

ORIGINAL RESEARCH

Unfreezing the Flexnerian Model: introducing longitudinal integrated clerkships in rural communities

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ABSTRACT

Introduction: Physician shortages in rural areas remain severe but may be ameliorated by recent expansions in medical school class sizes. Expanding student exposure to rural medicine by increasing the amount of prolonged clinical experiences in rural areas may increase the likelihood of students pursuing a career in rural medicine. This research sought to investigate the perspective of rural physicians on the introduction of a rurally based nine-month Longitudinal Integrated Clerkship (LIC).

Methods: In this mixed-methods study, nine physician leaders were interviewed from five Maine, USA, rural hospitals participating in an LIC. Semi-structured interviews were audiotaped and transcribed. Qualitative analysis techniques were used to code the transcripts and develop themes. Forty-seven participating rural LIC preceptors were also surveyed through an online survey.

Results: Four major themes related to implementing the LIC model emerged: (1) melting old ways, (2) overcoming fears, (3) synergy of energy, and (4) benefits all-around. The faculty were very positive about the LIC, with increased job satisfaction, practice morale, and ongoing learning, but concerned about the financial impact on productivity.

Conclusions: The importance of these themes and perceptions are discussed within the three-stage model of change by Lewin. These results describe how the innovative LIC model can conceptually unfreeze the traditional Flexnerian construct for rural physicians. Highlighting the many stakeholder benefits and addressing the anxieties and fears of rural faculty may facilitate the implementation of a rural LIC. Given the net favorable perception of rural faculty of the LIC, this educational model has the potential to play a major role in increasing the rural workforce.

Key words: clerkship, community-based, Flexner, longitudinal, medical students.



Introduction

Physician shortages are becoming apparent in many areas of the USA, particularly in rural locations^{1,2}. The recent phenomenon of expanding medical school class sizes provides a potential solution to the rural workforce shortage, but physicians must still be recruited to work in these underserved areas. Previous literature has shown that physicians are more likely to practice in a rural area if they have a rural upbringing³ or have rural educational experiences during their training⁴. Thus, expansions in class size will likely only result in an increase in the rural workforce through the addition of distributed clinical training sites in rural areas.

In the predominantly rural state of Maine, a new program was created in partnership with Tufts University School of Medicine⁵ to address the physician workforce needs. Developed in conjunction with an increase in the Tufts class size, the 'Maine Track' provides a unique curriculum for a small number of students, some of whom are from rural Maine. A key component of the Maine Track program was the establishment of a nine-month longitudinal integrated clerkship (LIC) model^{6,9} at multiple rural hospitals across the state.

Training in a rural community for a prolonged, intensive period provides medical students the needed exposure and connection to rural medicine⁴. Small hospitals spend significant resources in recruiting physicians as well as supporting locum tenens providers. Involving rural physicians in teaching may help with factors improving retention of physicians¹⁰. Introducing the LIC into a rural community, however, may present several challenges to the local physician leaders and preceptors. Many rural physicians, although often experienced educators, are likely unfamiliar with the LIC model, having been trained as students years ago in the traditional Flexnerian construct of inpatient block rotations during the clerkship year. Preceptors and hospital administrators might also be concerned about the impact on physician productivity in the current fee-for-service reimbursement model.

Within the theoretical framework for change proposed by psychologist Kurt Lewin and discussed by Kritsonis¹¹, this research wished to explore the impact of introducing the LIC into rural communities. Lewin's three-stage model of change suggests that individuals must first become motivated to change ('unfreezing'), and subsequently they need to change what needs to be changed. In the third stage, the changes are made permanent ('refreezing'). This study assesses specifically the perceptions of physician leadership and preceptors in the early development of a rural LIC component in the Maine Track curriculum.

Methods

Design

This was a mixed methods study using semi-structured interviews as well as an online preceptor survey.

Setting and participants

Nine physician leaders (ie the Chief Medical Officer and/or the LIC site coordinator) of the five rural Maine hospital sites were included for the interviews. These physicians were integrally involved in the establishment and operation of the LIC at their respective site. Each rural site had completed at least one cycle of students participating in the LIC program, with 2–4 students at each site. For the faculty preceptor survey, 84 physicians were identified in these five rural sites.

Interview guide and survey procedures

The authors developed the interview guide and Figure 1 outlines the questions guiding the interview. Nine physician leaders were asked if they would be willing to be interviewed and none declined. The interviews involved in-depth, semi-structured conversations, lasting approximately 45 minutes each. The interviews were conducted by one of the authors (CK) and occurred in May and June of 2013. The interviews were conducted on-site at the rural hospital. The interviews were audiotaped and then transcribed.



