Medical Teacher

ISSN: 0142-159X (Print) 1466-187X (Online) Journal homepage: informahealthcare.com/journals/imte20

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To cite this article: Rachel Ellaway, Lisa Graves, Sue Berry, Doug Myhre, Beth-Ann Cummings & Jill Konkin (2013) Twelve tips for designing and running longitudinal integrated clerkships, Medical Teacher, 35:12, 989-995, DOI: 10.3109/0142159X.2013.818110

To link to this article: https://doi.org/10.3109/0142159X.2013.818110

Published online: 24 Jul 2013.

2013; 35: 989–995 MEDICAL TEACHER

TWELVE TIPS

Twelve tips for designing and running longitudinal integrated clerkships

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Abstract

Longitudinal integrated clerkships (LICs) involve learners spending an extended time in a clinical setting (or a variety of interlinked clinical settings) where their clinical learning opportunities are interwoven through continuities of patient contact and care, continuities of assessment and supervision, and continuities of clinical and cultural learning. Our twelve tips are grounded in the lived experiences of designing, implementing, maintaining, and evaluating LICs, and in the extant literature on LICs. We consider: general issues (anticipated benefits and challenges associated with starting and running an LIC); logistical issues (how long each longitudinal experience should last, where it will take place, the number of learners who can be accommodated); and integration issues (how the LIC interfaces with the rest of the program, and the need for evaluation that aligns with the dynamics of the LIC model). Although this paper is primarily aimed at those who are considering setting up an LIC in their own institutions or who are already running an LIC we also offer our recommendations as a reflection on the broader dynamics of medical education and on the priorities and issues we all face in designing and running educational programs.

Introduction

Longitudinal integrated clerkships (LICs) have been attracting a growing following as an alternative to traditional block clerkships. There are now many schools around the world running elective LICs and a smaller number that run mandatory LICs in their undergraduate programs. Although there are common factors LICs have been implemented in many different ways.

A clerkship is a common North American term denoting the clinical years of undergraduate medical education programs. Traditionally this has been organized as 'block clerkships' where learners undertake a succession of clinical learning experiences based on one disciplinary focus at a time. This model has been criticized for its lack of continuity, interruptions to developing practice, an inability to track patient journeys, limited patient-focus and as a result a degraded focus on patient-centred or patient-oriented care (Hudson et al. 2011). Longitudinal integrated clerkships have been proposed both as a solution to the limitations of the block clerkship model and as an opportunity to innovate within the clerkship format (Hauer et al. 2009; McLaughlin et al. 2011).

At its heart, an LIC requires learners to spend an extended time in a clinical setting (or a variety of interlinked settings) where their clinical learning opportunities are woven together through a continuity of patient contact and care, continuity of assessment and supervision, and continuity of clinical and cultural learning through patients, peers, health providers, and community health and social resources (Hirsh et al. 2007). Although it has particular associations with community-based programs, the LIC model has been run successfully in urban as well as rural settings (Couper et al. 2011; Hirsh et al. 2012).

This 'twelve tips' paper is primarily aimed at those who are considering setting up an LIC in their own institutions or who need a broader framework to review or develop existing LIC activities. We also offer this paper as a reflection on the broader dynamics of contemporary medical education and on the priorities and issues we all face.

Experience and evidence

Our recommendations are based on three sources. Firstly, we have drawn upon our own experience in building and running LICs. The Northern Ontario School of Medicine and the University of Alberta implemented their LICs in September 2007 followed by the University of Calgary in 2008 and McGill University in 2010. NOSM's LIC is mandatory while the others are elective. A second source has been the discourses of the CLIC group (www.clicmeded.com), a consortium of schools that run LICs in their own institutions and share ideas and experiences through conferences and other activities. These first two sources are grounded in the lived experiences of designing, implementing, maintaining, and evaluating LICs.

The third source is more traditionally evidence-based in its approach. We undertook a thematic review of the current published literature on LICs to identify the advantages and disadvantages of this approach. We conducted a PubMed search in July 2012 and again in December 2012 using the search term: 'longitudinal clerkship'. This generated 164 returns. Papers were rejected if they did not refer to LICs as

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ISSN 0142–159X print/ISSN 1466–187X online/13/120989–7 © 2013 Informa UK Ltd.
DOI: 10.3109/0142159X.2013.818110

a distinct model although synonyms for LICs were allowed. We also rejected papers that formed short commentaries on longer papers that did not add substantially to the debate. This left 18 papers that were entered into our thematic review (Hemmer 2009; Norris et al. 2009; Teherani et al. 2009; Denz-Penhey & Murdoch 2010; Zink et al. 2010; Couper et al. 2011; Hudson et al. 2011; Konkin & Suddards 2012; Levitt & Cooke 2011; Mazotti et al. 2011; McLaughlin et al. 2011; Brooks et al. 2012; Hauer et al. 2012a,b; Hirsh et al. 2012; Hudson et al. 2012; O'Brien et al. 2012; Teherani et al. 2013).

