exhaustion rather than depersonalization, and the former was clearly

the issue during our focus groups.⁹ Each survey was matched by individual resident. If a resident completed at least one of each of the surveys during the study period, regardless of training year, their data was included. Two resident responses were excluded from the analysis for not following directions, so the response rate was 32/34 (94%). The host hospital IRB designated the project as exempt from review.

Spearman's Rho (rs) was used to assess correlation of the annual burnout measure with the ten prevention strategies. Significance was set at p<0.05 and all tests were two-tailed. SPSS version 28.0 was used for statistical analysis. The demographics of the study population are shown in Table 3.

Table 1: Burnout Prevention Survey

The following activity is important to me to prevent burnout.

	Personal	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
1	Influence happiness through personal values and choices	1	2	3	4	5
2	Spending time with family and friends	1	2	3	4	5
3	Religious or spiritual activity	1	2	3	4	5
4	Self-care (nutrition, exercise)	1	2	3	4	5
5	Adopting a healthy philosophical outlook	1	2	3	4	5
6	A supportive spouse or partner	1	2	3	4	5
0 1	Work					
1	Control over environment: workload	1	2	3	4	5
2	Finding meaning in work and setting limits	1	2	3	4	5
3	Having a mentor	1	2	3	4	5
4	Having adequate administrative support systems	1	2	3	4	5

Table 2: Burnout Survey

Residents	s were asked to choose one of 5 statements (modified from Ref 17):
1) I enjoy	my work. I have no symptoms of burnout;
2) Occasi did, but I	onally I am under stress, and I don't always have as much energy as I once don't feel burned out;
3) I am de physical a	afinitely burning out and have one or more symptoms of burnout, such as and emotional exhaustion;
4) The sy	mptoms of burnout that I'm experiencing won't go away. I think about

frustration at work a lot;
 feel completely burned out and often wonder if I can go on. I am at the point where I may need some changes or may need to seek some sort of help.

DOI: https://doi.org/10.24926/jrmc.v7i2.5651

Table 3: Demographics of Study Population (N=32)

Gender	Male [N (%)]	20 (62.5%)	
	Female [N (%)]	12 (38.5%)	
Race/Ethnicity	White [N (%)]	17 (53.1%)	
	Asian [N (%)]	9 (28.1%)	
	Hispanic [N (%)]	4 (12.5%)	
	Black [N (%)]	2 (6.3%)	
Age [Mean (S	D)]	30.75 (7.24)	

RESULTS

Table 4 shows that most correlations were negative, suggesting that the higher the ranking of the strategy the lower the burnout score. Seven correlations achieved statistical significance. In our PG-1 residents (those completing their first year of training after medical school), those who gave a higher rank to a workplace supporting their personal values as well as self-care and administrative support showed less burnout at the end of the year. For our PG-3s (those completing their third year of training after medical school), those who gave a higher rank to spending time with family and friends showed less burnout. For all three years, the most powerful correlation was with adopting a healthy philosophical outlook.

Table 4: Burnout Prevention Strategy Scale

		Burnout Measure score			
The following activity is important burnout:	t to me to prevent	Post PGY 1	Post PGY 2	Post PGY 3	
le Roman la sur la sur attaine de la sur la	Concernation	(N=18)	(N=15)	(N=20)	
Influence happiness through personal values and choices	Spearman's Correlation	559	286	233	
	Sig. (2-tailed)	.016	.302	.322	
Spending time with family and friends	Spearman's Correlation	178	296	640``	
	Sig. (2-tailed)	.481	.284	.002	
Religious or spiritual activities	Spearman's Correlation	.175	083	.154	
-	Sig. (2-tailed)	.488	.769	.516	
Self-care (nutrition, exercise)	Spearman's Correlation	509*	273	124	
	Sig. (2-tailed)	.031	.325	.602	
Adopting a healthy philosophical outlook	Spearman's Correlation	567	657**	721***	
	Sig. (2-tailed)	.014	.008	<.001	
A supportive spouse or partner	Spearman's Correlation	100	.227	075	
	Sig. (2-tailed)	.694	.417	.755	
Control over environment: workload	Spearman's Correlation	050	235	023	
	Sig. (2-tailed)	.843	.400	.923	
Finding meaning in work and setting limits	Spearman's Correlation	303	.096	.087	
189	Sig. (2-tailed)	.222	.734	.714	
Having a mentor	Spearman's Correlation	437	070	.039	
		Burno	ut Measure	score	
The following activity is important ournout:	to me to prevent	Post PGY 1 (N=18)	Post PGY 2 (N=15)	Post PGY 3 (N=20)	
	Sig. (2-tailed)	.070	.804	.869	
Having adequate administrative support	Spearman's Correlation	475*	.045	157	
	Sig. (2-tailed)	.046	.874	.507	

p < .010

Discussion

Our finding of differing correlations of preferences across training years fits developmentally, as PG-1s are more focused on the workplace and often have delayed local friend development and have less time to travel to family, priorities which are more important to our PG-3s. It is interesting that our PG-2s seemed to be intermediate, with workplace issues perhaps more resolved but they were not yet prioritizing time with family and friends. This is similar to what we found in our focus groups.⁹ However,

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even if because of our small sample the individual resident differences rather than training level are the true cause for the differences, they are still true for that individual.

Limitations and Strengths

We have shown a correlation between the importance of some strategies with subsequent burnout but we did not measure the effort invested in these strategies. The assumption that a resident would invest time in a strategy that is important to them would need to be proven by larger studies. As with most previous reports on resident burnout, selection bias and limited generalizability are a concern with reports from a single site. Although used and validated in varying populations, the singleitem burnout measure may not perform as well as the full Maslach Inventory in all populations. By using a shorter survey administered during a standing meeting, we got a 94% response rate compared to previous studies that had response rates ranging from 63% to 77%.

It is tempting to assume that efforts focused on mitigating strategies would decrease burnout, but both recent reviews of these efforts conclude that there is just not enough evidence that interventions make a difference.^{3,22} Instead, we conclude that individual residents arrive with preferences that help mitigate their experience of burnout. The previously published strategies used effectively by practitioners shown in Table 1 could be used as a menu to allow residents to indicate their interests. After the time period of these surveys, our program began assigning a faculty mentor for each resident. An individual plan to strengthen individual resident interests can be developed with their faculty mentor and limited time and resources can be focused on the strategies that we found most correlated. As residents complete the PG-1 year, the focus for them might become more about developing their connections to family and local friends. Group time can also be spent to understand what individual residents mean by the most powerful predictor of maintaining a healthy philosophical outlook and get group commitment to strengthen this skill.

We continue to collect longitudinal measures of burnout and will analyze temporal changes such as those occurring before and after the COVID pandemic. We welcome other residency sites to use our instruments to determine how generalizable our findings are.

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DOI: https://doi.org/10.24926/jrmc.v7i2.5651

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A Curious Reflection

William J. Crump, M.D. DOI: https://doi.org/10.24926/jrmc.v6i3.5100 Journal of Regional Medical Campuses, Vol. *6*, Issue 3 (2023)

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Volume 6, Issue 3 (2023)

A Curious Reflection

William J. Crump, M.D.