What has been your general impression of having had Maine Track students here?
What aspects have been positive? Challenging?
What do you think the faculty's perspective has been? How has the faculty benefited?
What do you think the staff's perspective has been? Patients' perspective?
How has the students' presence impacted you and your practice?
How has the students' presence impacted any process changes at your facility?
How has the students' presence impacted any systems changes in your community?
In what ways does the community benefit?
(Rural LIC Site Coordinator only)
What has been the impact on your professional satisfaction?
What has been the impact on your professional development and/or career?
What areas of self-improvement would you like to focus on?

Figure 1: Questions for semi-structured interviews.

An anonymous online survey of faculty preceptors was developed based on previous surveys of physician satisfaction in educational settings¹². A web-based survey tool was used (SurveyMonkey, www.surveymonkey.com). It was trialed with several inactive preceptors as well as rural LIC site coordinators and modified as a result of feedback. The survey included 16 statements centered on the themes of preceptor satisfaction, local and central support of preceptors and preceptor perceptions of the program. The survey was sent to all rural faculty four times over the course of three months (March through May of 2013) with a response rate of 58% ($n=49$).

Analysis

Qualitative techniques were used to analyze the transcripts¹³. Two authors (RB, CK) independently read all the transcripts, coding passages and establishing detailed codes. Initially, 44 detailed codes were generated. The commercial software program NVivo v10 (QSR International; www.qsrinternational.com/products_nvivo.aspx) was utilized for the coding process. These two authors subsequently reviewed their categories and minimal differences were detected and resolved. Three authors (RB, RT, CK) then jointly discussed and identified the themes that emerged.

Raw survey data were exported from SurveyMonkey into SPSS Statistics v21 (IBM; www.spss.com) for description and

analysis in comma-separated values (csv) format. Descriptive statistics were first conducted, followed by cross tabulation to examine trends within subgroups of the survey data. Faculty responses were grouped into those that responded 'Strongly Agree or Agree', 'Neither Agree or Disagree' and 'Disagree or Strongly Disagree', where applicable for response grouping. Both the number of responses and percentage of respondents were used in assessing the survey data.

Ethics approval

The Maine Medical Center Institutional Review Board exempted this study from reviews (#4139X).

Results

From the interviews of the rural LIC physician leaders, four major themes were identified: (1) melting old ways, (2) overcoming fears, (3) synergy of energy, and (4) benefits all-around. These are described related to the theoretical framework of Lewin's three-stage model of change.

Melting old ways

For many physicians trained under the traditional Flexnerian model, the concept of the LIC was a significant shift from



their past learning experiences. These leaders expressed skepticism about and discomfort with the LIC model. Disconfirming, or melting, the older model was challenging as initially there was neither a perceived gap between the traditional and newer educational models, nor significant dissatisfaction with the traditional model.

I think us old fashioned people still have qualms about the notion of an LIC as opposed to intensive kind of clerkships in a specialty for an extended period of time when you are trying to learn that subject matter and it remains to be seen how it turns out and I think most literature has been pretty positive on it.

We had a small portion of the medical staff who are very firmly entrenched that education should be one way and one way only and that this LIC model was crazy and that it was even more crazy testing it in a center that was not an academic center. So they really felt that we were doing a great disservice to the students. I would like to say we won them all over and they are all supporters and a lot of that had to do with our first two students who were just so fabulous.

I had a lot of anxiety about are they actually going to learn what they need to learn in a small hospital? Are they going to see what they need to see? I had concerns about how the docs were going to change their ways around teaching. We all grew up in the block system. Ultimately it turned out OK.

Overcoming fears

The unfreezing process, which is the first stage of change, can cause anxieties and fears as the previously accepted mental models are melted away. These physician leaders identified three areas of concerns. First, resistance of the LIC model stemmed from discomfort with the potential impact on preceptor productivity.

I think that if you asked most of the preceptors the big challenge for them is just they want to do more, they love it, but it's the constant 'where do I find time to do what I want

to do' versus balancing trying to see patients and being under constant pressure.

The biggest concern is the financial feasibility of it. I feel like it is the elephant in the room in everything we go to. The reality of it here is that, which is true for other places, is that we are heavily productivity based and in order for preceptors to be able to teach students well they need to decrease the amount of patients they see and being able to support them to teach financially is essential. Finding the money to support them to teach is challenging. I think that is the biggest single concern of having them around.

The fear of productivity losses was linked with the financial impact on the hospital.

At the start the concern was do we have the resources for teaching. That was always my biggest worry. You know we are a small hospital.

I was in a budget meeting, that is what I do now and money is so tight that I worry a little bit. When you think about what it costs the institution to do this, there is a number on this, it's not a big number but its \$___ or so a year and this program is not at risk here at all but I always worry a little bit about that as time goes on.

This concern was mirrored in the preceptor survey, which found that most preceptors noted a decline in clinical productivity and efficiency as a result of participating in the LIC. Most preceptors, however, also felt that the practice and hospital administration were supportive of their involvement and that overall office productivity had not declined (Fig2).

