The Rural Rotation in a Medical Technology Program: A Ten-year Retrospective Study

BEVERLY A KIRBY

OBJECTIVE: This study evaluated the effectiveness of a rural rotation as a tool to recruit medical technology program graduates to medically underserved areas.

DESIGN: A paper survey was distributed to all 1994 – 2003 graduates of the West Virginia University Medical Technology Program.

SETTING: The survey was mailed to the graduates' homes.

PATIENTS OR OTHER PARTICIPANTS: Ninety-four of the two hundred six surveys were returned for a response rate of 45.6%.

INTERVENTIONS: Surveys were mailed in January 2004.

MAIN OUTCOME MEASURES: Responses to questions regarding choice of site for rural rotation, whether or not a job was offered at the rural site, and whether the graduate subsequently worked at a rural site were tabulated. Responses to questions concerning whether the rotation helped the respondent to appreciate the needs of rural health facilities and whether the rotation resulted in a greater interest in working in a rural area were tabulated. Responses were also tabulated for questions about the value of the rural rotation to the respondent's education and whether the rural rotation was recommended for future students.

RESULTS: Of respondents, 70.2% chose their rural rotation sites due to proximity to their homes and 38.3% were offered jobs at their rural rotation sites. 50% of all respondents subsequently worked at a rural site. Of respondents, 73.4% indicated strong agreement that the rotation helped them appreciate the needs of the rural facility, and 37.2% indicated agreement with becoming more interested in working at a rural site. Of respondents, 65% indicated that the rural rotation was beneficial and that they would recommend it to future students.

CONCLUSION: Results of the survey suggest that a prior rural affinity is a factor associated with selection of rural sites for medical technology program graduates. The survey results also suggest that a rural rotation during medical technology education is beneficial to individuals, including those who elect not to go to rural sites after graduation.

ABBREVIATIONS: Health professions shortage areas (HPSAs) nurse practitioners (NP) medically underserved areas (MUAs) West Virginia Rural Health Education Partnerships (WVRHEP).

INDEX TERMS: education; medically underserved; recruitment; rural rotation.

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***Beverly A Kirby MA CLS(NCA) MT(ASCP)** is **associate professor**, Medical Technology Program, West Virginia University, Morgantown WV.*

***Address for correspondence:** Beverly A Kirby MA CLS(NCA) MT(ASCP), assistant professor, Medical Technology Program, West Virginia University, 2163 Health Sciences North, PO Box 9211, Morgantown WV 26506-9211. (304)293-1630, (304) 293-1627 (fax), bkirby@hsc.wvu.edu.*

West Virginia is a predominantly rural state with 64% of its population living in communities of less than 2500 individuals. The only two cities with populations over 50,000 are Charleston and Huntington. Of the state's 1,808,344 people, 15.3% are over 65 years old compared to the national average of 12.4%. In 1999, 17.9% of the state's population lived below the poverty level compared to the national average of 12.4%. All but eight of West Virginia's fifty-five counties are designated as medically underserved areas (MUAs) and forty-four of these counties are federally designated as health

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professions shortage areas (HPSAs). West Virginia's aging population, poverty, rough terrain, and lack of available medical care result in West Virginians having more health problems than people of other states. The following leading causes of death have age-adjusted rates that are consistently higher than the national rates: heart disease, malignant neoplasms, cerebrovascular disease, chronic obstructive pulmonary disease, accidents, pneumonia and influenza, diabetes mellitus, and suicide. These statistics are all according to the annual report of the West Virginia Department of Health and Human Resources.[1]

In 1991 the West Virginia University system received a four year Kellogg Community Partnership grant to develop a community-based academic program to address the issues of recruiting, preparing, and retaining health professionals for the rural areas of the state. During the same time, the governor called a special legislative session which resulted in the passage of H.B. 213, the Rural Health Initiative Act. The partnership of these two initiatives resulted in a tremendous infrastructure for educating health professionals with the vision of alleviating the shortage of medical care for the citizens of West Virginia.