Abstract

A regional campus dean provides a reflection for colleagues on the importance of maintaining curiosity to find meaning in work.

I recently received an invitation to provide a reflection at the beginning of our hospital medical staff meeting. Having attended these quarterly meetings in person with my colleagues while sharing an outstanding meal for almost 25 years, I had appreciated the short prayers and poems. We even had an a cappella rendition of an inspirational hymn one time. To engage attendees via zoom, I considered what a group of physicians and other providers who are giving up some of their evening for a meeting might appreciate. I decided that since we talk a lot about the Triple Aim in medicine, but less about the importance of physician satisfaction as the fourth element, that would be the topic of my five-minute reflection.

My perspective on this issue is framed by the last eight years of our longitudinal study of changes in empathy and burnout among our medical students and residents.^{1,2,3,4} As we reviewed the literature, the definition for empathy that fits best for us is a true understanding of what it's like to be that patient. When a new diagnosis or a new medication or intervention is considered, how will it fit into the life of the individual in our exam room with us? In this sense, empathy is a cognitive function and significantly different from the emotional aspects of feeling sympathy, which is something else. The literature is also clear that physicians with higher measured empathy not only have better patient outcomes and more satisfied patients, but they are happier themselves and report lower levels of burnout.

Studies of group physician practices show there are three elements that predict higher physician satisfaction and lower burnout. These are a personal sense of autonomy, agency, and meaning. Autonomy simply means that one has some influence over what goes on in their day-to-day practice. Agency means that one has influence over what the entire group does. Finding meaning in work is perhaps the most powerful factor in determining empathy and burnout.

The pursuit of meaning flourishes in the setting of empathy. The true practice of empathy requires continuing curiosity, as well as enough time with each patient to unleash that curiosity. As an attempt to widen the audience for this most important basic concept for patients and doctors, I had recently undertaken writing a trilogy of books using medical history as a vehicle.⁵ The physician energy invested in curiosity simply isn't captured by CPT codes or relative value units. Perhaps for this reason, the literature also shows that physician investment in curiosity wanes over time.

A landmark article was written by a general internist almost 25 years ago that highlights this. She says⁶:

When I was a young attending at San Francisco General Hospital, morning rounds usually consisted of briefly going over the 15 to 20 patients admitted to the team the night before and then concentrating on the "interesting" ones. I was righteous and was determined to teach the house staff that there were no uninteresting patients, so I asked the resident to pick the dullest. He chose an old woman admitted out of compassion because she had been evicted from her apartment and had nowhere else to go. She had no real medical history but was simply suffering from the depredations of antiquity and abandonment. I led the protesting group of house staff to her bedside. She was monosyllabic in her responses and gave a history of no substantive content.

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Perspectives

Nothing, it seemed, had ever really happened to her. She had lived a singularly unexciting life as a hotel maid. She could not even (or would not) tell stories of famous people caught in her hotel in awkward situations. I was getting desperate; it did seem that this woman was truly uninteresting. Finally, I asked her how long she had lived in San Francisco. "Years and years," she said Was she here for the earthquake? No, she came after. Where did she come from? Ireland. When did she come? 1912. Had she ever been to a hospital before? Once. How did that happen? Well, she had broken her arm. How had she broken her arm? A trunk fell on it. A trunk? Yes. What kind of trunk? A steamer trunk. How did that happen? The boat lurched. The boat? The boat that was carrying her to America. Why did the boat lurch? It hit the iceberg. Oh! What was the name of the boat? The Titanic. She had been a steerage passenger on the Titanic when it hit the iceberg. She was injured, made it to the lifeboats, and was taken to a clinic on landing, where her broken arm was set. She now was no longer boring and immediately became an object of immense interest to the local newspapers and television stations - and the house staff.

I closed this brief reflection by saying that as we get back to in-person human contact, hopefully soon without masks, my hope for us all is that we can rekindle our curiosity and find meaning in our work.

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ORIGINAL ARTICLE

Volume 10 Issue 3

Exploring Gender Variation in Medical Student Professional Identity Development: A Longitudinal Study Through the Career Eulogy

Perspective

William J. Crump, MD¹, Sarah M. Fisher, MD¹, Ronald Reagan Gilley, MD¹, Whitney T. Gilley, MD², Craig Ziegler, PhD¹

ABSTRACT

BACKGROUND: Empathy towards patients is a key component of a physician's professional identity. In longitudinal studies at their campus, the authors of this study observed that women had higher empathy scores as measured by a standard Likert scale survey; however, the differences were insignificant in most training years.

METHODS: In this larger study, the authors confirmed this finding and used a career eulogy projective exercise to explore gender differences in professional identity formation more deeply than a Likert scale score. The study included 76 medical students from all 4 years of training at a rural, regional medical school campus in the upper Southeast of the United States.

RESULTS: The authors found that women emphasized quality themes more than men after the third year of medical school (M3). Women also mentioned passion themes more after the first year of medical school (post-M1) and had significantly more mentions of compassion themes upon entering medical school. Women consistently mentioned patient relationship themes more across all years of medical school, particularly after the second year (post-M2). Both genders mentioned themes of enjoying life equally, except after the second year, when men mentioned these themes significantly more. Women mentioned community themes significantly less after the first year (post-M1). Family themes were mentioned equally by both genders.

CONCLUSION: Using stereotypes of gender roles in the Southern U.S. as a reference point, the authors suggest some possible interpretations of these findings, noting significant differences from previously published gender differences. The career eulogy exercise proved to be a valuable tool for examining professional identity formation in detail.

KEYWORDS

gender differences; medical student professional identity formation

INTRODUCTION

Professional identity formation in medical students includes adopting the values and behaviors of the medical profession and aspiring to physician characteristics such as empathy, competence, and the provision of high-quality care.¹ Conceptually, students bring their pre-medical school selves into the socialization process of medical school and residency. They ultimately develop who they wish to become and start thinking, acting, and feeling like a physician.¹ Those with different traditional gender identities on entry to the socialization process may react differently to the opportunities for socialization. Culture and family of origin influence this, and there are many differences even within traditional gender identities. Very few professional identity development studies include medical students identifying as nonbinary.²



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A study of 776 medical students in Brazil showed that women had higher scores of measured empathy, altruism, and stress. Men had higher scores of well-being and guality of life. Interestingly, these differences faded significantly across the years in medical school.³ The group that developed the widely used Jefferson Scale of Empathy (JSE) has published several studies showing that women scored significantly higher than men. An older study of their graduates in practice 6 to 10 years out from medical school showed that women valued the psychological, social, and cultural factors addressed during their medical school education and were more satisfied with patient interactions in their practice than men. Men were slightly happier with their decision to become a physician.⁴ There was no assessment done comparing attitudes across the years of training. A 2002 study of 371 M3-year medical students found that JSE scores were higher among women, with higher scores associated with better performance ratings by faculty on clinical rotations but not with MCAT or USMLE Step 1 or 2 examination scores. This study found that empathy scores for both genders decreased over the 4 years of medical school, with the difference being least after the second year and greatest after the third year, with men showing a sharper drop.⁵

Clinical competence is a frequently mentioned aspect of physician identity, and imposter syndrome—feeling undeserving of success or incompetent despite evidence to the contrary—is another facet with reported gender differences. A review of 2300 articles conducted by Thomas and Bigatti showed that between 41% and 52% of women reported this syndrome, and men ranged from 24% to 48%.⁷ This review also showed no clear changes in different years of medical school training. The authors concluded that almost all the studies were cross-sectional and that a longitudinal study with multiple measures of the same individuals was needed.

