General Article

Umeå University's Proposed "Rural Stream" – An Effective Alternative to the Longitudinal Integrated Clerkship Model for Small Rural Communities?

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ABSTRACT

Background: Umeå University Faculty of Medicine (UUFM), Sweden, has a regionalized medical program in which students spend the final 2½ years of their undergraduate degree in district hospitals. In late 2018, UUFM started a "rural stream" pilot exposing students to smaller rural locations. **Methods:** The objectives are to deliver the benefits for medical education and rural workforce development that have been observed in longitudinal integrated clerkships (LICs) while maintaining consistency between learning experiences in the main campus, regional campuses, and rural locations. This article compares the UUFM rural stream with those typical of the LICs described in the medical education literature. Comparisons are made in terms of the four key criteria for LIC success, and additional characteristics including peer and interprofessional learning, "'continuity," and curriculum development. **Results:** The rural stream has elements of length, immersion, position in the degree program, and community engagement that are both similar to, and different from, LICs. Key challenges are to ensure that participating students create close relationships with host medical facilities and communities. The rural stream also has some potential advantages, particularly in relation to team learning. **Discussion:** Alternatives to the LIC rural stream model as typically described in the literature may be required to allow for immersive medical education to occur in smaller rural communities and to be suitable for medical schools with more traditional approaches to education.

Keywords: Longitudinal integrated clerkships, rural medical education, Sweden, Umeå University

Background

Umeå University was the first medical school in Sweden to introduce a regionalized medical program (RMP). Starting in 2011, students could undertake all of their clinical coursework units (comprising the final 2½ years of their 5½-year undergraduate degree) outside the main teaching hospital in Umeå.[1] By 2019, 30 of the approximately 100 Umeå University medical students in each clinical semester are based in one of three district hospitals. These hospitals are in towns with populations of 50,000–70 000 inhabitants, while Umeå itself has a population of 110,000. The RMP is distinctive because students are at the distributed locations for much longer than the 1-year placement typical of the longitudinal integrated clerkship (LIC) models seen as the "gold standard" for rural

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medical education.[2] In late 2018, Umeå University Faculty of Medicine (UUFM) started a "rural stream" pilot which provides opportunities for students to spend time in primary care facilities in small rural communities during their clinical semesters. The purpose of this article is to describe the rural stream and to consider the extent to which it is likely to provide similar benefits to those claimed for LICs.

LICs such as the Flinders University Parallel Rural Community Curriculum program in South Australia[1] have students based at regional health facilities for the entire 3rd year of their 4-year graduate program.[3] As with the Flinders program, UUFM students are exposed to a mix of teaching *in situ* in the distributed locations and to teaching facilitated by distance bridging technologies. Rural LICs have been shown to deliver better educational outcomes for students through providing deeper contact with patients and a more "natural" curriculum which is, in part, determined by the daily patient load of the clinics and hospitals involved in the teaching.[4] LICs are also claimed to contribute to improving the recruitment and retention of primary care doctors in underserviced rural areas,[5] although the impact appears to be somewhat limited to the specific locations where LICs are hosted.[6] LIC locations are typically larger regional centers. Long-term, immersive student placement programs like LICs are more difficult to sustain in smaller locations which may rely on one or two supervising clinicians, and which may find it challenging to support students both within and outside of their clinical education tasks.[7] At the same time, it is often these smaller communities which experience workforce shortages.[8] Extending medical education to these smaller sites is likely to require some variation on, or even alternative to, the standard LIC model.

Methods

Umeå University has had quite a traditional and conservative approach to medical education[9] with 2 years of theoretical learning, and clinical units gradually introduced later in the program. In general, there has been limited interaction between units, although the RMP structure has led to more overlap, at least for students in the distributed locations.[1] The RMP implementation had several other impacts on the medical school as a whole, by requiring lecturers to post their teaching material online, and forcing changes in teaching pedagogy through the use of distance bridging technologies. The steps leading to these ultimately positive changes were not, however, without challenges.[10] As a result, UUFM proposes to introduce the rural stream gradually and in close collaboration with the County Council Health Department (Region Västerbotten).

The rural medical education literature suggests that at least four attributes are required for rural programs to provide high-quality student experiences and inspire students to choose rural primary care careers.[11] Programs which see students spend long periods of time in rural locations (like the LIC model) are seen to have the most positive impacts. Long placements (typically taken in one block) provide immersive, clinical contact with a range of patients. Continuity, i.e., being able to monitor patient progress over a long period of time, and become immersed in the daily routines of the practice and the community is a key to success[12] Finally, extended placements facilitate community engagement which ensures that rural program graduates understand the nature of work and life in rural communities. Consequently, long-term continuity, community-engaged, and immersive placements which occur late in the base medical degree appear to have the best outcomes.[13] In addition to the four "keys", LICs have been assessed as effectively promoting interprofessional and peer learning and in influencing curriculum development in primary care education and beyond.[14]

The challenge for UUFM is to implement a rural stream which can meet these requirements while being developed within the core structure of the medical degree.