A second early fear was whether the 'right' student was matched with the rural community. Although no perceived mismatches had occurred in the first two years of the LIC experience, physicians wanted to be sure there was a good fit between the student and rural site.



The temperament of the students made a huge difference I think in how that played out.

You know the two students we had were both terrific and they had just great personalities and were beautiful in their personal skills and they were enthusiastic without being intrusive. So how much of it were those two students and how much of it is the curriculum and design is not clear to me.

For the LIC site coordinator, concerns about the administrative burden were voiced. For some, this educational role was very new to them.

I've had to get smart about organizing things. I could not afford to reduce a lot of my time in the practice so I have to try to be more efficient when I'm there and take some time during my day, I take lunch to answer emails and coordinate phone calls and do the things for the program while I am also wearing my other hat.

It gets a little bit easier as you do it each year but there is a fair amount of work to doing this. The logistics and getting everybody at the right place at the right time and keeping the preceptors up to speed about what we need to do and all that kind of stuff.

Synergy of energy

Clearly some of the forces facilitating change with the LIC model, and movement towards a new equilibrium¹¹ were the positive impacts of having the Maine Track LIC students in the community and working with many providers. Three clear elements emerged: excitement, energy and engagement. These elements appeared to compound one another and magnify the sense of positive energy from having the LIC program. The results of the faculty survey also supported this theme (Fig3).

The students have been very active in the hospital community in the day to day events and they go to a lot of the educational things which are usually geared towards nursing

or ancillary staff and so I think the staff find that very exciting too having a student involved.

They have brought an energy to the institution and to me personally, to the preceptors, to a lot of the patients, and even to people who are not actively involved with them. They have really brought an energy and excitement for learning and a sense of purpose added to it and the program here. The hospital here has its mission which I think people are very receptive to.

I think from the beginning it is great to have students, I think it energizes you. I think it makes you look good. When you practice it makes you really kind of talk out loud about 'why do I do what I do', and I think it is beneficial for patients to see that kind of interaction.

The students were just so accepting and willing to help and so I think that that was what got us through that first year and then because it seemed to go so well, obviously we were interested in doing things that we could make better. We've been fine tuning it each year but I think that was empowering. It was like 'hey, we can do this'.

Benefits all-around

Aiding the rural community sites as they shifted towards the refreezing stage of change¹¹ were the many perceived benefits of having the LIC model at their site. These rural physician leaders thought that, in essence, everyone gained. For the preceptors, job satisfaction increased and their own ongoing education was improved by having inquisitive learners working with them.

This is important for us in terms of the sort of professional nature of our most capable medical staff members and the people who really crave additional intellectual challenge. This is a big piece of what keeps them happy and keeps them engaged and keeps them here.