The review also indicated no clear changes across different years of medical school training. A longitudinal study with multiple measures of the same individuals is needed. Among family medicine residents in Wisconsin, imposter syndrome was reported by 41% of women and 24% of men, with no variation across the 3 years of postgraduate training.⁸ There are no recent studies on the implications of traditional Southern gender stereotypes in professional identity formation, but older studies reveal their persistence.⁹ These stereotypes, often depicted in Southern literature, suggest women are more nurturing and relationship-focused, which may influence their professional identity development.¹⁰

Over the past 7 years, a professional identity curriculum using a "career eulogy" has been developed.¹¹⁻¹³ This instrument allows students to describe their ideal future selves with no prompts on a blank page.¹⁴ Previously published results show that the characteristics mentioned align closely with the widely accepted model of professional identity. Mentions of compassion in the career eulogy correlated with JSE scores, supporting the validity of the career eulogy as a projective instrument. Women were more likely to mention compassion and patient relationships in their eulogies, with no gender difference in mentions of quality of care. The sample size was too small to analyze surveys separately by each year of medical school. The current study uses a larger data set to examine longitudinal gender differences across the 4 years of medical school and expects differences to vary by training year and evidence that persistent gender stereotypes may fade as training progresses.

METHODS

The study population included 76 medical students distributed across all 4 years of training at a rural, regional medical school campus in the U.S. upper Southeast. The mean age was 23.3; 59% identified as female, and none identified as non-binary or transgender. Seventy-eight percent were from rural hometowns, and 97% were in-state students. The Jefferson Scale of Empathy (JSE), a well-validated 20-item Likert scale survey, was used as the standardized empathy measure for comparison.¹⁶⁻¹⁸ Medical students completed a career eulogy (CE) and JSE on paper at 1 sitting in each of their 4 years of training.¹⁹⁻²⁰ For the CE, participants were asked to "imagine that you are ready to retire from medicine in the distant future. In about 50 words, write a short speech outlining what you would like to be said about you at the retirement ceremony." Three experienced medical educators first developed



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cluster phrases to describe each phrase used by individual students in their eulogies during the pilot trials of the CE (Table 1). An iterative discussion resolved disagreements (about 5% of all scoring) until a consensus was reached. The authors of this study previously published a strong positive correlation between mentions of compassion on the CE and the total score on the JSE.11-13 Each student completed each instrument, and the Institutional Review Board (IRB) of Baptist Health Deaconess Madisonville hospital approved the study as exempt.

STATISTICAL ANALYSIS

Frequencies and percentages for male and female students across medical school years were tabulated. Gender comparisons were made on the total JSE score and the CE subscale clusters of quality, passion, compassion, patient relationships, enjoying life, community, and family (Table 1). The analysis did not include clusters with mentions of less than 3%. Compassion was classified as something observable without considering patient response, while patient relationships included patient response. If a phrase fitting a cluster was used more than once, the cumulative number indicated the student's high cluster value. The study population's self-identified gender by year of training was reported and is shown in Table 2. Hometowns with populations less than 30,000 were used as a proxy for rural upbringing, with no gender differences found. Independent-sample t-tests were used for the JSE, and Mann-Whitney U statistics were used for the CE, with statistical significance set at p<.05 using 2-tailed tests. SPSS version 29.0 was used for data analysis.

Terms used by students	Cluster
Seeking excellence; knowledgeable; seeking improvement; the best; quality of	Quality
care; great doctor; contributed to medical knowledge; left a legacy	
Vigor; excitement; love of medicine; impact on care; persistence; never gave	Passion
up; never backed away from a challenge	
Empathy; kind heart; sentimental; understanding; sympathetic; every patient	Compassion
mattered; gave patients hope; truly cared	
Connected with patients; puts patients' needs first; made personal	Patient
connections; personable	relationships
Always happy; my life was a gift; the journey was fun; the joy of practice;	Enjoy life
always had a smile; positive attitude	
Brought better care to my town; legacy in my town; very involved in	Community
community; educated the community	
Taught colleagues; taught community members about their health; hosted	Teacher
medical students	
Genuinely sought to help others; payment not required	Service
Blessed to serve; faith is central; servant of God; displayed faith through care	Calling
Loyal to family; puts energy into relationship with spouse; love of family	Family
Co-worker, colleagues, fellow physicians	Coworker

*Modified from Reference 12.

TABLE 1. Terms Used by Students to Describe Themselves in their Career Eulogies*

	Female		Male		
	Count	(%)	Count	(%)	
Medical school Entry	49	(61%)	31	(39%)	
Post M1	41	(59%)	28	(41%)	
Post M2	35	(59%)	24	(41%)	
Post M3	29	(62%)	18	(38%)	
Post M4	16	(67%)	8	(33%)	

TABLE 2: Gender by School Year



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RESULTS

Because the surveys were done at existing administrative gatherings during the first 3 years of medical school, the response rate of M1-M3 students was very high. There was no such gathering at the end of the M4 year, so the response rate of M4 students was 23/53 (43%). Given this discrepancy, the M4 data were excluded from the conclusions. One student's post-M2 surveys were missed because of an extended student leave, so the overall rate for baseline and post measures across the first 3 years was 211/212 (99.1%) of survey opportunities. Male and female JSE scores did not significantly differ across medical student years (Table 3). Gender comparisons of career eulogy clusters (Table 4) showed women included quality themes more than men only after the M3 year (females: mean 1.67; males: mean 1.25, p=.040). Women also included passion themes more than men at post-M1 (females: mean 2.09; males: mean 1.54, p=.022). Women had significantly more mentions of compassion themes at medical school entry (females: 1.77; males: 1.09, p=.013). However, across the medical school years, the gender differences began to decrease, with men's compassion increasing while women's compassion

		Female	Male	
		Mean (SD)	Mean (SD)	P-Value
JSE	Medical school Entry	119.20 (9.01) N=44	115.78 (12.21) N=26	0.184
	Post M1	120.36 (8.59) N=36	118.00 (9.11) N=22	0.325
	Post M2	122.32 (9.20) N=28	121.91 (6.05) N=19	0.855
	Post M3	119.52 (10.74) N=23	119.14 (10.34) N=14	0.917
	Post M4	116.40 (11.96) N=15	121.75 (8.84) N=8	0.280