Results

Rural stream structure

The Stream pilot started in the first teaching semester of the 2018/2019-year (September 2018) with two volunteer students who will spend time in the Storuman (population 2500, 250 km from Umeå campus) cottage hospital and the regional hospital in the larger town (population c. 8000) of Lycksele some 100 km closer to Umeå. Lycksele Hospital includes surgical wards (with specialties in orthopedic and bariatric surgery), emergency care facilities (including a helicopter ambulance), and a maternity ward. Lycksele Hospital also hosts postgraduate medical training, including in surgery specialties.

UUFM has identified ten-course units with clinical components that may be possible to undertake in either Storuman or Lycksele [Table 1]. If a student was to complete all clinical components in these rural locations, the total "exposure" would be 103 days over a period of 3 years, equating to approximately 40% of their clinical clerkship. In addition, students could elect to base their semester 10 research project unit in Storuman (or Lycksele), which would provide an additional full semester of placement. Further rural exposure could be gained by students taking up summer jobs in either of the locations.

Students in the rural stream undergo the same assessment tasks and have the same learning outcomes as their peers.

The clinical components of the rural stream are supervised in rural locations by senior doctors who already have teaching

roles with UUFM or are trained clinical supervisors. Students are encouraged to engage in peer learning, including interprofessional peer learning as both hospitals also host nursing and other health professional students. The pilot is extended to four new entrants (two in the spring semester and two in autumn semester) every year. This staggered entry approach will provide opportunities for students in different stages of the program to work and learn together and for projects to be developed (research and practice development), which can extend over multiple years.

Evaluation

Evaluation of the first pilot years is mainly qualitative, involving several methods such as narrative analysis of students written reflections, ethnographically inspired observations during student placements and regular interviews. Medical students, supervisors, and staff involved in the rural stream will be asked to reflect on their experiences of education, work, and life in a rural setting. Another important focus for the evaluation during the pilot years will be the capacity to meet curriculum objectives and the progression of the students and to identify critical aspects for further development of the educational program. Once the pilot has been established over 3 years (twelve students), the evaluation will include attention to patient and community impacts. The County Council Health Department will provide resources in the community (especially housing) in the pilot phase, but expectations of community contributions (providing housing, having patients interact with students, and resultant changes in medical service delivery) will increase as student numbers increase.

Table 1: Inventory of Course Units with Clinical Components in Storuman and Lycksele

Semester	Subject	Storuman cottage hospital (days)	Lycksele hospital (days)
5	Family medicine	5	
	Clinical examination techniques	5	
6	Internal medicine	10	15
7	Surgery	5	15
	Oncology		5
8	Family medicine	10	
9	Psychiatry	5	
11	Family medicine	8	
	Obstetrics/gynecology	5	5
	Pediatrics	5	5
	Total (days)	58	45

Discussion

Comparisons with longitudinal integrated clerkships

The UUFM rural stream may have advantages to the regular LIC model [Table 2]. Students at different stages in the medical degree program will be able to work and learn together. Students can follow patients over a longer period and potentially at different sites (patients transferred from the cottage hospital, to Lycksele hospital, to Umeå hospital, for example). Students will work and learn with a variety of supervisors and colleagues as staff change over that time, and as each placement assumes a different curriculum focus. These potential advantages are at the expense of a long unbroken period of exposure. The directing of learning activities to meet specific curriculum demands while on placement also lessens the potential value of having the "curriculum walk through the door," although by necessity, rural stream students will engage in both the required learning and have opportunistic learning experiences determined by the patient load at the time.

The regular moving of students between three locations (Umeå, Storuman, and Lycksele) may prove logistically difficult (housing and managing social and other commitments) and may reduce the extent to which students

Table 2: Comparison of Umeå University Faculty of Medicine Rural Stream and standard Longitudinal integrated clerkship

Factor	UUFM rural stream	LIC
Long term	Across 3-5 years	Usually a full teaching year
Immersive	Small blocks of time spread out across the program	"Full time" for the year
Community-engaged	Students are (regular) visitors to the community	Students live and work in the community
Late in the degree program	Across the mid and late parts of the program	Typically in the second-to-last year
Broad curriculum	The curriculum is largely predetermined, but there are likely to be opportunistic learning experiences	"The curriculum walks through the door"
Interprofessional	Students are exposed both to local interprofessional work teams and to distributed teams at multiple locations	Students are exposed to interprofessional work teams at a single location
Peer learning	Students work with colleagues from different stages of the degree program	Students work with a small number of colleagues from the same cohort
Continuity of care	Students have initially short-term contact with patients but may see the same patients in different settings over a longer period of time	Students work with the same patients throughout the program
Extending the curriculum	Students follow an identical formal curriculum as their urban colleagues but will have an extending "informal" curriculum including rural health, Sami health, and community-based medicine	Students follow a curriculum that is unique to their location and the time that they are on the program

UUFM: Umeå University Faculty of Medicine, LIC: Longitudinal integrated clerkships

feel attached to a single location. There is a risk that the rural placements will be seen by students and educators as of secondary value to the work at "main campus." However, movement between sites also provides exposure to multiple settings within the same courses, broadening the student's knowledge of how particular types of medicine may be done in different places, and of the roles of different professions based in different locations.

