

## Chapter 1.2.5

### ESTABLISHING A RURAL CURRICULUM FROM AN URBAN ACADEMIC MEDICAL CENTRE

**Tom E Norris**

*University of Washington, United States of America*

---

#### Introduction

The shortage of primary care physicians<sup>1</sup> in the United States (US), especially in rural areas, is a decades old problem, and one that is worsening (1,2,3,4,5). Similar shortages in the rural physician workforce are being seen worldwide (6,7,8,9). There is clear evidence supporting the notion that having medical students or resident physicians spend time during their education and training in rural areas increases the likelihood that they will eventually choose to practice in a rural area (10,11,12).

Unfortunately, almost all medical schools and academic medical centres, as well as most graduate medical education programmes, are located in urban areas. This mismatch between the need for an increased rural physician workforce; the importance of spending education and training time in rural areas; and the location of medical schools, academic medical centres, and residencies<sup>2</sup> is not helpful in addressing the rural physician shortages. The solution to this dilemma is the development by medical schools of specific rural curricula, utilising decentralised educational strategies to educate and train medical students and residents in rural areas. Several institutions have developed proven strategies to accomplish this task.

---

<sup>1</sup> A 'physician' here (and in North America more broadly) is another term for 'doctor' or general practitioner, while in countries like South Africa and Australia, a 'physician' is a specialist in internal medicine.

<sup>2</sup> A resident – or registrar – is a qualified doctor who is part of a structured specialist training programme. Residencies are described slightly differently across countries. For example in Britain/Australia they are 'vocational training'; in South Africa, 'postgraduate training' – while in Canada they are 'postgraduate medical education' and in the USA, 'graduate medical education'.

This chapter will explore several of these strategies – including targeted admissions processes, decentralised medical schools, rural longitudinal integrated clerkships<sup>3</sup>, integrated rural medical school curricula, and residency rural training tracks.

## Discussion

There is an antidote to urban academic medical education that will result in many students making rural career choices. With the dual problems of rural physician shortages, coupled with urban locations for most academic medical centres, a specific strategy must be adopted in order to achieve the desired outcomes of career choices that include a primary care specialty and location choices that are rural.

Optimally medical education institutions will develop a strategic sequence of activities, leading toward clearly defined rural primary care goals. Ideally the medical school undertaking this task will have a proven ability to provide a decentralised educational programme. The sequence must begin with the admissions selection of new medical students who grew up in rural sites. The next step is exposure to a curriculum designed to teach the students about health equity, particularly as it involves rural underserved patients. The subsequent key step is to teach as much of this curriculum as possible in rural settings with experienced physicians who can serve as both role models and teachers. Continuity of both patient care and teaching is important, and the model of rurally located longitudinally integrated clerkships has proven to be quite successful in this regard. Preferably the medical school rural curriculum will interdigitate seamlessly with the curriculum of a rurally-oriented or rurally-located graduate medical education programme — perhaps a rural training track residency.

While any of these steps taken singly may increase the number of students who eventually enter rural primary care practice, all of the steps taken sequentially will dramatically increase the chances of success.

---

<sup>3</sup> A clerkship – or rotation or block – is a structured clinical learning opportunity which forms part of academic requirements that have to be met.

**Illustrative case study:  
University of Washington WWAMI TRUST Programme**

The University of Washington and the rural northwestern US states of Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI) have developed a decentralised rural medical education programme (TRUST) that contains all of the components noted above.

Let us track a real student, who we will call Jane Doe, through the programme.

Jane grew up on a cattle ranch in southeastern Montana. The nearest community had a population of 2 000 and was 20 miles from Jane's home. She was a good student, with a strong interest in science and health care. Although she originally considered veterinary medicine, she decided in high school that she wanted to be a physician. Jane attended a state university in Montana and did well, majoring in cellular biology. In 2006 she applied to the Montana WWAMI programme and was admitted to the new TRUST programme in 2007. The programme admitted five Montana medical school applicants each year, with requirements that the students must plan to enter rural practice and must have a rural background; Jane met both requirements.