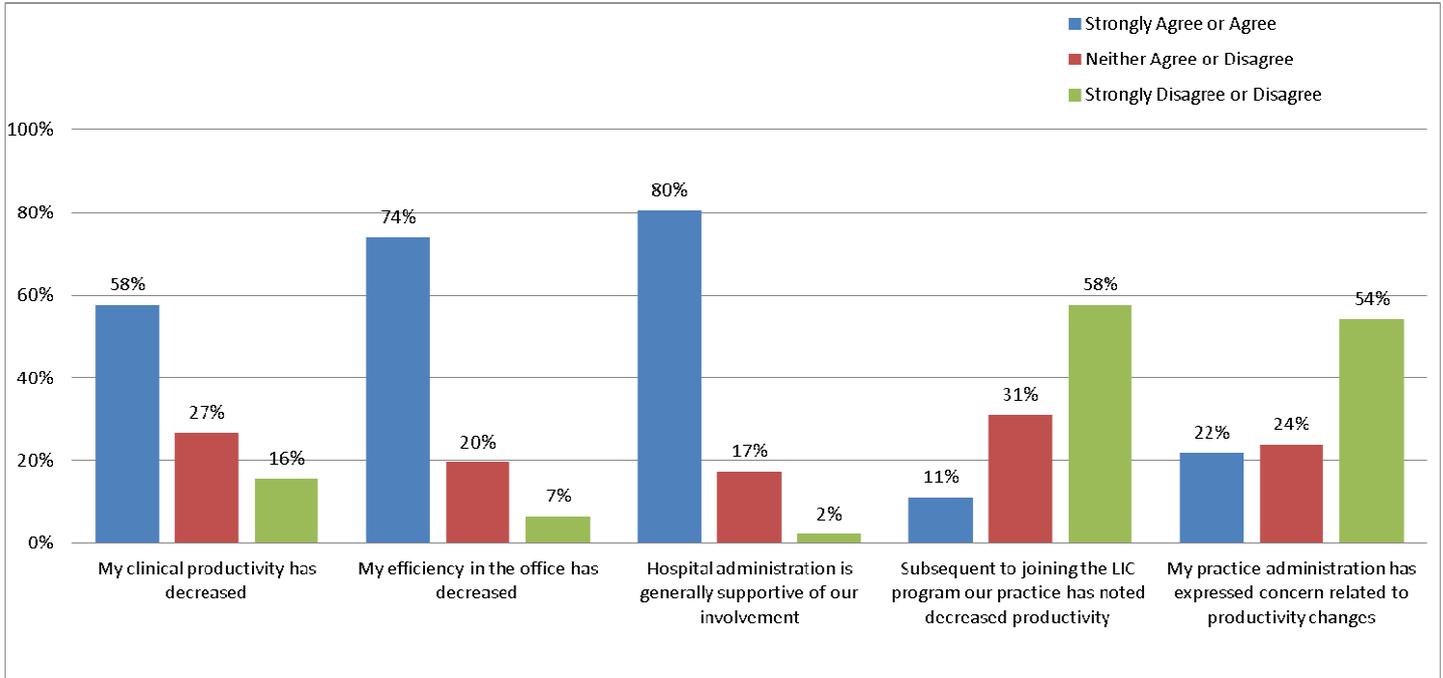


Figure 2: Results from faculty satisfaction survey – perception of fears.

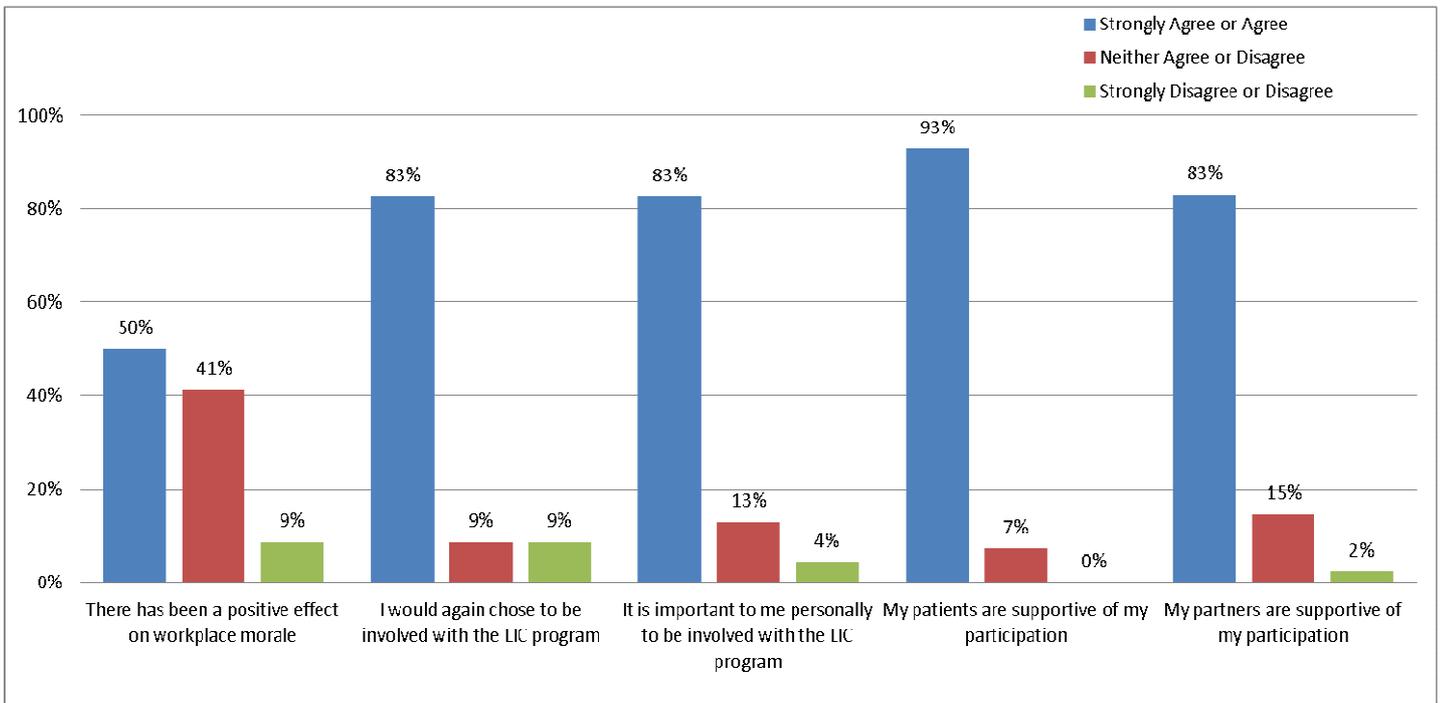


Figure 3: Results from the faculty satisfaction survey – synergy of energy.