TABLE 3: Jefferson Scale of Empathy by Gender

		Female	Male	
Career Eulogy		Mean (SD)	Mean (SD)	P-Value
Quality	Medical school Entry	1.72 (0.77)	1.71 (0.90)	0.816
		N=32	N=21	
	Post M1	1.53 (0.67)	1.62 (0.77)	0.704
		N=32	N=24	
	Post M2	1.65 (0.69)	1.65 (0.79)	0.895
		N=26	N=17	
	Post M3	1.67 (0.64)	1.25 (0.45)	0.040
		N=24	N=16	
	Post M4	1.36 (0.67)	2.17 (1.17)	0.093
		N=11	N=6	
Passion	Medical school Entry	1.82 (0.90)	1 38 (0 62)	0 114
	inconcur ceneer 2na y	N=28	N=16	
	Post M1	2.09 (0.93)	1.54 (0.78)	0.022
		N=32	N=24	
	Post M2	2.19 (1.60)	1.64 (1.06)	0.066
		N=26	N=15	1
	Post M3	1.86 (0.99)	1.60 (0.84)	0.502
		N=22	N=10	

TABLE 4: Career Eulogy Clusters by Gender, continued on next page



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		Female	Male	
Career Eulogy		Mean (SD)	Mean (SD)	P-Value
	Post M4	1.80 (1.03)	1.67 (0.58)	1.000
		N=10	N=3	
Composition	Madical school Entry	1 77 (1 07)	1.10 (0.54)	0.012
Compassion	Medical school Entry	N=30	N=16	0.015
	Post M1	1.75 (0.91)	1.31 (0.48)	0.174
		N=20	N=13	
	Post M2	1.50 (0.82)	1.50 (0.71)	0.894
	D	N=16	N=10	0.410
	Post MD	1.01 (0.70) N-19	1./0(1.5/) N=10	0.410
	Post M4	1.27 (0.65)	1.20 (0.45)	1.000
		N=11	N=5	
Patient Relationships	Medical school Entry	1.80 (1.03)	1.47 (0.92)	0.231
	Dent M1	N=30	N=15	0.004
	Post WII	N=29	N=11	0.094
	Post M2	2.53 (1.31)	1.38 (0.65)	0.010
		N=19	N=13	
	Post M3	1.61 (0.78)	1.00 (0.00)	0.064
	2.24	N=18	N=7	1 000
	Post M4	1.33 (0.52)	1.25 (0.50)	1.000
		IN=0	N=4	
Enjoy Life	Medical school Entry	1.09 (0.30)	1.09 (0.30)	1.000
	ă	N=11	N=11	
	Post M1	1.36 (0.92)	1.20 (0.45)	1.000
	D . 10	N=11	N=5	0.020
	Post IVI2	1.11 (0.55) N=0	1.85 (0.75) N=6	0.058
	Post M3	1.25 (0.50)	1.33 (0.58)	1.000
		N=4	N=3	
	Post M4	1.0 (-)	1.50 (0.71)	1.000
		N=1	N=2	
Community	Medical school Entry	1 23 (0 44)	1 33 (0 50)	0.655
community	incurcui schoor Endy	N=13	N=9	0.055
	Post M1	1.0 (0.00)	1.27 (0.47)	0.041
		N=19	N=11	
	Post M2	1.42 (0.51)	1.40 (0.55)	1.000
	Post M3	1 21 (0 43)	1 17 (0 41)	1 000
	1000000	N=14	N=6	1.000
		Female	Male	
Career Eulogy		Mean (SD)	Mean (SD)	P-Value
	Post M4	1.33 (0.52)	1.00 (0.00)	0.500
·	2	N=6	N=3	
Family	Medical school Entry	1.0 (0.00)	1.0 (0.00)	1.000
railiny	Medical school Entry	N=6	N=8	1.000
-	Post M1	1.36 (0.50)	1.38 (0.74)	1.000
		N=11	N=8	
	Post M2	1.14 (0.38)	1.50 (0.55)	0.266
	D (1)(2)	N=7	N=6	1 000
	Post IVI5	1.11 (0.55) N=0	1.14 (0.58) N=7	1.000
	Post M4	1.50 (0.84)	1.0 (0.00)	0.500
		N=6	N=3	

TABLE 4: Career Eulogy Clusters by Gender



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showed little change. Women mentioned patient relationship themes more than men across all medical school years, but the difference was significant only at post-M2 (females: mean 2.53; males: mean 1.38, p=.010). Across medical school years, both genders mentioned enjoying life themes equally, except for the post-M2 year, where men recorded this significantly more (females: mean 1.11; males: mean 1.83, p=.038). Women mentioned community significantly less only at post-M1 (females: mean 1.00; males: mean 1.27, p=.041). Both genders mentioned family themes equally.

DISCUSSION

The results of this study confirmed what had been found previously in a smaller group of students regarding empathy and professional identity formation: women's JSE scores were higher overall but not significantly so in most training years.13 In a previous study conducted by Hojat et al., this difference was significant only in post-M2 measures.⁶ As in previous studies,³ men's empathy scores were lower on entry to medical school, and the difference faded significantly across training years. However, unlike one study, there was no significant decrease in men's empathy measures after the M3 year, and no gender difference was found after the M3 year. This discrepancy could be due to differences in the schools' student populations or M3 training environments. Further studies in other schools and environments are needed to clarify these differences.

The career eulogy results provide a more detailed view of professional identity formation than previously published measures, which are all closedended Likert scales. The findings indicate that identity formation is fluid and changes across the 4 years of medical school. With 4 usable survey sessions for each student and 7 CE clusters, one would expect 1.4 session clusters (28 x .05 chance probability) to be significant by chance alone, yet 6 session clusters were found to be significantly different.

Because almost all students were from small towns in the Southern United States, traditional gender roles were expected to influence the results. As predicted, women mentioned compassion more frequently, but only at medical school entry. Women mentioned patient relationships more frequently after the M2 year, with nearly significant differences after the M1 and M3 years. The predicted preference for family mentions among women was not observed at any session. The significantly higher mentions of quality among women after the M3 year and passion after the M1 year were unexpected. Likewise, the findings that men mentioned enjoying life after the M2 year and community after the M1 year were not predicted.

Understanding differences in professional identity formation by the level of training is complex. The typical U.S. medical student begins at 22-23 years old and finishes at 27-28. Developmentally, more students would consider forming families, getting married, and other life-stage changes as training proceeds. A potentially unique variable at the urban campus where the students spend their first 2 years is gender role modeling, where 95% of course directors and 80% of faculty are women. Persistent female characteristics in modern faculty culture could create a differential effect; the increased frequency of quality mentions in women found only after the M3 year might reflect the impostor syndrome issue found in previous studies, indicating women might feel a greater need to appear confident and competent to validate that they belong. One of this study's female authors (SMF), drawing on her previous personal experience as a student at this campus, speculated that Southern small-town cultural stereotypes do not allow men to express passion in work, and women are more open to this, ignited by the M1 year. Another potentially unique aspect of the M1/M2 years is the longitudinal standardized patient (SP) experience, where a student becomes very close to an individual SP over time. This, combined with a traditional feminine nurturing tendency, might explain why the post-M2 CEs show more patient relationship mentions in women.

Conversely, almost all elected and appointed community leaders in the host city of the urban campus where these students spend their first 2 years of medical school are men. These leaders regularly participate in interactive panels discussing current community issues with students across the first 2 years. This could explain the fewer mentions of community among female students after the M1



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year. Interestingly, both of this study's female authors (SMF and WG), drawing on their previous personal experience as students at this campus, proposed that the fewer enjoy life mentions among women after the M2 year could be because they had heard stories from upper-level medical students and residents in the urban environment, where women physicians potentially have more to worry about when balancing traditional domestic expectations with their clinical responsibilities.