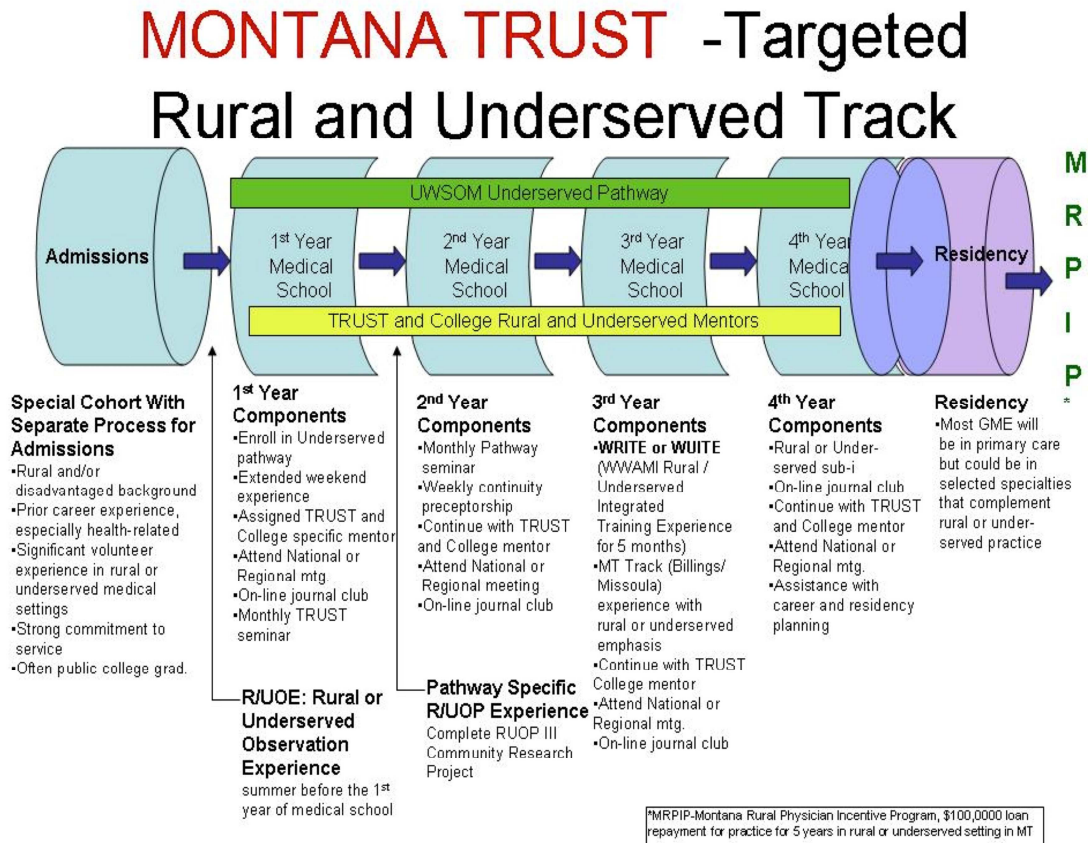
In addition to a special admissions programme, TRUST included the first year of medical school in a small town at one of WWAMI's decentralised first year sites. The TRUST curriculum was specifically designed as a sequence of proven experiences for rurally-bound medical students. Detailed components of the TRUST curriculum are outlined in Figure 1 below.

Shortly after admission, and several weeks before medical school classes began, Jane was assigned to a rural community in Montana and to a rural family physician. For the next four years Jane spent segments of time in the same small town, learning under the guidance of the rural preceptor<sup>4</sup>, with the patients in the preceptor's practice. Jane enjoyed several key TRUST factors, including patient, community, and preceptor continuity. This continuity was strongly emphasised in the third year of medical school which included a 20 week longitudinal integrated clerkship in her continuity community (WRITE—WWAMI Rural Integrated Training Experience).

---

<sup>4</sup> A preceptor - or clinical instructor/adjunct faculty - is a clinician (person with core clinical skills) who offers clinical teaching at a distant (rural) site.

Figure 1: WWAMI Montana TRUST Curriculum



By early in her fourth year of medical school, Jane had confirmed her decision that she wanted to be a rural family physician. She arranged a month-long sub-internship in the only family medicine residency in Montana, one of the 20 family medicine residencies affiliated with the WWAMI programme’s family medicine residency network. She loved the experience and the residency loved her. Working through a special plan that allowed her to become part of the residency outside of the National Resident Matching Programme, Jane signed a contract with the residency that would allow her to become a resident there upon graduation from medical school. The residency worked with Jane to allow her to continue to spend time in her ‘continuity community’ during her residency. Jane is now a resident and plans to enter practice in the same continuity community that served as her classroom during medical school and residency.

## Practice pearls

### *What to do*

In order to successfully educate and train medical students and residents who will eventually choose to practice in a rural area, academic health centres must include the following factors in their programming:

- Target candidates for medical school admission who have grown up in rural areas.
- Maximise time spent in rural settings during medical school and residency.
- Increase continuity experiences with rural patients during medical school.
- Increase continuity of educational experience with rural preceptors or attending physicians during education and training.
- Design a curriculum that is specifically developed for medical students and residents who will eventually care for rural and underserved patients.