The preceptors do recognize that they have changed the way that they practice and the students keep themselves on their toes. The examples I like to use are the two conferences that we have had monthly forever and ever, morbidity and mortality and tumor board conferences. Morbidity and mortality before the medical school program was the attending opens the chart and starts '86 year old Mildred here for fourth admission for COPD [chronic obstructive pulmonary disease] and she didn't make it this time, next.' Whereas I have noticed this sort of transition and now the attending opens up the chart to talk about the patient and they see the students there and they actually start talking about the disease and the patient. It's a remarkable transition that happened and the same with the tumor board.

A family physician impassionedly made the comment that 'the students make us better physicians' because physicians want to be on top of their game, they want to teach, and they're conscious of doing things the right way.

The rural hospitals benefited by recruiting physicians interested in teaching. This benefit is hoped to decrease the financial costs of hiring locum tenens providers.

I meet with just about everybody that has been recruited here and I talk about the medical school and what the expectation is. In fact, we have had some people come here because of that. They say 'oh really you teach the Tufts medical students? That is awesome'.

When you do go to a small hospital in a rural area and that teaching aspect has kind of died, and when you grow up in a teaching atmosphere whether as a medical student or resident, you are always in that teaching environment ... then you get into a small rural practice and that sort of is gone. Most of us don't want to lose that so when they hear there are teaching opportunities that is a big plus for recruitment.

The return on investment is very delayed but we know in one form or another ten years from now there will be something here, it may look different, but we are going to need physicians and we are going to want good physicians and I

think that is why the Board originally signed on even though as an investment it didn't look like there would be an immediate return. They are aware of this long term need to stay attractive and stay connected to the mainstream and have people that want to come here.

The community hospitals also benefited through marketing efforts and highlighting the program to local stakeholders.

We put posters all over the hospital announcing the students and their bios and also the preceptors because I like for them to get the recognition from both their peers and their patients that they are involved in this program. We provide posters for their offices so while their patients are sitting in the waiting area they can say 'oh look Dr ____ is teaching'.

We have cards all over the place. We have pictures everywhere. Our local paper The _____ does two or three articles a year about the program.

Hospital staff enjoyed having the LIC students on-site and patients also benefited from having an LIC student closely involved with their health care over a prolonged, longitudinal engagement.

The staff were really involved and they liked them and the students were really part of the life of the institution I think ... they really were and it was nice.

Oh yeah, the staff love them. They love them. As a matter of fact one of my jobs is kind of ... you know I feel like their handler because everybody wants a piece of them and of course everything is interesting.

In general the staff loves the students. They really do. Sometimes they are a little confused because we are not a teaching hospital so a lot of them have never heard of us having students here but that is becoming less and less of an issue because of having more and more students but most of them love it.

I have heard some anecdotes that there are some patients who really missed their medical student. They felt like they had a



personal doctor that was particularly interested in them and there are some patients that really responded to that and who sort of felt like in a way they got better care because their doctor was being at his or her best.

There is no question that the community is just on board with this. I mean you saw that in the patients when they come in. Many of our patients are sort of return customers. They'll even ask me 'don't you have a student today?' or 'why no student today?' and I'll say well this is the time of year that we don't have students but they will be back in June and they will say 'oh ok good'. Especially when the students get their panel patients and the patients will actually ask for the student.

Lastly, a teaching culture was promoted, and enhancement of the hospital's mission in education was thought to be occurring.

It's becoming just part of what we do, which is teaching medical students.

We had a pool of docs that were psyched for it and ready to go and then there was this other pool that said I don't want a medical student and it actually amazed me that as time went by they all sort of said I'll teach.

The Board loves it. I approach the board each month just with a couple of sentences about what's happening in the med school and they love it when I bring one of the students to the Board meeting and they give a little introduction and talk about themselves.

The benefits of the LIC as perceived by the rural LIC preceptors were also evident in the LIC preceptor survey. Most preceptors noted an increase in professional and overall job satisfaction as well as an improvement in clinical skills and medical knowledge (Fig4).

Discussion

This research has described from the qualitative component of this mixed-methods study four themes related to introducing the LIC at rural hospital sites. This research found that physician leaders were challenged by the innovative educational model, needed to

overcome multiple fears, became excited and energized as the LIC program developed, and recognized many benefits for all stakeholders. LIC preceptors supported these four themes and generally held a very positive perception of the program. These findings most closely align with the three-stage change model by Lewin¹¹.

In the first stage of this change model, individuals must 'unfreeze' past mental models and cultural influences. Although medical educators have described the fragmentation of the traditional medical student clerkship experience¹⁴, it is likely that rural physicians are unaware of such literature criticizing this approach and supporting the LIC concept. Driving forces help in disconfirming the present situation. As such, from the outset, the Maine LIC was proposed to rural physicians and administrators as a possible long-term solution to the chronic problem of attracting and maintaining a rural physician workforce. Providing an in-depth rural clinical experience as a means for future recruitment⁴, and for Maine students in particular, enabled leaders and faculty to take that leap-of-faith step and agree to participation in the LIC model. Recognizing the success of factors in rural clinical placements and education^{15,16}, the Maine Track LIC developers also advocated for the selection of a committed and trusted local physician site coordinator as it was thought that individual would be a key driving force for change.