The review synthesized the key findings or recommendations from each of the papers with our own experiences to derive a 12-point framework to guide the development of an LIC. The framework was piloted through workshops and consultations and adjustments were made to accommodate the issues raised. The following framework of twelve tips are the result of this synthesis.

Tip 1

What benefits do you require or expect from running an LIC?

An LIC can benefit learners, preceptors, medical schools, and host communities in different ways:

- The principle benefits for learners in an LIC flow from five dimensions of continuity: continuity of care through learners following patients through multiple steps in their journey; continuity of supervision through learners building long-term learning relationships with their preceptors; continuity of assessment through learners being directly observed over an extended period of time; continuity of context where learners build competence in working within a particular healthcare environment, and continuity of learning by linking learners' experiences to global program objectives and outcomes. An LIC may also improve learners' confidence, satisfaction, engagement, and performance as well as their understanding of the culture and health human resources of their placement context.
- Preceptors and other health professionals may also benefit from the positive impact an LIC can have on patient care (for instance when learners act as patient advocates). There can be benefits from learners becoming active contributors to the health teams in which they are placed. For instance, LIC preceptors typically tend to see their learners, once they have spent some time in the LIC, turning from a net drain on their time to being positive contributors to their practice. The time taken for this inflexion to occur will vary depending on the learner and their circumstances but is, at least from practical experience, roughly three to five months. The LIC may also afford more opportunities for richer teaching experiences such as peer teaching, team teaching, and interprofessional learning with other health professional learners.
- Although it is not advised to develop an LIC solely to address capacity issues, some medical schools with increased class sizes may benefit by engaging new teaching sites rather than expanding overburdened clinical teaching facilities. An LIC may also help to build longer term relationships between the medical school, its clinical faculty, and its partner communities. Developing an LIC jointly with its host communities is more likely to be successful and sustainable than those that do not.

Despite the many potential benefits to running an LIC, these benefits do not flow automatically from longitudinal clinical learning experiences. It is important therefore to be clear about the benefits you are pursuing, whom the beneficiaries are to be, and how these benefits will be enabled through the design and execution of the LIC plan.

Tip 2

What challenges do you face in starting and running an LIC?

Just as there can be many benefits to the LIC there can also drawbacks and challenges:

- Programs are responsible for providing a learning environment in which LIC students are able to meet their goals and objectives. LIC sites must be selected and developed accordingly. For instance, if the breadth of clinical presentations available to learners is sometimes limited in a particular LIC then preceptors can ensure that each time a similar case is encountered that learners approach it at progressively higher levels of complexity.
- From time to time there may be relationship challenges between learners and preceptors or with others in their LIC. These challenges may occasionally be too severe to resolve without disrupting learners' studies. The capacity to change learners' preceptors within a community, to move learners between LIC sites or even to pull them out of an LIC altogether must, therefore, be part of the LIC plan. For example, Calgary will repatriate an LIC learner after 90 days if a conflict remains unresolved.
- LICs may require more or different preceptor time and effort than other clerkship models. This may place additional burdens on the practice as a whole. It may be found that while LICs often require more administrative input, the actual face-to-face teaching requirement can be less than for block clerkships. LIC learners will take time to become 'useful' and preceptors and their practices need to be able to absorb the potential burden of learners up to this point. Establishing an LIC in a community where health professionals are already familiar with clinical teaching can be a major asset. The needs of other learners at the LIC site (such as residents and elective students) should also be taken into account, particularly as more senior learners, in particular residents, may lessen the teaching load on preceptors and can therefore be an asset in sustaining an LIC.
- Community teaching for teaching beyond the preceptor should also be reviewed. If a community proves unstable in its capacity for physician teaching, then over-burdening them with additional responsibilities may lead to early preceptor burnout to the detriment of all.
- Institutions undertaking LICs may face increased cost and logistical complexity. LICs may also involve recurring costs providing access to campus-based resources and

supporting videoconferencing, teleconferencing, exam invigilation, and/or travel. Additional effort is required to identify appropriate communities and preceptors for the LIC, and, in the case of elective LICs, to identify appropriate learners. Resources will also be required to deal with scheduling and other logistical challenges that may occur in and around the LIC.