Integrating the rural stream with the core curriculum will provide substantial pedagogical and management challenges, some of which have been successfully addressed in the implementation of the RMP, but some of which will be unique to this stream. The rural stream will have smaller learner groups, groups that encompass more than 1 year of the program and will likely be much more "hands-on" in terms of patient contact and independent work, particularly later in the program. It has already been recognized that substantial extra-curriculum learning is likely to take place in the rural stream, including exposure to Sami health, rural medicine, and community-based medicine – none of which are formally taught in the core program. The opportunity exists, therefore, for the rural stream to provide a very direct and rich contribution to ongoing curriculum development for the entire program.

Conclusions

The rural stream has been designed to meet a particular need in Northern Sweden, which is for medical education in the small and somewhat isolated rural communities which dominate the inland areas. Expanding medical education to these communities is likely to increase their ability to attract appropriately trained and motivated doctors in future. While the implementation of a "standard" LIC program may be possible in these small communities, it is likely to be very difficult because of the lack of critical mass of supervising clinicians and resources to support the student learning experience. The rural stream proposal attempts to increase exposure to particular kinds of rural settings while conforming to the demands of the core curriculum. As with the experience of implementation of the RMP, changes to both curriculum and pedagogy are likely to emerge incrementally and in partnership between the central campus in Umeå and the education sites.

The rural stream provides exposure over a long period of time (3 or 4 years) but not for long periods of time (at least for clinical education). The extent to which it may be "immersive" is difficult to predetermine. It is likely that students will have strong interactions with the rural workplaces even when not on placement as they debrief on past placements, arrange future placements, and complete assessment tasks. At the same time, placements over multiple years might provide opportunities for deeper interaction with particular patients. In summary, the rural stream is "long" in a different way to the LIC standard, its immersive value is unclear, and it engages students in rural practice through a larger part of the degree program but may not have the same level of community engagement. Nevertheless, this is a model of exposure that goes beyond the "flying visits" that smaller communities are often exposed to, and there are elements of this model that could be used to enhance LICs and rural medical education more broadly.

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Conflicts of interest

There are no conflicts of interest.

References

1. Pettersson FL. Implementing a Swedish regionalized medical program supported by digital technologies: Possibilities and challenges from a management perspective. Rural Remote Health 2013;13:2173.
2. Norris TE, Schaad DC, DeWitt D, Ogur B, Hunt DD, Consortium of Longitudinal Integrated Clerkships. Longitudinal integrated clerkships for medical students: An innovation adopted by medical schools in Australia, Canada, South Africa, and the United States. Acad Med 2009;84:902-7.
3. Heddle W, Roberton G, Mahoney S, Walters L, Strasser S, Worley P. Challenges in transformation of the "traditional block rotation" medical student clinical education into a longitudinal integrated clerkship model. Educ Health (Abingdon) 2014;27:138-42.
4. Strasser R, Hogenbirk JC, Minore B, Marsh DC, Berry S, McCready WG, *et al*. Transforming health professional education through social accountability: Canada's northern Ontario school of medicine. Med Teach 2013;35:490-6.
5. Mausz J, Tavares W. Learning in professionally 'distant' contexts: Opportunities and challenges. Adv Health Sci Educ Theory Pract 2017;22:581-600.
6. Walters L, Carson D, McGrail M, Campbell D, Porter R, Greenhill J, *et al*. Network theory: A new method of evaluating the impact of rural training pipelines? Rural Medicine Conference; Dubbo, Australia; 2014.
7. Worley P, Couper I, Strasser R, Graves L, Cummings BA, Woodman R, *et al*. A typology of longitudinal integrated clerkships. Med Educ 2016;50:922-32.
8. Rivett D. Rural health: Bush outlook brightens with classification overhaul. Aust Med 2014;26:27.
9. Jones R, Higgs R, de Angelis C, Prideaux D. Changing face of medical curricula. Lancet 2001;357:699-703.
10. Pettersson F, Olofsson AD. Implementing distance teaching at a large scale in medical education: A struggle between dominant and non-dominant teaching activities. Educ Info Technol 2015;20:359-80.
11. Hudson JN, Poncelet AN, Weston KM, Bushnell JA, A Farmer E. Longitudinal integrated clerkships. Med Teach 2017;39:7-13.
12. Osman NY, Atalay A, Ghosh A, Saravanan Y, Shagrin B, Singh T,

et al. Structuring Medical Education for Workforce Transformation: Continuity, Symbiosis and Longitudinal Integrated Clerkships. Educ Sci 2017;7:58.

13. Ellaway R, Graves L, Berry S, Myhre D, Cummings BA, Konkin J. Twelve tips for designing and running longitudinal integrated clerkships. Med Teach 2013;35:989-95.
14. Myhre DL, Woloschuk W, Pedersen JS. Exposure and attitudes toward interprofessional teams: a three-year prospective study of longitudinal integrated clerkship versus rotation-based clerkship students. J Interprof Care 2014;28:270-2.