LIMITATIONS AND STRENGTHS

The students included in this study were uniquely selected by the campus admission process for interest in rural practice, so the findings should only be generalized to similar populations. A strength of this study is the very high response rate; however, the response rate among the post-M4 students is too low to make any conclusions. Despite the small group size at the other 4 survey times, the differences found reached significance. Slightly larger group size may have brought the trends of the passion cluster post-M2 and the patient relationship theme in post-M1 and post-M3 to significance. The latter is potentially very important, as this would reveal that after all 3 years of medical school for which there is enough data, women showed a consistently greater interest in this aspect of doctoring.

Future research should include similar studies in other populations using career eulogy as a measure of professional identity development. The instrument and coding clusters are available to those interested.

CONCLUSION

In this population of rural campus medical students, the authors found no longitudinal differences by gender in a standard measure of empathy that uses a Likert scale survey. The projective career eulogy was found to be an easily accepted and useful tool to provide a deeper look into professional identity formation, where longitudinal gender differences were found in some aspects of professional identity development. Some of these mirrored traditional "female nurturing" stereotypes, and some clearly did not, which differs from previous publications on this issue. The role of gender in professional identity formation is much more complex than the simple differences reported in studies done almost a generation ago.

INFORMED CONSENT

The Institutional Review Board (IRB) of Baptist Health Deaconess Madisonville hospital approved the study as exempt. Verbal consent was obtained from participants at the start of each session.

CONFLICTS OF INTEREST

The authors declare there are no conflicts of interest.

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Maternal and Child Health Journal https://doi.org/10.1007/s10995-023-03600-z

FROM THE FIELD



Group Prenatal Care vs. Traditional Prenatal Care: A Parity-Matched Comparison of Perinatal Outcomes in a Rural Community

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Accepted: 18 January 2023

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Abstract

Purpose Prenatal care is important for positive outcomes for both mother and infant. The traditional one-on-one method remains the most common. This study aimed to compare perinatal outcomes of patients attending group prenatal care with traditional prenatal care. Most previously published comparisons did not match for parity, a key predictor of perinatal outcome. **Description** We collected perinatal outcome data for 137group prenatal care patients and 137 traditional prenatal care patients, matched for contemporaneous delivery and parity, who delivered at our smallrural hospital during 2015–2016. We included key public health variables, including the initiation of breastfeeding, and smoking at the time of delivery.

Assessment There was no difference between the two groups for maternal age or infant ethnicity, induced or augmented labor, preterm deliveries, APGAR scores less than 7, low birth weight, NICU admissions, or cesarean deliveries. Group care patients had more prenatal visits and were more likely to initiate breastfeeding and were less likely to report smoking at the time of delivery.

Conclusion In our rural population matched for contemporaneous delivery and parity, we found no difference in traditional perinatal outcome measures and that group care was positively associated with the key public health variables of not smoking and initiating breastfeeding. If future studies in other populations have similar findings, it may be wise to provide group care more widely to rural populations.

Significance

We provide a comprehensive table comparing previous studies of group care with a focus on differences in the populationsstudied. Ours is the first to provide perinatal outcomes from a rural population in the US and only the second to match for parity, a keypredictor. Our groups were smaller than previous reports, but our completematching on parity and contemporaneous delivery of the control group are strengths. We found no difference intraditional perinatal outcome, but group care patients reported higher rates of breastfeeding and not smoking, a difference only found in two previous urban-based reports.

Keywords Traditional prenatal care · Group prenatal care · Rural health care · Perinatal outcomes

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Published online: 02 March 2023

Introduction

The routine of medical care during pregnancy is continuously evolving. During prenatal care, healthcare providers complete fetal imaging, maternal health screenings, nutritional counseling, and preventative care. It is the obstetric provider's primary goal to minimize the potential risk of complications to both the mother and fetus. In 1989, a landmark publication recommended that prenatal care focus on health promotion, risk screening, and psychosocial and medical interventions using standardized documentation (Gennaro, 2016). Modern prenatal care typically involves monitoring pregnant people for possible risk of complications, early

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diagnosis of any potentially adverse conditions, and counseling on diet, drug usage, and smoking cessation (Alexander, 1995). These essential interventions target some of the most common and avoidable risk factors of maternal-fetal morbidity and mortality.

Prenatal care has taken different forms during its evolution. One style is a traditional one-on-one approach with a healthcare provider facilitating direct care in a clinical setting. Another form, rising in popularity in the early twentyfirst century, is group prenatal care. This method places pregnant people whose pregnancies are at similar gestational ages into small groups and offers sessions focused on the infant, the pregnant person's body, childbirth, and parenting. The sessions include individual time to meet with their provider and for individuals to join the group to share concerns and learn from other members when appropriate. The goal of these sessions is to bridge what the medical professionals could provide during a brief office visit and an opportunity to discuss other issues that could not be addressed during a brief office visit. (Rising, 1998).

Many studies have reported the different methods that providers choose to facilitate prenatal care. Reports have produced conflicting results as shown in Table 1 (Benediktsson, 2013, Carter, 2016a, Cunningham, 2018, Ickovics, 2003, Ickovics, 2007, Ickovics 2016, Kennedy, 2011, Picklesimer, 2012, Zorilla, 2017). A recent meta-analysis of 14 articles found that patients participating in group prenatal care do not have lower preterm birth rates, NICU admission, or breastfeeding initiation (Carter, 2016b). Individual research studies have shown that group prenatal care provides significant improvements in preterm birth weights and increased breastfeeding (Ickovics, 2007, Zorilla, 2017). Of the nine studies comparable to ours in Table 1, only one controlled for parity, a very powerful confounder in measuring obstetric outcomes. One study controlled for the number of individual visits over a 9-year period and showed that group prenatal care had significantly fewer preterm births and low birth weight. Five or more visits related to group care provided even greater benefits in these outcomes (Cunningham, 2018). Many studies focus on measurable infant outcomes, while others have reported results of mothers' health or benefit, specifically the mothers' overall satisfaction with their prenatal care and sense of well-being (Chae, 2017). Some have detailed descriptions of the study population and the environment of care, but many do not. Many of these studies do not control for possible confounding factors, including parity or population differences such as rurality. In 2018 The American College of Obstetricians and Gynecologists Committee on obstetric practice concluded that there was no evidence that group prenatal care causes harm. This group suggested larger, randomized trials including a focus on subpopulations that might benefit from different models of prenatal care (ACOG, 2018).

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Our study was designed to address the subpopulation issue. We compared mothers' and infants' outcomes who received traditional prenatal care to those who received group prenatal care in a rural population while controlling for parity.

Variables of breastfeeding and smoking at the time of delivery were also included in our study. Breastfeeding has many health advantages for infants as well as benefiting a child's development throughout their life and into adulthood. Some of these benefits include gastrointestinal function, weight and blood pressure maintenance, overall immunity, and fewer episodes of acute otitis media (Cunningham, 2018).