Legislation in 1995 integrated the Rural Health Initiative and the Kellogg Community Partnerships programs into the West Virginia Rural Health Education Partnerships (WVRHEP). The program has grown into a network of 13 consortia covering 47 counties with 255 training sites and 493 field faculty. The health profession programs' curricula were amended to include required rotations in rural communities comprised of discipline-specific clinical training, interdisciplinary case management, and community service and/or community-based research.

To establish an educational pipeline, the W.K. Kellogg Foundation developed and funded the Health Sciences and Technology Academy to increase the number of economically disadvantaged and African American high school students who pursue post-secondary education in the health sciences. Additionally, the West Virginia Recruitment and Retention Project was funded by the Claude Worthington Benedum Foundation to provide financial incentives and placement activities.

Continued legislative funding reflects the state commitment to the WVRHEP vision: "In West Virginia, we envision a time when all residents of our most underserved, rural communities have local access to high-quality primary healthcare provided by well-trained, high quality healthcare professionals."[2]

The West Virginia University Medical Technology Program officially became involved in the state rural health initiative with a federal grant for the interdisciplinary training of health professionals. The Rural Interdisciplinary Training Grant provided for a collaborative training program of medical technology, physical therapy, and social work students. The grant funded one-month rural rotations for students for three years beginning in 1993. Participating students received stipends as well as free housing. The resultant curricular changes remained in effect beyond the funding to allow a mandatory one-month rural rotation for every medical technology student. Students no longer receive stipends but are eligible for free housing at approved RHEP sites.

The current nationwide shortage of medical technologists is especially critical in the rural areas. Small hospital laboratory managers are increasingly frustrated by the inability to attract and retain laboratory professionals. The medical technology program at West Virginia University envisions the required rural rotation as a recruitment and retention tool that makes rural practices a more attractive choice for healthcare practitioners.

Previous studies of health professionals have demonstrated factors that appear to have a positive effect on the choice of medically underserved areas for practice sites. The most frequently studied question has been whether exposure to medically underserved areas during training significantly influences the eventual choice of practice location.

Tavernier, Conner, Gates, and Wan surveyed 775 physicians within three to six months of completing a family medicine residency in an attempt to evaluate the effects of exposure to underserved areas during training. They defined MUAs as rural communities with population of 20,000 or less at least 60 miles from any metropolitan area with a population of at least 100,000; inner city areas with a majority of population being of low socio-economic status; or international third world countries.[3] As expected, those participants who had exposure to rural communities prior to their medical training demonstrated an increased desire to locate to an MUA. The findings, however, also demonstrated the positive effects of early exposure during training on later practice site choice. The association of early service experience participation was very similar to being born and/or raised in an MUA.[3]

Recognizing the importance of prior exposure to rural areas, several medical education programs have made an attempt to recruit students into their programs based on their rural

background. The University of Louisville reported a successful project that identified students from rural areas who were interested in health professions and involved the students in labor-intensive programs to increase their ACT scores. This resulted in an increased pool of applicants to medical school with affinity for rural practice.[4] The University of Nebraska Medical Center has also recognized the importance of recruiting students who have a previous affinity for rural practice. They are making a concerted effort to identify and accept students who have a rural orientation.[5]

The University of Adelaide, South Australia reviewed twelve studies and concluded that "there is consistent evidence that the likelihood of working in rural practice is approximately twice greater among doctors with a rural background".[6] They further concluded that "there is a smaller body of evidence in support of the other rural factors studied, and the strength of association is similar to that for rural background".[6] The other rural factors included rural schooling, having a rural partner, rural undergraduate training, and rural postgraduate training.

The University of Arkansas examined factors and incentives promoting long-term employment of nurse practitioners (NP) in rural Arkansas. Their evidence indicated that NP students who participated in clinical practicums were more likely to practice in rural areas.[7]

The Te Waipounami Rural Health Unit of the University of Dunedin, New Zealand evaluated the effect of a fifth-year rural health curriculum on the attitudes of students toward a career in rural general practice. The investigators found that students who came from rural backgrounds are more likely to have a positive attitude toward rural general practice. They found, however, that a rural curriculum can produce attitude changes in other students. They concluded, therefore, that medical schools should address the needs of rural communities by selecting students of rural origin and also ensuring a significant rural health component of the curriculum.[8]

A ten-year retrospective study of the rural experience of students in the Medical Technology Program at West Virginia University is reported here. Because the primary goal of the required rural rotation is recruitment and retention of laboratory professionals in the MUAs of West Virginia, it is important to determine whether the rural rotation is having a positive effect on the likelihood of participants' working in rural areas upon graduation.