During this first stage of change, restraining forces emerge that attempt to perpetuate the status quo. Anxieties and fears regarding the impact on physician productivity were very evident. To address the financial concerns of physicians and administrators, sharing the literature assessing student impact on practices may be helpful in overcoming these fears. Worley and Kitto¹⁷ described how students in rural general practices in Australia for at least five months have a positive effect on physician productivity. Jack Verby, director of a long-standing 12 month LIC program in the USA, has suggested that having a third-year medical student was worth an additional \$40,000–70,000 in annual billings compared to when no student is present, a statement previously noted by the author¹⁸. One key factor in the effect of student presence on productivity may be the duration of the rural placement. Rotations lasting longer than 2–3 months may go beyond the inflection point at which students have a positive financial impact on the practice¹⁹.

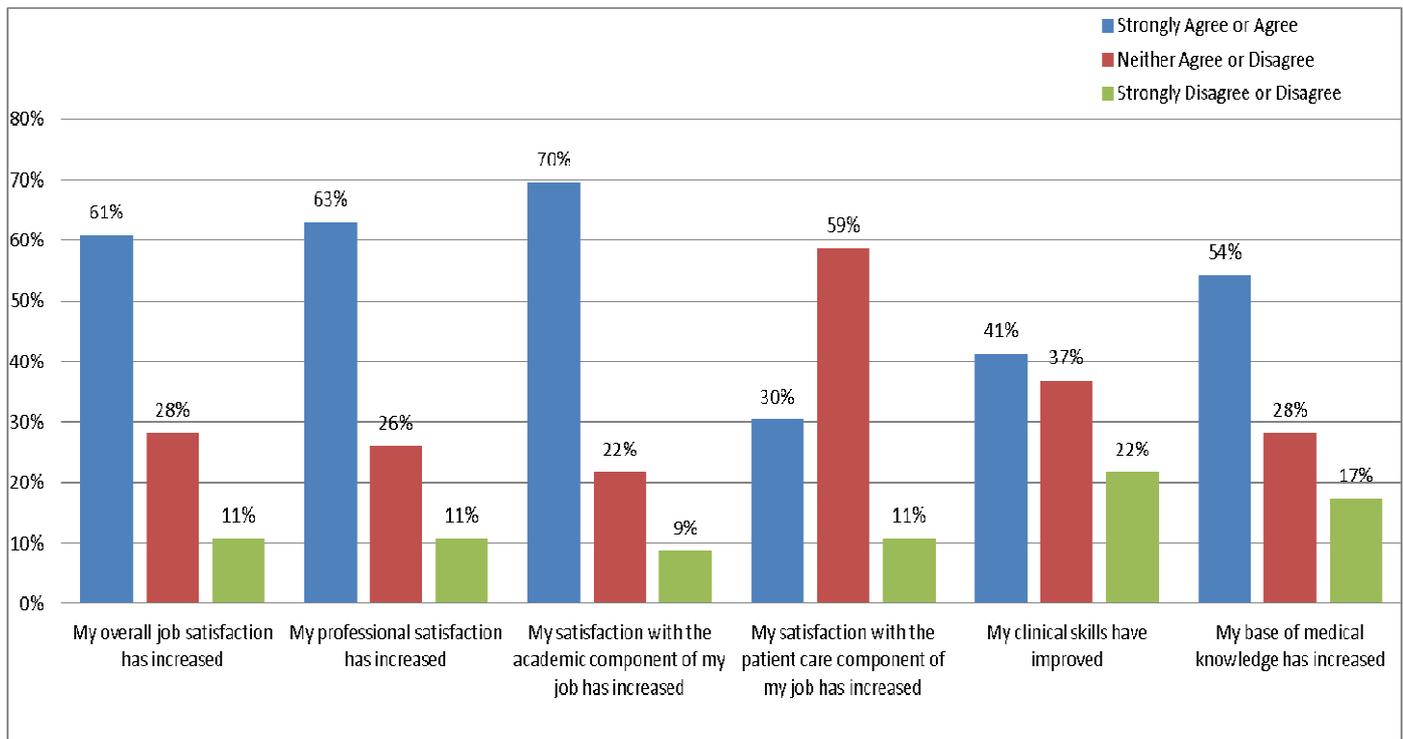


Figure 4: Results from faculty satisfaction survey – benefits all-around.