### **What's the evidence?**

There is significant evidence to support each of the key points presented in the Practice Pearls section above.

Admitting the right students is very important. A recent study of Jefferson Medical College graduates by Rabinowitz and colleagues indicated that growing up in a rural area is one key predictor of future rural practice (13). Furthermore, Gill and associates found that a rural background for Canadian medical students increased the likelihood that they would enter family medicine practice (14).

Time spent in rural educational sites during medical school is another factor in educating physicians who will eventually practice in rural areas. At the University of Newcastle in Australia, Rolfe and colleagues found that both rural background and rurally-located education are important for future rural doctors (15). For over 40 years, the University of Washington's WWAMI programme has educated medical students using a highly decentralised system in which many students spend the first year of medical school in smaller communities and most students spend at least some of their clinical clerkships in rural sites (16,17). The outcome has been that more students have chosen rural practice and primary care. Similarly, Worley and his colleagues at Flinders (Australia) found that students who spent a year in a rural longitudinal integrated clerkship (LIC), compared to those who spent a year at an

urban tertiary site, were more likely to enter rural primary care (18). This study also emphasises the importance of rural continuity experiences for students who eventually choose rural practice. Walters and colleagues, also at Flinders, also found that rural LIC's that provide students with continuity experiences with both patients and teachers positively influence primary care and rural career choices (19).

After graduation from medical school, spending some (or all) of one's residency in a rural setting helps create rural physicians (10). Multiple studies have considered rural residency pathways as an entry into rural practice. In the US, Rural Training Tracks (RTT) has been widely accepted as an approach to locating residency training in rural sites. Outcomes studies have shown the success of this strategy in rural practice choices (20).

Special medical school curricula designed for future rural physicians have been developed by several schools. James Cook University (Australia) has reported on outcomes indicating that their graduates who have participated in the rural curriculum are more than twice as likely to enter rural practice than graduates of other Australian medical schools who have not had a specialised course of study (21). The WWAMI programme has had similar experiences with its Targeted Rural Underserved Student Track (TRUST) (unpublished data).

### **Broader applicability and implementation**

Although the programming approach described here outlines a proven arrangement that allows an urban academic medical centre to train physicians for rural primary care, the same general principles could be applied to other special physician training needs. For example, a suburban medical school that wished to train students for underserved urban practice could utilise the same sort of decentralised educational principles and strategically sequenced curricular programming that is described here for rural primary care.

## Conclusion

Abraham Flexner, whose report for the Carnegie Foundation one hundred years ago laid the foundation for modern American medical education, said, “The small town needs the best and not the worst doctor procurable. For the country doctor has only himself to rely on: he cannot in every pinch hail specialist, expert, and nurse. On his own skill, knowledge, resourcefulness, the welfare of his patient altogether depends. The rural district is therefore entitled to the best-trained physician that can be induced to go there”(22).

Flexner was right, and our job is to select bright young people from rural places and provide them with a medical education that does not turn their aspirations toward urban specialisation. This can be done by urban academic medical centres through decentralised medical education and a purposefully designed curriculum. This will allow our medical school and residency graduates to become the ‘best doctors’ that Flexner visualised.

## References

1. Council on Graduate Medical Education. *Tenth report: Physician distribution and health care challenges in rural and inner city areas*. US Department of Health and Human Services, 1998.  
[www.hrsa.gov/advisorycommittees/bhpradvisory/cogme/Reports/tenthreport.pdf](http://www.hrsa.gov/advisorycommittees/bhpradvisory/cogme/Reports/tenthreport.pdf) (accessed 29 January 2014).
2. Rosenblatt RA. Commentary: Do medical schools have a responsibility to train physicians to meet the needs of the public? The case of persistent rural physician shortages. *Acad Med* 2010; 85: 572–4.
3. Agency for Healthcare Research and Quality. *Health care disparities in rural areas: Selected findings from the 2004 National Healthcare Disparities Report*. Publication no: 05-P022, 2005.  
[www.ahrq.gov/research/ruraldisp/ruraldispar.htm](http://www.ahrq.gov/research/ruraldisp/ruraldispar.htm) (accessed 29 January 2014).
4. Institute of Medicine Committee on the Future of Rural Health Care. *Quality through collaboration: The future of rural health*. Washington DC: National Academies Press; 2005.
5. Colwill JM, Cultice JM. The future supply of family physicians: Implications for rural America. *Health Aff (Millwood)* 2003; 22: 190–8.