METHOD

Participants

All 206 graduates of the West Virginia University Medical Technology Program from 1994 to 2003 were invited to participate. All program graduates during that time had been required to complete an enrichment rotation. The majority of the enrichment rotations had been completed at rural sites, although some students had been permitted to complete their rotations at small community hospitals in non-rural areas.

Materials

A cover letter invited participation and assured the participants of their anonymity (Appendix A). A self-addressed postage-paid envelope was provided.

The medical technology program rural health education coordinator designed a questionnaire to obtain information regarding where the rural rotation was completed, why the site was chosen, and whether or not the respondent subsequently worked at that site or any other medically underserved site. Four questions regarding the respondent's opinion of the rural rotation were rated by a Likert scale and the respondent was also invited to provide comments (Appendix B).

RESULTS

Of 206 questionnaires sent out, 94 were completed and returned for a 45.6% response rate. Sixty-six (70.2%) of respondents gave nearness to home as their reason for choice of rotation site. Fifteen (16.0%) stated that they chose the site because it was near friends or family members. Two (2.1%) stated that the site was in an area of interest. Three (3.2%) stated that they were placed at the site by the program director. Two (2.1%) chose the site because of housing availability. The remaining respondents did not give a specific reason for their choice (Figure 1).

Of the 66 participants who indicated that their rural rotation sites were chosen because they were close to home, only 28 (42.4%) indicated that they worked at a rural site. Thirty-eight (57.6%) indicated that they had not worked at a rural site after graduation, but five of these indicated that they were currently continuing their education in medical school, dental school, physicians' assistant programs, or other forms of graduate education.

Of the 66 participants who indicated that they chose their rural rotation sites because they were close to their homes, 51 (77.3%) indicated through a positive response (4 or 5)

that they appreciate the needs of rural hospitals or clinics. Only 15 respondents of this group responded with a neutral or negative rating (Figure 2).

Twenty-five of the 66 participants (37.9%) who indicated that they chose rural rotation sites because they were close to home indicated that the rural rotation made them more interested in working at a rural site but 41 of them (62.1%) gave neutral or negative responses (Figure 3).

Of those 69 participants who rated their appreciation of the needs of rural hospitals as high, 51 (73.9%) had also indicated that they chose their rural rotation sites because they were close to home (Figure 4).

Of those 52 participants who rated their level of interest in working in a rural area as high, 45 (87%) had also indicated that they chose their rural rotation sites because they were close to home (Figure 5).

Of those 47 participants who have worked in rural areas since graduation, 31 (66%) are those who also chose their rural rotations because they were close to home.

Thirty-six of the 94 respondents (38.3%) indicated that they were offered jobs at their rotation sites. The other 58 (61.7%) indicated that they were not offered jobs.

Forty-seven of the 94 respondents (50%) stated that they had worked at that site or at another medically underserved site after graduation. The other 47 (50%) indicated that they had not worked at an underserved site.

Figure 6 represents all responses regarding whether the rotation helped the respondent appreciate the needs of rural hospitals or clinics. One respondent wrote "NA".

Figure 7 represents all responses regarding whether the rural rotation made the respondent more interested in working at a rural site after graduation. One respondent wrote in "NA" and one did not answer.

The 94 respondents also replied to the question of whether the rural rotation was beneficial to the education at West Virginia University with the following results (Figure 8).

The 94 respondents were also asked to rate whether they recommended the rural rotation for future students (Figure 9).