Although the LIC preceptors in this study did perceive that their productivity and office efficiency had decreased (Fig2), this has yet to be supported by an assessment of actual practice information (eg number of patient visits, office billings). These preceptor perceptions could pose challenges for recruitment and retention of faculty. We suggest that educational leaders, as change agents, need to address these perceptions up front. Methods to manage these anxieties could include reviewing the literature cited above, being transparent about all financial aspects of the program, and committing to periodic assessment of the true impact on productivity. If a true decrement in productivity is realized, educational leaders may take steps to provide teachers with the means to minimize these effects through faculty development and the dissemination of efficient teaching techniques. They may also work to insulate providers from the financial risk associated with the teaching enterprise.

The ability to select the ‘right’ student for the rural LIC community was another common reservation on the part of faculty. Students, however, would seem unlikely to pursue clerkship placement in a community in which they felt themselves to be a poor fit. Similarly it would seem evident that only more self-directed students would be interested in participating in an LIC.

In the second stage of Lewin’s change model, individuals are motivated to change and the old ways have begun to melt away. For the physician leaders we interviewed, the synergistic effect energized preceptors and hospital staff members; along with the excitement of having young and engaging learners, this helped enable the LIC program become a success. Medical students in essence become the change agents for the growth of a new status quo. Aiding in movement to a new state are the many perceived benefits of the LIC. The positive perceptions of LIC preceptors have



been similarly described for programs in both rural Australia²⁰ and urban San Francisco²¹. In addition to increases in preceptor job and professional satisfaction, preceptors felt their medical knowledge improved as did their clinical and teaching skills^{22,23}. LIC preceptors also believed that both the quality of patient care and workplace morale are enhanced by having medical students present in the practice¹⁰. In addition to the perceived benefit of recruiting and retaining physicians at rural hospitals, having the students embedded in the rural LIC may also benefit the community in educational (eg increase local interest in healthcare careers by students conducting health events with high school students) and economic (eg in-migration of new services or employers) areas^{24,25}.

'Refreezing' is the third and final stage of the change model. After the 'baking' has occurred in the second stage, organizations can go through a period of consolidation where the new model, self-concepts and identity are established²⁶. Although only two classes of students have completed the rural LIC, we believe the positive energy and perceived benefits of the rural LIC program are easily facilitating the process of making the change permanent in these rural sites. We would suggest that other processes have also aided this stage. The rural site coordinators have held frequent meetings since the inception of the program, sharing best practices and discussing means of overcoming preceptor anxieties and other local barriers. Actively marketing the students' presence in local media has helped the branding of the program, and describing the students' stories has engaged local community members. The Maine LIC students also now recognize a rural preceptor for a teaching award on an annual basis.

The results of this study have certain limitations. These findings reflect the experience of one program in one rural state, and do not reflect the impact of introducing an urban LIC program. Perceptions of other stakeholders (eg rural hospital administrators, staff, patients) may differ from those of actively engaged physicians. Although the faculty survey response rate was reasonable at 58%, there is the possibility that faculty less favorably inclined toward the LIC did not

participate. Similarly, these results are based entirely upon the perception of the participating faculty. This research offers no empiric evidence that patient care or educational outcomes are improved as a result of the LIC or that the financial impact is positive or at least not negative. Another potential limitation is that four of the five sites were supported by a three-year Health Resources and Services Administration (HRSA) workforce development grant in implementing the LIC. The effect of this grant on the perception of the faculty administrators is also unknown as the presence of this financial support may have positively skewed the perception of the participants. Financial impact is a realistic concern for community sites, and future LIC sites without grant support could be assessed for similar concerns. Finally, other theoretical models for change have been described¹¹, although the authors felt Lewin's model was most appropriate for this setting.

Conclusions

This study highlights four themes related to beginning a LIC in five rural sites (melting old ways, overcoming fears, synergy of energy, and benefits all-around) and the perceptions of LIC preceptors in those sites. Described within the theoretical framework for change by Lewin¹¹, the results of this study are significant as the findings outline the driving and restraining forces to be anticipated when new rural LIC sites are recruited. The results also highlight the positive aspects and benefits of the LIC model that can be shared with potential sites, supporters of current sites, and funding agencies.

References

1. Gazewood JD, Rollins LK, Galazka SS. Beyond the horizon: the role of academic health enters in improving the health of rural communities. *Academic Medicine* 2006; **81**: 793-797.
2. Whitcomb ME. The challenge of providing doctors for rural America. *Academic Medicine* 2005; **80**: 715-716.