- Developing an LIC may or may not involve brand new teaching sites. For instance, both the University of Alberta and the University of Calgary have used sites that had taken residents and students for a number of years before starting the LIC. Although it seems less costly to expand existing facilities than to bring completely new sites on board, we have encountered no strong evidence to substantiate this and the number of factors involved may make it difficult to make a definitive ruling on this matter.
- Accommodation costs may be another concern, particularly if learners need to rent accommodation at their LIC site as well as retaining accommodation near their main campus. Given the potential for additional financial burdens on students most programs attempt to ensure that those students undertaking an LIC are not economically disadvantaged.

We recommend that you regularly review the problems that may be faced in running an LIC and whether you have capacity to address them. Ensuring support from all levels: student, local faculty, administration, and community as well as leadership at the faculty and departmental level, is key.

Tip 3

How long should each longitudinal experience be?

There is some debate how long a clerkship needs to be in order to be considered 'longitudinal'. A few weeks are clearly insufficient, and, while a whole year is definitely long enough, it may be more time than some schools can secure. At the very least, there needs to be sufficient time for the continuities of care, supervision, assessment, learning, and context to be established. It may take even longer for a learner to be accepted as a team member and become an asset to the practice and not considered a burden. Too short a time period may increase learners' anxiety about the demands of the LIC model without allowing the benefits to be realized, or for preceptors to benefit from their learners contributions to their practice. Worley & Kitto (2001) distinguish between a 'turning point' where an LIC learner 'is of daily benefit to the practice' and a 'break-even point' where an LIC learner generates sufficient 'financial benefit to counter the earlier losses'. Although the length of an LIC should in the end be determined by practical and educational considerations, longer would seem to be better. This is an area needing further research and evaluation.

Tip 4

Where your LIC will take place?

LICs need not be rural or even community-based and they may be run in a single location (subject to capacity) or in many locations (subject to availability and logistical complexity). Location can be considered in terms of clusters of nearby practices rather than single practices. Communities geographically close to each other can coordinate or share learners, building on each other's capacity or resources for teaching. A suitable LIC practice needs community collaboration, sufficient preceptors, sufficient administrative and technical support, and an adequate caseload diversity to support the educational needs of learners over time. Success in the initial years of an LIC will often perpetuate success as initial skeptics recognize the strengths of the LIC model.

Tip 5

How many students can realistically be accommodated in the LIC at any one time?

The number of learners that each site can take at any one time acts as a carrying capacity variable around which the LIC can be planned. This is a complex question and may depend on preceptors (quality and quantity), the numbers and types of other learners, the size of the practice and the patient population. Sites should not be seen as having fixed capacity; a site may have varying numbers of preceptors or be more or less flexible in terms of space for learners. Retaining 'back up' community sites can help to accommodate fluctuations in site capacity as well as accommodating repeating learners or learners who require a specific type of learning environment (for instance language or accessibility needs). Capacity can also be explored in terms of opportunities for interprofessional and intraprofessional learning. The structure of the formal academic session at each school may also determine the minimum number of learners to place at each LIC site. For instance, NOSM learners are placed in groups and clusters that are large enough to support small group learning.

Tip 6

Will the LIC be elective or mandatory?

Knowing how many learners you can take into your LIC at any one time should indicate whether all of your learners or only some of them can have the opportunity to undertake an LIC experience. Although capacity is a major factor there may be other reasons for following an elective or mandatory model, including learner choice and organizational culture and politics. At the time of writing the majority of schools known to be running an LIC were running them as electives. Selecting learners for an elective LIC can be challenging as it has yet to be established which students benefit the most from LIC experiences (Ellaway 2012). In the absence of research the current default model would seem to be random selection.

<table>
<tr><th></th><th>Monday</th><th>Tuesday</th><th>Wednesday</th><th>Thursday</th><th>Friday</th><th>Weekend</th></tr>
<tr><td>Early morning</td><td>Hospital rounds</td><td>Hospital rounds</td><td>Hospital rounds</td><td>Hospital rounds</td><td>Hospital rounds</td><td rowspan="4">Hospital rounds and on-call</td></tr>
<tr><td>Late morning</td><td>Primary care teaching</td><td>Primary care teaching</td><td>Primary care teaching</td><td>Primary care teaching</td><td>Specialty-specific sessions</td></tr>
<tr><td>Early afternoon</td><td>Web-conferenced PBL case 1 part 1</td><td rowspan="2">Primary care teaching</td><td rowspan="2">Specialty-specific sessions</td><td>Web-conferenced PBL case 1 part 2</td><td rowspan="2">Personal study time</td></tr>
<tr><td>Late afternoon</td><td>Web-conferenced PBL case 2 part 1</td><td>Web-conferenced PBL case 2 part 2</td></tr>
<tr><td>Evening</td><td>-</td><td>Hospital rounds</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
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Figure 1. Typical week breakdown of scheduled activity for LIC learners at the Northern Ontario School of Medicine.