Figure 1. Participants' reasons for choice of rural site

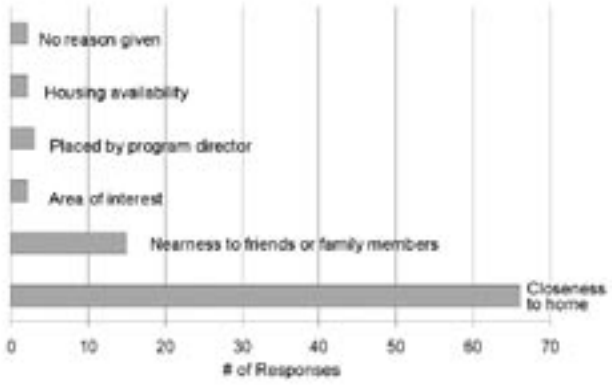


Figure 2. Participants' understanding of the needs of rural hospitals who choose a rural site because of proximity to home

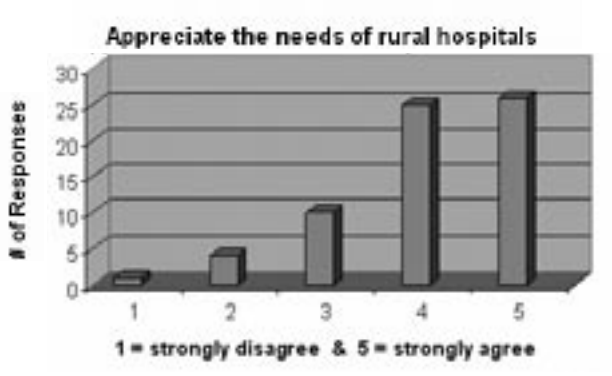
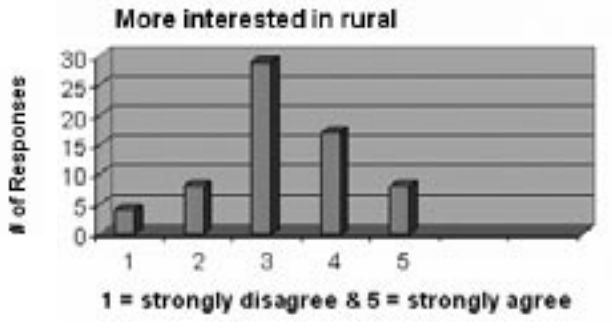


Figure 3. Participants' rating of their increased interest in working at a rural hospital who choose a rural site because of proximity to home



DISCUSSION

The results of the questionnaire appear to support the value of the rural rotation to the goal of recruiting and retaining laboratory professionals to the rural areas of West Virginia. Approximately one-third of the graduates were offered positions at the site where they did their rotation and half of the respondents ended up working in medically underserved areas. Sixty-five percent of students indicated that they recommended rural rotations for future students and also indicated that they felt that the rotation had been beneficial to their education.

The qualitative data that resulted from the open-ended questions added a richness to the evaluation of the rural rotation program. The graduates offered some valuable insights into the benefits of the experience. Even the students who have chosen not to work in rural areas suggested that they were enriched by the experience, as can be seen in the following representative quotes:

"The rural rotation was an eye opener. We were told about smaller institutions and the technology that was there or not there, but to see it was completely different. The rural rotation is a great experience for students getting ready to enter the job force."

"Rural rotation was valuable for me as a student. I feel students need to be exposed to as many environments as possible. I chose to work in an urban area after graduation, but that doesn't mean the rural rotation wasn't valuable to me. I also feel that the rotation would be beneficial to future students at WVU but should be a mainstay in programs across the country."

"Rural hospitals are such a different experience! Never thought I would work in a rural area, but I have X3!"

"I loved the rural rotation. It made me realize that there are still hospitals that are not computerized. Though I work at a large facility now, I feel like I would like someday to go to a smaller setting and I feel that the rural rotation gave me a little insight into that."

"I feel the rural rotation provides beneficial, hands-on experience for students. I, however, prefer a more fast-paced work environment. Thus, a rural hospital is not the place for me."