6. Thomas G. Shortage of doctors in rural areas. *Natl Med J India* 2012 Jul-Aug; 24(4):249.
7. Leonardia JA, Prytherch H, Ronquillo K, Nodora RG, Ruppel A. Assessment of factors influencing retention in the Philippine National Rural Physician Deployment Programme. *BMC Health Serv Res* 2012 Nov 20; 12: 411.
8. DaSilva RB, Pineault R. Impact of physician distribution policies on primary care practices in rural Quebec. *Can J Rural Med* 2012 Summer; 17(3): 92-8.
9. Sousa A, Dal Pos MR, Carvalho CL. Monitoring inequalities in the health workforce; the case study of Brazil 1991-2005. *PLoS One* 2012; 7(3): e33399.
10. Norris TE, Norris SB. The effect of a rural preceptorship during residency on practice site selection and interest in rural practice. *Journal of Family Practice* 1988; 27(5): 541-4.
11. Robinson M, Slaney GM. Choice or chance! The influence of decentralized training on GP retention in the Bogong region of Victoria and New South Wales. *Rural Remote Health* 2013; 13: 2231.
12. Rabinowitz HK, Diamond JJ, Markham FW, Santana AJ. Retention of rural family physicians after 20-25 years: Outcomes of a comprehensive medical school rural programme. *J Am Board Fam Med* 2013 Jan-Feb; 26(1): 24-7.
13. Rabinowitz HK, Diamond JJ, Markham FW, Santana AJ. The relationship between entering medical students' background and career plans and their rural outcomes three decades later. *Acad Med* 2012 Apr; 87(4): 493-7.
14. Gill H, McLeod S, Duerksen K, Szafran O. Factors influencing medical students' choice of family medicine: Effects of rural vs. urban background. *Can Fam Physicians* 2012 Nov; 58(11): e649-57.
15. Rolfe IE, Pearson SA, O'Connell DL, Dickinson JA. Finding solutions to the rural doctor shortage: The roles of selection versus undergraduate medical education at Newcastle. *Aust N Z J Med* 1995 Oct; 25(5): 512-7.
16. Ramsey PG, Coombs JB, et al. From concept to culture: The WWAMI programme at the University of Washington School of Medicine. *Acad Med* 2001; 76(8): 765-75.
17. Norris TE, Coombs JB, et al. Regional solutions to the physician workforce shortage: The WWAMI experience. *Acad Med* 2006; 81(10): 857-62.
18. Worley P, et al. Vocational career paths of graduate entry medical students at Flinders University; a comparison of rural, remote and tertiary tracks. *Med J Aust* 2008; 188(3): 177- 8.



19. Walters L, Greenhill J, et al. Outcomes of longitudinal integrated clinical placements for students, clinicians, and society. *Med Educ* 2012; 46(11): 1028-41.
20. Rosenthal TC, McGuigan MH, Anderson G. Rural residency training tracks in family practice: Graduate outcomes. *Family Med* 2000; 32(3): 174-7.
21. Sen Gupta T, Murray R, Hays R, Woolley T. James Cook University MBBS graduate intentions and intern destinations: A comparative study with other Queensland and Australian medical schools. *Rural Remote Health* 2013; 13(2): 2313.
22. Bowman R. *Flexner's impact on American Medicine*. <http://www.ruralmedicaleducation.org/flexner.htm> (accessed 20 June 2013).

This article is a chapter from the **WONCA Rural Medical Education Guidebook**. It is available from [www.globalfamilydoctor.com](http://www.globalfamilydoctor.com).

Published by:

WONCA Working Party on Rural Practice  
World Organization of Family Doctors (WONCA)  
12A-05 Chartered Square Building  
152 North Sathon Road  
Silom, Bangrak  
Bangkok 10500  
THAILAND



[manager@wonca.net](mailto:manager@wonca.net)

© Norris TE, 2014.

The author has granted the World Organization of Family Doctors (WONCA) and the WONCA Working Party on Rural Practice permission for the reproduction of this chapter.

The views expressed in this chapter are those of the author and do not necessarily reflect the views and policies of the World Organization of Family Doctors (WONCA) and the WONCA Working Party on Rural Practice. Every effort has been made to ensure that the information in this chapter is accurate. This does not diminish the requirement to exercise clinical judgement, and neither the publisher nor the authors can accept any responsibility for its use in practice.

Requests for permission to reproduce or translate WONCA publications for commercial use or distribution should be addressed to the WONCA Secretariat at the address above.



Suggested citation: Norris TE. Establishing a rural curriculum from an urban academic medical centre. In Chater AB, Rourke J, Couper ID, Strasser RP, Reid S (eds.) *WONCA Rural Medical Education Guidebook*. World Organization of Family Doctors (WONCA): WONCA Working Party on Rural Practice, 2014. [www.globalfamilydoctor.com](http://www.globalfamilydoctor.com) (accessed [date]).