The use of tobacco during pregnancy is the primary cause of many preventable adverse outcomes for an infant. Smoking increases the risk of stillbirth by 50% (summary RR 1.46, 95% CI 1.38–1.54) and increases the overall risk of infant death by 20% (summary RR 1.22, 95% CI 1.14–1.30) in a meta-analysis with 142 studies (Pineles, 2016). Smoking can also be an important risk factor for infants born small for gestational age and with low birth weight, with 20% of these births attributed to tobacco use. Smoking can affect a child's health not only as an infant but also into adulthood, leading to adverse effects such as type 2 diabetes, asthma, brain development abnormalities, hypertension, hyperactivity disorder, and a significantly increased risk of psychiatric disorders (NCCDPHP, 2012).

Methods

We used a case-control method comparing the outcomes of the infants and mothers who participated in group prenatal care to outcomes of patients receiving traditional prenatal care. The individual patient selected their method of care. For the context of our study, we defined traditional prenatal care as seeing a provider individually. We defined group prenatal care as attending monthly group meetings as part of the prenatal care program. The groups had 8–10 pregnant people who were often accompanied by their partners. They received nutritional counseling, education, and a health check-up from a provider while having time for open discussion with other pregnant people. The participants were grouped by gestational age regardless of parity to foster more diversity and encourage greater mentorship and knowledge exchange.

Researchers collected data for 137 group prenatal care patients from 2015 to 2016 from the manual delivery book completed by the labor and delivery clerk. This staff person had an 8 h precepted orientation and then directed any questions before making book entries to the nursing clinical leader on site. Prenatal records were batched and hand-carried by prenatal clinic staff to the clerk prior to

1	1		5					1
	C-section		GC less tha TC p < 0.01					
	Small for GA < 10th percentile						GC better than TC p=0.04	
	Admit		GC better than TC RR 0.22 95% CI 0.07 to 0.72			No differ- ence	No differ- ence	No differ- ence
	Low Birth wt.		GC better than TC p < 0.01	GC better than TC RR 0.62 95% CI 0.47-0.81	No differ- ence	No differ- ence	No differ- ence	No differ- ence
	APGAR 5 min		GC better than TC p=0.01					no differ- ence
	APGAR 1 min							
	Preterm		GC more than TC p=0.055	GC better than TC RR 0.63 95% CI 0.49-0.81		GC better than TC $P = 0.045$	No differ- ence	
	Smoking	GC less than TC p=0.01						
	Breast- feeding	No differ- ence				GC ^a better than TC ^a p<0.001	No differ- ence	
	Controlled for Parity +/-	ž	No	No	Yes	No	No	No
	Study Type	Pro-Cohort	Retro- Cohort	Matched cohort	Matched cohort	RCT	Cluster RCT	Retro- Cohort
	Population	N=724 middle class SES mostly Cauca- sian	N=7256	N=6439	N = 458 predomi- nately black and His- panic low income	N = 1047 young, African Ameri- can low income	N=1148	N=335
	Setting	Calgary, Alberta 2008–2011	St. Louis, MO 2004–2008	Nashville and Detroit 2009-June 2016	New Haven, CT and Atlanta, GA Sept. 2001– 2002	New Haven, CT and Atlanta, GA 2001–2004	New York City, NY 2008–2012	Base Lewis- Mchord Lake- wood, WA 2005-2007
	Author, Date	Benedik- tsson (2013)	Carter (2016a)	Cunning- ham (2018)	(2003)	(2007)	Ickovics (2016)	Kennedy (2011)

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the introduction of a shared electronic health record. We selected as controls 137 traditional prenatal care patients of the same parity listed immediately above the study patients in the same manual delivery book completed by the labor and delivery clerk. At any one time during the study period, the facility had 2 certified midwives, 3 OB/ Gyns, and 2 family physicians delivering infants. Our outpatient prenatal facility included level 2 U/S capabilities and telemedicine consultation with maternal fetal medicine specialists with an average of 12 consults per month, approximately 1/3 of which were unforeseen/emergent. We had 6 labor/delivery rooms and 2 operating rooms for C/S in the same wing. Our NICU is a level 2 that required transfer to a level 3 for any infant with complex congenital abnormalities or gestational age less than 28 weeks. We had 9 licensed NICU beds staffed by 1 neonatologist and a neonatal nurse practitioner. During the period reported here, we had a total of 1591 deliveries. An average of less than one antenatal patient per month required transfer to maternal fetal medicine care at a university hospital 110 miles away after hospital admission at our facility.

We used a chi-square test to compare the group prenatal care patient group to the traditional prenatal care patient group for each of the outcomes. The study was reviewed by the delivery facility Institutional Review Board and designated as exempt.

The study population was residents of small towns, each living within 30 min of the rural delivery hospital. The data collected included parity, number of prenatal visits, gestational age at delivery, induction, augmentation, type of birth (vaginal, cesarean, VBAC, assisted vaginal), method of anesthesia, APGAR scores, birth weight, breastfeeding initiation (self-reported), NICU admission, mother's smoking status at delivery (as reported by the mother), the race and ethnicity of the infant assigned by the mother, and age of the mother at the time of delivery as seen in Tables 2, 3 and 4.

Results

The group prenatal care patients had significantly more prenatal visits and were more likely to report breastfeeding and less likely to report smoking. There was no significant difference for preterm deliveries, infants born with APGAR scores less than 7, infants born with low birth weight, total infant NICU admissions, gestational age at delivery, induction, augmentation, type of birth (vaginal, cesarean, VBAC, assisted vaginal) or method of anesthesia (see Tables 2, 3 and 4).

Table 1 (co	ntinued)				New Sector								
Author, Date	Setting	Population	Study Type	Controlled for Parity +/-	Breast- feeding	Smoking	Preterm	APGAR 1 min	APGAR 5 min	Low Birth wt.	NICU ^a Admit	Small for GA < 10th percentile	C-s
Picklesimer (2012)	Greenville, SC 2009-2010	N = 4083 low- income Med- icaid	Retro- Cohort	No		No differ- ence	GC better than TC P=0.01						
Zorilla (2017)	Puerto Rico Aug. 2013- Dec. 2015	N = 1726 low income	Retro- Cohort	No			GC better than TC p=0.0	GC better than TC p=0.0	GC better than TC $p=0.0$	GC better than TC p=0.002			
RCT randor	nized controlle	id trial. GC an	oup care. TC t	raditional care	e. NICU Neo	natal intensive	care unit adm	ission					

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Table 2 Study population

Group N=137 Traditional N=135 p Maternal age (years) <18 9 (7%) 4 (3%) 18-35 129 (94%) 125 (91%) 0.345 >35 4 (3%) 3 (2%) Total prenatal visits Mean (SD) 14.6 (2.91) 12.86 (3.24) < 0.001 Reported smoking^a 26 (19%) 43 (31%) 0.024 95 (69%) 0.018 Breast feeding^a 111 (81%)