"Medical technologists are desperately needed in rural areas of the state. Some facilities only hire BS med techs and

Figure 4. Participants' responses to the statement "The rural rotation helped me appreciate the needs of rural hospitals and clinics" who choose a rural site because of proximity to home

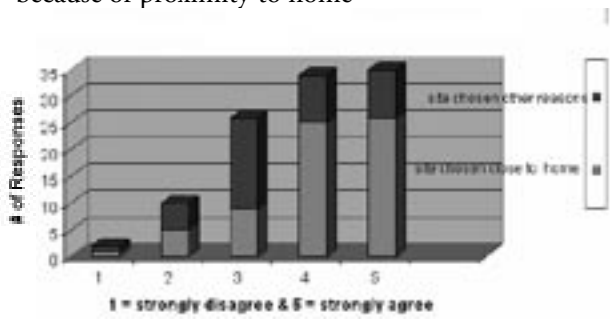


Figure 5. Participants' responses to the statement "The rural rotation made me more interested in working at a rural site after graduation" who choose a rural site because of proximity to home

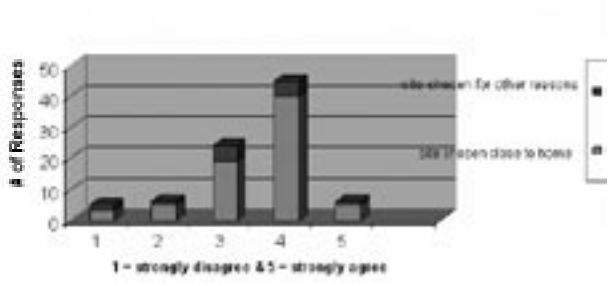
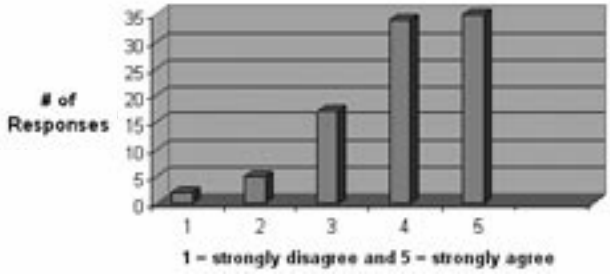


Figure 6. All participants' responses to the statement "The rural rotation helped me appreciate the needs of rural hospitals and clinics"



they are very hard to find. I would highly recommend students trying rural rotations in the southern part of the state. Maybe it would spark a job interest and help with our med tech shortage."

"My rural rotation was a truly wonderful experience. It helped me to really put my skills to work in a guided situation other than in school."

Students who chose their rural rotation sites because they were close to home offer some insight supporting the value of early exposure to rural environment in recruiting to rural areas. Those students who were from rural areas appear to be more likely to return to rural areas to work and to appreciate the unique needs of rural hospitals. This supports the ideas of recruiting and preparing students from rural areas to enter the healthcare professional programs.[3,6] Those who already have rural affinity are more likely to furnish the medical manpower to the state's medically underserved areas.

The results of this survey support continuing to require rural rotations of all medical technology students at West Virginia University. The rotation appears to be associated with some degree of success in recruitment and retention of medical technologists in underserved areas. It also appears to be beneficial to individuals who do not choose to work in rural areas. The survey supported the decision to require more actual rural exposure as part of the rotation. As a result, all current and future students are encouraged to participate fully in the community and interdisciplinary opportunities at the rural sites. Students who are not close to home are also being encouraged to select sites that provide housing so that they can become more involved in the communities. It is expected that this will enhance the enrichment experience for participants.

CONCLUSION

The required rural rotation at West Virginia University is a valuable enrichment experience for medical technology students. It serves as a site for applying their clinical skills in a unique way to prepare them for the workforce. It also serves as a recruitment tool for the medically underserved areas of the state.

Exposure to the rural environment serves to enhance an understanding of the needs of a medically underserved population. The study results support the notion that providing that exposure as part of the training of healthcare professionals as well as recruiting and retaining those individuals who already have rural affinity may help alleviate medical personnel shortages.