Tip 7

What will a typical week in the LIC look like?

An LIC needs structure to support the vital dimensions of continuity identified earlier and cannot be left as a free for all for the learner to make of it what they will. One approach is to have students follow a patient panel designed to provide the required case mix allowing learners to build their own schedules around them; another is to provide more of a structured timetable with a less specified patient panel (see Figure 1 for a breakdown of a typical LIC week for third-year clerks at the Northern Ontario School of Medicine). Adding core learning sessions helps to maintain continuity of instruction by mapping the LIC to the core curriculum. It can also allay student anxiety that they are missing out by opting for an elective LIC. Although a core common curriculum is an essential part of an LIC, learners should still be allowed the flexibility to pursue self-directed learning activities within their LIC communities.

Tip 8

How will academic aspects of the program be accommodated whilst on the LIC?

Even though learners may be located at different sites they can still engage in shared activities using online communication and collaboration tools. Session formats such as reversed lecture (prerecorded lecture viewed independently followed by a synchronous group seminar on the material) and problem-based learning can be transacted perfectly well in LICs. As an example, the NOSM LIC week (shown in Figure 1) involves two afternoons each week of web-mediated PBL sessions. Other ways of maintaining a core program presence include using a portfolio whose longitudinality exceeds that of the LIC allowing learners to connect their LIC experiences to earlier and later learning events, and engaging learners in project work that links LIC experiences to earlier learning experiences.

Tip 9

How will your LIC integrate with the rest of the program?

The LIC should be a natural extension of the curriculum so that it enhances the program as a whole. In the right conditions developing an LIC can stimulate broader curricular change or evolution that involves the curriculum aligning with the LIC rather than the other way round. The key to consistency within the LIC is adherence to clerkship objectives and outcomes. Accreditation criteria for undergraduate MD programs vary between jurisdictions but typically they require that learners are provided with 'equivalent' experiences (although not necessarily identical ones) at each site of a distributed program, including LICs. The same core outcomes and objectives should be achievable using a variety of models even though there may be additional LIC-specific outcomes. Aligning the LIC curriculum with assessment, allows for the same objectives to be assessed regardless of the geographical location or format of the clerkship. Similarly, the same outcomes may be assessed with different but comparable tools.

Tip 10

How will you support LIC learners and teachers?

Learners on LICs may feel isolated from friends and family; they may have challenges working with their preceptors, fellow learners or others in the LIC environment; they may have problems in the community or they may encounter other challenges. Preceptors must work on their relationships with their learners to maximize the learning experience and learners should be involved in addressing these issues wherever possible. Learners can benefit from being placed in

groups of 2 or more, especially if the site or program is new, so that they can mentor each other and provide mutual support to help them to be less socially and professionally isolated. When LICs are based in smaller centres, learners' capacity to find physician care outside of their teaching faculty may also be a challenge.

Planning an LIC should include contingencies for relationship failures between faculty and learners, for students who encounter learning failures and for the increased burden to remediate learners who are struggling academically. Additional supports may need to be put in place, especially if the LIC is distant from other campus resources, including dedicated non teaching physicians (who can function as an MD to the students but not as a clinical preceptor or teacher that can evaluate or assess them), employee assistance programs, telephone support from parent university resources, and the ability to utilize resources from local higher education institutions. Preceptors in rural settings may encounter boundary issues more frequently than those in more urban settings and this should also be accommodated in the LIC support plan.

The relationship between the LIC and the parent medical school will need to be managed carefully. LICs should not be seen as sitting outside the medical program nor should they be seen as satellites to the main campus 'mothership'. Learners and their preceptors will need to remain connected to their medical program, and to the institution's resources. LIC learners and preceptors should be regularly engaged in activities that get them to function as a coherent learning community.