^aDuring the delivery admission

Table 3 Labor and delivery variables

	Group $N = 137$	Traditional $N = 137$	Р
Induced labor	51 (37%)	44 (32%)	0.370
Augmented labor	21 (15%)	23 (17%)	0.735
Primary C-section	41 (30%)	35 (25%)	0.395
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Table 4 Infant variables

	Group N = 137	Traditional N=137	р
Male infant	72 (53%)	72 (54%)	0.846
Female infant	65 (47%)	62 (46%)	
Infant race			
White	124 (91%)	132 (96%)	0.051
Black	7 (6%)	3 (3%)	
White black	3 (2%)	0 (0%)	
White Asian	0 (0%)	1 (1%)	
Asian	1 (1%)	0 (0%)	
White Hispanic	2 (2%)	0 (0%)	
Hispanic	0 (0%0	1 (1%)	
APGAR score <7 at 1 min	19 (14%)	12 (9%)	0.146
APGAR score <7 at 5 min	5 (4%)	5 (4%)	1.000
Gestation < 37 weeks	13 (9%)	8 (6%)	0.279
Low birth weight < 6.0 lbs.	11 (8%)	14 (10%)	0.532
Admitted to NICU	24 (18%)	21 (16%)	0.638

Discussion

Group prenatal care is generally accepted as innovative and effective (ACOG, 2018). Some studies have shown suggestions of some positive outcomes for mother and infant when compared to individual prenatal care (See Table 1). ACOG has recommended that more research on both models is needed to examine the benefit of each, allowing providers to make informed decisions when offering prenatal care methods (ACOG, 2018).

We did not find a previously published study that included a rural population that received group prenatal care matched for parity. We did not see in our small population any difference in traditional outcome measures for mother or infant. However, even in our small groups, we found that the group prenatal care mothers were significantly more likely to initiate breastfeeding and more likely to have reported that they did not smoke at the time of delivery. Only three of the reports summarized in Table 1 included breastfeeding as a measure, and only one showed a difference. Only two of these reports included smoking as an outcome, and only one showed a difference.

Our findings support that group prenatal care may optimize these two very significant risk factors. In our study, an increased likelihood of initiating breastfeeding and decreased reported smoking in the group prenatal care mothers suggests that group prenatal care could benefit mothers

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and infants and is a valuable option for prenatal care to minimize these risks and promote public health.

Limitations and Strengths

Our study's primary limitation was a potential selection bias. First time mothers might be more likely to choose group prenatal care, so our study controlled for parity. There may also be differences in choice across socioeconomic status (SES) or self-identified racial or ethnic background. We did not have a measure of SES nor a way to know the racial or ethnic identification of the mothers. There was no significant difference among race and ethnicity as identified by the mothers in their infants, but our population had very little diversity. Patients who chose group prenatal care may have been intrinsically more likely to breastfeed and not smoke. Randomization would be useful, but this is difficult in rural populations, and in fact, most previous urban studies also lacked randomization for practical reasons. Our data also depended on the attention to detail of the labor and delivery clerk in our hospital, and the patients may have given what some might consider socially desirable answers to smoking and breast-feeding questions. As a cross sectional study, we were not able to discern between prenatal smoking cessation or if the group prenatal care mothers had a higher percentage of those who never smoked during pregnancy.

We did not measure some other reported benefits of group prenatal care, including patient satisfaction, increased selfesteem, better knowledge, and better preparation for labor and delivery (ACOG, 2018). It is possible that these benefits might be greater in rural populations, and future studies including these measures would be valuable. Our small group size may have led to a type 2 error, and larger group sizes may have shown some differences in traditional outcome measures. Our study's strengths are using closely timed concurrent controls matched by parity and that we studied a rural population not included in previous reports.

Conclusion

Well-designed studies in different populations are still needed to inform the evolution of routine prenatal care. If others can confirm our findings that group prenatal care has positive effects on maternal smoking and breastfeeding, it would seem wise to provide this option more widely, including in rural populations.

Acknowledgements The authors would like to thank Nita Nair, a summer research assistant, for her attention to detail in data entry and Steve Fricker for assistance with data management and analysis. The authors declare there were no outside funds supporting this study.

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Author Contributions Allauthors involved in all stages of the study and manuscript preparation.

Funding None.

Data Availability The data that support the findings of this study are available from the corresponding author, WJC, upon reasonable request.

Code Availability Not applicable.

Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval TheInstitutional Review Board for Baptist Health Madisonville determined thisstudy was exempt.

Consentto Participate Notapplicable.

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Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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Barriers and Strategies to Implementing research in rural health

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Abstract

Background

Kentucky, much like the majority of the United States, is a rural state with many pockets of limited access to healthcare. This disparity in access to care also contributes to lack of clinical research in rural populations. Because results from research involving urban populations cannot always be generalized to rural populations, rural clinicians must question the applicability to their patients Some rural clinicians may be interested in implementing research protocols but would require support to be successful.

Objective

The purpose of this study is to conduct a literature review to determine barriers, limitations, and strategies of implementing research in rural communities.

Methods

PubMed was used to conduct an extensive literature review. Search terms included rural, research, implementation, limitations, and strategies. Articles were included based on relevance to implementation of research in rural areas. Analysis was conducted to identify and explore common themes relating to barriers and strategies for implementing research in rural health.

Results

Several themes were identified based on literature review. Overarching themes in barriers to implementing health research in rural areas include lack of appropriate research training of rural health professionals, professional isolation and lack of research support, inadequate funding, and mistrust of research among rural populations. Many strategies were identified to address these barriers. Common strategies included the creation and adoption of robust rural research training programs for rural health professionals and ancillary staff, mentorships between rural health clinicians and community agency staff with their nearest academic center, and recruiting community support for research projects. Although rural clinicians face many challenges in implementing research, this review shows that a few proven strategies have been published to address these barriers to implementation of research in rural populations. The key characteristic of successful projects is substantive inclusion of the target population in every stage of planning, implementation, and evaluation and the willingness of project staff to modify protocols to meet local needs.

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Class of 2022 with Dr. Bill Crump at Deans Hour engrossed in real time evidence search



Trover Campus

TROVER CAMPUS ADMINISTRATIVE STAFF

Dr. William Crump is Associate Dean of the Trover Campus and Professor of Family and Community Medicine at U of L. A graduate of Vanderbilt Medical School, he completed residency at the University of Alabama in Birmingham and a Faculty Development Fellowship at the University of North Carolina at Chapel Hill. He was a faculty member at the regional campus at Huntsville, Alabama for almost 10 years and Assistant Dean and Director of Rural Programs at the University of Texas Medical Branch in Galveston for almost 6 years prior to his move to Madisonville in 1998. Concerning his activities in Madisonville, Dr. Crump says: "I feel that I've been preparing for this job my entire professional life. It's a challenge I truly enjoy. As I look back on the last 24 years here, it's remarkable how much fun it's been. I am proud of our graduates and working with them has made me a better doctor and teacher."





Mrs. Kendall Denny is the Clinical Student Coordinator for the Trover Campus. She manages all day-to-day aspects for the High School Rural Scholars, College Rural Scholars, Prematriculation, Preclinical programs, our admissions process and our student-led free clinic. She says, "I am so blessed to have been able to come full circle with the U of L Trover Campus. As a former High School Rural Scholar myself, having the privilege of managing the program just puts a smile on my face! I absolutely love that I get to play such an integral part in the beginning of each student's journey to medical school!"