3. Rabinowitz HK, Diamond JJ, Markham FW, Paynter NP. Critical factors for designing programs to increase the supply and retention of rural primary care physicians. *JAMA* 2001; **286**: 1041-1048.
4. Rabinowitz H, Diamond J, Markham FW, Wortman JR. Medical school programs to increase rural physician supply: a systematic review and projected impact of widespread replication. *Academic Medicine* 2008; **83**: 235-243.
5. Bing-You RG, Bates PW, Epstein SK, Kuhlik AB, Norris TE. Using decentralized medical education to address the workforce needs of a rural state: a partnership between Maine Medical Center and Tufts University School of Medicine. *Rural and Remote Health* **10**: 1494 (Online) 2010. Available: www.rrh.org.au (Accessed 3 December 2014).
6. Norris TE, Schaad DC, DeWitt D, Ogur B, Hunt DD, Consortium of Longitudinal Clerkships. Longitudinal integrated clerkships for medical students: an innovation adopted by medical schools in Australia, Canada, South Africa, and the United States. *Academic Medicine* 2009; **84**: 902-907.
7. Hirsh D, Walters L, Poncelet AN. Better learning, better doctors, better delivery system: possibilities from a case study of longitudinal integrated clerkships. *Medical Teacher* 2012; **34**: 548-554.
8. Bates J, Towle A. Longitudinal integrated clinical placements: where are we going? *Medical Education* 2012; **46**: 1022-1027.
9. Poncelet AN, Bokser S, Calton B. Development of a longitudinal integrated clerkship at an academic medical center. *Medical Education Online* 2011; **16**: 5939.
10. Walters LS, Worley PS, Prideaux D, Rolfe H, Keaney C. The impact of medical students on rural general practitioner preceptors. *Rural and Remote Health* **5**: 403 (Online) 2005. Available: www.rrh.org.au (Accessed 3 December 2014).
11. Kritsonis A. Comparison of change theories. *International Journal of Management, Business and Administration* 2005; **8**: 1-7.
12. Bunton SA, Corrice AM, Pollart SM. Predictors of workplace satisfaction for US medical school faculty in an era of change and challenge. *Academic Medicine* 2012; **87**: 574-581.
13. Creswell JW. *Qualitative inquiry and research design*, California: SAGE Publications, Inc., 2013.
14. Bell SK, Krupat E, Fazio SB. Longitudinal pedagogy: a successful response to the fragmentation of the third-year medical student clerkship experience. *Academic Medicine* 2008; **83**: 467-475.
15. Maley M, Worley PS, Dent J. Using rural and remote settings in the undergraduate medical curriculum: AMEE Guide No. 47. *Medical Teacher* 2009; **31**: 969-983.
16. Page S, Birden H. Twelve tips on rural medical placements: what has worked to make them successful. *Medical Teacher* 2008; **30**: 592-596.
17. Worley PS, Kitto P. A hypothetical model of the financial impact of student attachment on rural general practices. *Rural and Remote Health* **1**: 83 (Online) 2001. Available: www.rrh.org.au (Accessed 3 December 2014).
18. Bowman R. Impact of medical students on rural preceptors – it's time for better evidence. *Rural and Remote Health* **1**: 199 (Online) 2003. Available: www.rrh.org.au (Accessed 3 December 2014).
19. Hudson JN, Weston KM, Farmer EA. Medical students on long-term regional and rural placements: what is the financial cost to supervisors? *Rural and Remote Health* **12**: 1951 (Online) 2012. Available: www.rrh.org.au (Accessed 3 December 2014).
20. Shannon SJ, Walker-Jeffrey M, Newbury JW, Cayetano T, Brown K, Petkov J. Rural clinician opinion on being a preceptor. *Rural and Remote Health* **6**: 490 (Online) 2006. Available: www.rrh.org.au (Accessed 3 December 2014).
21. Teherani A, O'Brien BC, Masters DE, Poncelet AN, Robertson PA, Hauer KE. Burden, responsibility, and reward: preceptor experiences with the continuity of teaching in the longitudinal integrated clerkship. *Academic Medicine* 2009; **84**: S50-S53.



22. Walters L, Prideaux D, Worley PS, Greenhill J. Demonstrating the value of longitudinal integrated placements to general practice preceptors. *Medical Education* 2011; **45**: 455-463.
23. Couper I, Worley PS, Strasser R. Rural longitudinal integrated clerkships: lessons from two programs on different continents. *Rural and Remote Health* **11**: 1665 (Online) 2011. Available: www.rrh.org.au (Accessed 3 December 2014).
24. Strasser RP. Community engagement: a key to successful rural clinical education. *Rural and Remote Health* **10**: 1543 (Online) 2010. Available: www.rrh.org.au (Accessed 3 December 2014).
25. Toomey P, Lovato CY, Hanlon N et al. Impact of a regional distributed medical education program in an underserved community: perceptions of community leaders. *Academic Medicine* 2013; **88**: 811-818.
26. Denz-Penhey H, Murdoch C, Lockyer-Stevens V. 'What makes it really good, makes it really bad.' An exploration of early student experience in the first cohort of the Rural Clinical School in the University of Western Australia. *Rural and Remote Health* **4**: 300 (Online) 2004. Available: www.rrh.org.au (Accessed 3 December 2014).
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