Figure 7. All participants' responses to the statement "The rural rotation made me more interested in working at a rural site after graduation"

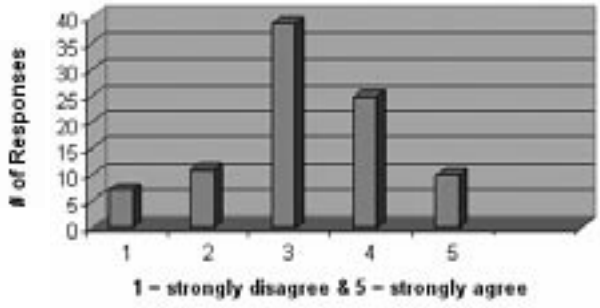


Figure 8. All participants' responses to the statement "The rural rotation was beneficial to my education at West Virginia University"

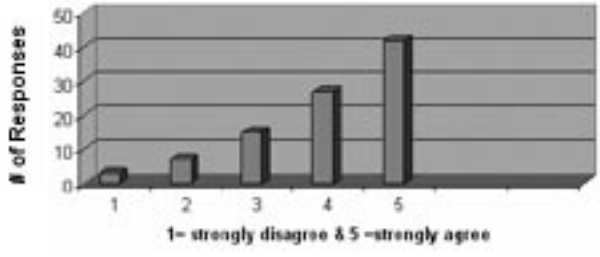
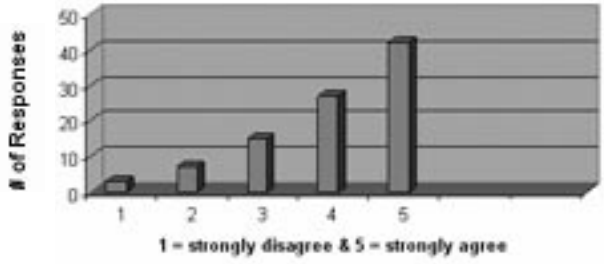


Figure 9. All participants' responses to the statement "I would recommend the rural rotation for future students"



Clin Lab Sci encourages readers to respond with thoughts, questions, or comments regarding this article. Email responses to ic.ink@mchsi.com. In the subject line, please type "CLIN LAB SCI 20(4) CP KIRBY". Selected responses will appear in the Dialogue and Discussion section in a future issue. Responses may be edited for length and clarity. We look forward to hearing from you.

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Appendix A. Solicitation letter

January 5, 2004

Dear Graduate of the Medical Technology Program,

As the rural education coordinator for the Medical Technology Program, I am doing a ten-year retrospective study of the benefit of the rural/enrichment rotation to our students. I would really appreciate your input. Participation in this survey is entirely voluntary.

Attached is a brief questionnaire. Please respond to the questions candidly. You may omit any question that you prefer not to answer. Tabulated results may be used to demonstrate the value of the rural rotation to the state health care system and to students. Data from this survey may be published, but individual and site identifiers will be removed to completely protect anonymity. Please do not put your name on the survey.

Please return your response in the enclosed self-addressed postage-paid envelope.

Thank you very much for your anticipated participation in this valuable study.

Yours truly,

Beverly A Kirby, MA MT(ASCP) CLS(NCA)
Assistant Professor

Appendix B. Student questionnaire

West Virginia University Medical Technology Program
Ten-year Retrospective Study of the Rural Rotation

1. Year of graduation from the Medical Technology Program _____
2. Site where rural/enrichment rotation was completed _____
3. Reason for your choice of site _____
_____
4. Were you subsequently offered a job at the site? _____
5. Did you subsequently work at that site or any rural site? Keep in mind that all of West Virginia is considered rural or medically underserved except for Morgantown, Charleston and Huntington.
_____
6. List places you have worked since graduation. _____
_____
_____
_____
7. Rate each of the following by circling a number on a scale of 1 – 5 with **1 representing strong disagreement** with the statement and **5 representing strong agreement** with the statement.

The rural rotation helped me appreciate the needs of rural hospitals and clinics.

1 2 3 4 5

The rural rotation made me more interested in working at a rural site after graduation.

1 2 3 4 5

The rural rotation was beneficial to my education at West Virginia University.

1 2 3 4 5

I would recommend the rural rotation for future students.

1 2 3 4 5

Please use the back of this page for any additional comments concerning the impact or benefit provided by your rural rotation.