Nick Duncan is the Pathways Coordinator for the Trover Campus. He manages all day-to-day aspects for the High School Rural Scholars, College Rural Scholars, Prematriculation, Preclinical programs, our admissions process and our research files. He says "getting to be a part of the Trover Campus team and having a hand in our students' journeys to medical school is very rewarding."



Baptist Health Deaconess Madisonville - West Kentucky AHEC

Dr. Christy Adkins, serves as the Director of the West Kentucky AHEC. Christy's educational background includes a doctorate degree in P20 & Community Leadership from Murray State University, a Master of Science degree in Organizational Communication for Murray State University, along with an additional Master of Science Degree in Deaf Education from the Washington University in St. Louis, School of Medicine. Christy worked for Trover Foundation in the Education Department, and in the Clinic Division as a Medical Staff Services Coordinator. Prior to returning to the area, Christy worked for Lake Sumter State College as the Director of Career Development Services, in Clermont Florida. When asked to reflect on the work of the West Kentucky AHEC, Christy stated that, "the center is in a unique position to change the health status in Western Kentucky by providing clinical rotations and robust, health related career awareness



opportunities to students in our region. It is our hope that in doing so, we will grow an allied health professions workforce to support rural health in our communities."

CHIEFS OF TEACHING SERVICES



Family Medicine – Dr. Kristin Wickham acts as the Teaching Chief of Family Medicine at the Trover Campus. Dr. Wickham earned her M.D. degree from the University of Louisville with the clinical years at the Trover Campus. She completed her residency at Deaconess Family Medicine Residency in Evansville, IN. Since completing her residency in 2019, she has been practicing Family Medicine in her hometown at Baptist Health Deaconess Madisonville. Concerning her teaching role, Dr. Wickham says: "In addition to learning about complex medical diagnoses, students on the family medicine rotation have a unique opportunity to spend time getting to know patients and the socioeconomic factor that so often impact their health. Working individually with the students during a small snapshot of their career is very rewarding, and one of the best parts of my job."

Internal Medicine - Dr. B.N. Sreekumar is the Teaching Chief of Internal Medicine at the Trover Campus. Dr. Sree earned his M.D. degree from Madras Medical College College in India and completed a residency program in Internal Medicine at Michael Reese Medical Center, University of Illinois, Chicago and a Cardiovascular Medicine fellowship at the University of Missouri, Columbia. Dr. Sree has been in practice since 1995, in Madisonville since 1997, and on the ULTC faculty since 2001. His busy cardiology rotation is a favorite of ULTC students. Dr. Sree says of his teaching at the Trover Campus:"The Trover campus provides a unique opportunity for our motivated students to learn high quality medicine and insights into complex decision making in a friendly environment. Teaching stimulates me to keep up to date and sharing knowledge enhances the joy of clinical practice."





<u>Neurology - Dr. Nahgma Mufti</u> is the Teaching Chief of Neurology at the Trover Campus. Dr. Mufti obtained her undergraduate and medical degrees from the Khyber Medical College in Peshaswar, Pakistan and completed Residency Programs at the Veterans Affairs Medical Center in Wilkes Barre, Pennsylvania and North Shore University Hospital, New York, where she also completed a Neurology Fellowship. Dr. Mufti has been with the Madisonville campus since 2002. In regard to her teaching role, Dr. Mufti says: "I really enjoy working with the students. When I work with them and teach them, it gives me the stimulus to learn new things.

OB/GYN – Dr. Sarah Fisher is the Teaching Chief of OB/GYN at the Trover Campus. She earned her M.D. degree at the University of Louisville with the clinical years at the Trover Campus. She completed her residency at Geisinger in Danville, PA. Since graduating residency in 2019, she has been practicing in her hometown of Madisonville here at Baptist Health Deaconess Madisonville. With regards to teaching, Dr. Fisher says "Teaching medical students is one of the best parts of my job. Students keep us energized and constantly moving forward to strive for better care that is evidence-based. On the OB/GYN rotation, students can expect to see a diversity of patients in clinic and be involved with surgeries and deliveries."





Pediatrics - Dr. Carey Dodds is the Teaching Chief of Pediatrics at the Trover Campus. Dr. Dodds grew up in Madisonville, earned her M.D. degree from the University of Louisville and completed her residency there as well. She served as a hospitalist at Kosair Children's Hospital and Attending Physician at the Children and Youth Project in Louisville from 2000-2004. In 2004 she moved back to her hometown and became a key part of the ULTC teaching team. Students regularly report that her teaching made a difference for them, both in learning and specialty choice. She took the Chief position in 2011. Describing her teaching activities, Dr. Dodds says "Working with the students keeps you at the top of your game. You must stay up to date on the latest recommendations and be able to provide explanations to the students about your medical decisions."

Psychiatry - Dr. Shabeer Abubucker is the Teaching Chief of Psychiatry at the Trover Campus. He earned his M.D. degree from Medical College of Georgia and completed a residency program in Psychiatry at the Medical College of Georgia. Dr. Abubucker has been in practice since 2007, and in Madisonville and on the ULTC faculty since 2016. His busy Psychiatry rotation is a favorite of ULTC students. Dr. Abubucker says of his teaching at the Trover Campus: "People and their lives are fascinating. The diversity of the human experience is humbling. The Psych rotation gives students an opportunity to be introduced to the diversity of the human experience and to appreciate pain and suffering as well as compassion and healing."





Surgery - Dr. Mohan Rao is the Teaching Chief of Surgery at the Trover Campus. Dr. Rao earned his M.D. degree from the Ohio State University College of Medicine in 1980 and completed his surgery internship and residency at the University of Louisville. He also completed a fellowship in burns and critical care at Cornell University in New York City. Dr. Rao has practiced in Madisonville since 1986 and has been actively involved in surgery education for more than 30 years. He has received numerous teaching awards from the students and residents at the University of Louisville and is a member of the Alpha Omega Alpha society at both Ohio State and the University of Louisville. When discussing the Trover Campus, Dr. Rao says: "The educational program of Trover is a vitally important component of the surgical practice here in Madisonville. Our continued association with enthusiastic and motivated students from the University of

Louisville is a privilege and a constant source of our own ongoing education."

ACKNOWLEDGEMENT

Once again we want to recognize the partners in the building of the Trover Campus: Baptist Health Deaconess Madisonville, the University of Louisville School of Medicine and the West Kentucky AHEC (Area Health Education Center). Each program reviewed in this report is truly a collaborative effort, and all partners deserve credit for the outcomes. A special note of thanks goes to Dr. David Wiegman, former Senior Executive Dean at U of L. Without his and the current ULSOM leadership' untiring efforts on the Louisville campus, the dream of Dr. Loman Trover and others in Madisonville would not have been realized. Likewise, without the strong advocacy provided by many elected officials, the Trover Campus would not exist in its current form. Many dedicated individuals participated in the preparation of this report. Pam Carter produced the excellent graphic summaries and brought it all together in a most readable form.

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U of L Trover Campus students in action


