Given that a site should be willing to host an LIC for it to be suitable then the enthusiasm and engagement of preceptors is a given. Furthermore, the ability for preceptors and others in the community to get to know learners over time and to watch them develop helps to sustain energy levels and commitment. Not only does faculty development serve to enhance teaching skills it may also provide reassurance to LIC students that their preceptors are well prepared and actively engaged with their learning. Establishing and maintaining a standard of teaching across sites is an important part of this. Faculty development activities may need to adapt to a more distributed faculty demographic although it is just as likely that the sites in which LICs may take place are already a part of the institution's catchment area. Although some sites may never have had medical students before, many others will have had regular contact with the medical school in other contexts (residents, electives, shorter placements, etc.). As an example, all of the sites selected for the LIC at the University of Alberta and the University of Calgary had already been teaching both undergraduate and postgraduate programs for many years and had regularly taken advantage of faculty development opportunities afforded to rural teachers.

Tip 11

How will you 'sell' the LIC to learners and faculty?

The LIC concept may be unfamiliar to learners and faculty and may therefore be met with a mix of positive and negative reactions. It will, therefore, be important to communicate what the planned LIC will involve, who it will involve and how it links to the rest of the program. Learner anxieties can be addressed by sharing the evidence that participating in an LIC will not impede their target residency or negatively impact their performance on licensing exams (in fact our experience would indicate that it is very likely to improve them). For example, class after class of NOSM learners (all of whom undertake an 8-month LIC) have been shown to perform as well as, and in many cases better than, other Canadian medical schools, both in their LMCC exams and in the national match for residency places. That NOSM learners regularly match to generalist specialties and subspecialties as well as to family medicine demonstrates, even to the most skeptical learner, that their LIC experience does not in any way disadvantage their career opportunities. On the whole, we find that learners often turn out to be the best champions for the LIC model, not least by their ability to win over doubting faculty by their confident and competent approach to patient care.

The resistance of existing faculty to change can be a significant barrier to implementing an LIC in an established medical school. Many urban subspecialty faculty members may not believe that students will be able to meet their clerkship objectives in an LIC setting. It is important, therefore, to have key champions within the faculty, including the Dean and the relevant Associate Deans. Building networks with others in universities with successful programs can also assist to allay faculty fears. For example, the CLIC Group (www.clic-meded.com) has provided a valuable forum for sharing expertise and solutions to common problems and issues around designing and running LICs.

Although there may be some pressure to pilot an LIC 'to see if it works' before committing to this model, we would argue that this is largely redundant as the LIC model has been shown to work well in different contexts. However, it can help in some circumstances to undertake a staged increase in numbers of LIC sites rather than launching a program all in one go so that particular logistical issues can be worked out. However, if a staged increase is followed, those sites that are involved should take on a full complement of students immediately so that the students have a supportive peer presence at their LIC site.

Tip 12

How will you know your LIC has been successful?

It is important to develop a robust program evaluation plan as you are developing your LIC. Asking the right questions is, as ever, an important part of evaluation and they should be designed to satisfy the needs of all stakeholders including the host communities for the LIC. The longitudinal outcomes of the LIC could also be tracked, for instance through a tracking study looking at the longer term impacts of the LIC on learners, faculty, communities, and the medical education program as a whole. Longitudinality is intrinsic to the evaluation of the LIC model as each iteration is, by definition, longer than a block clerkship and may, therefore, take rather longer to fully test and evaluate. Not only will curriculum oversight committees need to receive updates on student progress, they will need to

review information from evaluations and site visits on a regular basis. Learners will need to be assured that their comments and issues are addressed so evaluation review meetings will also be required.

Discussion

Our twelve tips are strongly grounded in practical experience, as there were relatively few published studies on the efficacy and efficiency of LICs at the time of preparing this paper. The existing evidence has tended to be limited by relatively low numbers of participants and the selection bias arising from the dominance of elective LICs and the specifics of the contexts in which these studies took place. The role of context on LICs has yet to be robustly explored, as what works best for one community may be less effective for another. This is another opportunity for further research.

Although it is in many ways an innovative model, the LIC is nominally and practically bound to the concept of the clerkship, a model that has remained relatively unchanged since its championing by the Flexner report more than a century ago (Flexner 1910). The (re)introduction longitudinality arguably moves the clerkship full circle back to the apprenticeship, a model much criticized by Flexner and his followers. We would argue that the LIC presents a different kind of apprenticeship by adding the structure and rigour that Flexner criticized as being absent from earlier models. Indeed, the LIC may, by merging the best of the old and the new, be an optimal model for later year's undergraduate medical education. We invite you to engage in this debate.

Declaration of interest: The authors have no conflicts of interest to declare with respect to this paper.

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