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RESEARCH ARTICLE



'It was the worst possible timing': the response of UK Longitudinal Integrated Clerkships to Covid-19

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ABSTRACT

Covid-19 has altered medical education worldwide. Given recent events, UK Longitudinal Integrated Clerkships (LICs), which are relatively new innovations, may have changed in structure and delivery, or may have demonstrated resilience. Collating the responses and experiences of UK institutions may yield transferrable recommendations for institutions wishing to develop sustainable LICs. A mixed-methods survey concerning LIC prevalence, variety, and experiences of responses to Covid-19 was circulated to all 33 UK medical schools through academic networks. 25 survey responses were received, representing 20 institutions. 12 faculty completed follow up semi-structured interviews. 13 LICs were reported: 1 wasn't running during 2020, 5 were running unchanged, and 7 with alterations. 2 additional LICs were planned. Thematic analysis of free-text survey and interview responses revealed that relationships between faculty and institutions were central in facilitating recent adaptations to UK LICs. Given model flexibility, an increased drive to develop LICs was also evident. Barriers to adapting programmes included uncertainty regarding progression of Covid-19 restrictions and issues with secondary care access. Investing in faculty development and support networks could increase LIC sustainability. By highlighting the relative resilience of UK LIC placements during Covid-19, these findings offer important insight for the future delivery of sustainable LICs within, and beyond, the UK.

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Longitudinal Integrated Clerkship; Covid-19; relationships; adaptations; sustainability

Introduction

The Covid-19 pandemic has brought significant disruption to universities and societies around the world. Given restrictions to reduce the risk of viral transmission, the pandemic has altered the implementation and delivery of medical student education [1]. Changes globally have included a shift to online education, innovative alternatives to clinical placements, and 'supporting direct patient contact with mitigated risk', particularly for more senior students [2].

Longitudinal Integrated Clerkships (LICs) are a relatively new, but increasingly established, model of clinical education for medical students [3]. Formally defined as placements where students are situated within a clinical setting 'or a variety of interlinked clinical settings' for 'an extended time', LICs require continuity in patient interaction, supervision and assessment to aid the retention of knowledge and 'cultural learning' [4]. LICs often exist as alternatives to block rotation models, where students move between clinical environments after a shorter duration and maintain little or no connection to the environment

they have left [5]. There are many reported benefits to the implementation of LICs including: improved faculty and student satisfaction; improved cultural understanding of local areas; and recruitment and retention advantages for both the area and speciality involved (usually, but not exclusively, general practice) [4,6–8]. Although, worldwide, LICs are increasingly popular, they represent a relatively recent innovation within UK education [9]. In 2018, a survey conducted by two authors of this study (AM and RP) reported the existence of nine UK LICs but noted increasing interest in development [10]. It is unclear whether this interest has translated to an increase in programme numbers since 2018.

Given disruptions to clinical education over the past 18 months, it is likely adaptations to LICs will have been necessary to facilitate delivery and education during Covid-19. Yet, there is very little known about how this disruption has impacted LIC delivery. As relatively new innovations [10], that often run with small numbers of students [9], the presence and status of LICs within the UK may be at risk because of Covid-19 contingency planning. Bartlett et al. report that the development and implementation of LICs often poses

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‘multiple challenges’, which can mean that LICs do not continue to run following a period of initial interest [11]. Programme sustainability, defined by Bartlett et al. as a programme that ‘can be maintained over time’ [11], is important, as sustainability respects the time, money and effort invested in programme development and implementation, and is crucial in enacting the longer-term benefits of the LIC model, which include recruitment to underserved areas, and improved health outcomes [9,12]. Adapting and responding to Covid-19 restrictions can be conceptualised as an additional challenge to new UK-based LICs with the possibility of impacting programme sustainability, which has not been considered by previous empirical research. Collating what has been done, and how institutions have adapted programmes in response to recent challenges, may yield transferrable recommendations for institutions looking to develop and implement sustainable LICs within the UK.

Given all this, we asked:

- How, if at all, have the amount of UK LICs on offer changed since the last national survey in 2018?
- Considering Covid-19, what, if any, changes have been made to UK LIC programmes?
- What lessons can be learned to future proof LICs for potential future crises?

Methods

Research orientation

The authors conducted this mixed-methods research from a pragmatic orientation. Pragmatism focuses on ‘what works best for understanding and solving problems’ [13] rather than the nature of reality (ontology), or knowledge (epistemology) [14]. The authors selected a pragmatic orientation to facilitate timely research into understanding the issues posed by Covid-19.

Ethical approval

The authors obtained ethical approval from Hull York Medical School (approval number: 2045) and collected volunteers’ written, informed consent prior to participation.

Design

The authors developed a mixed-methods electronic survey in Qualtrics (Provo, UT), using a previous survey developed by two authors (AM, RP) which aimed to document the prevalence and variety of UK LICs [10].

Participants were asked whether their institution had an LIC, to describe the LIC offered, and regarding perceptions of LICs/any barriers to development if the institution did not host an LIC. There were no definitional LIC criteria provided within the survey – the authors asked participants to self-define as having an LIC, to acknowledge the variety of UK longitudinal placements and align with previous research [10].

The authors developed additional questions specifically regarding institutions’ responses to Covid-19 and factors facilitating or hindering this process. Two higher education faculty piloted the survey for face validity, and the authors made minor changes to wording in response to their comments. The survey contained dropdown questions, multiple-choice questions, Likert scales, and free-text qualitative questions. The survey is provided within supplementary material.

Recruitment and data collection

In November 2020, the authors emailed all UK medical school Primary Care ‘Heads of Teaching’ (HoT) with a link to the electronic survey. Follow up emails were circulated (January and March 2021). Heads of teaching were asked to complete the survey if they possessed the most in-depth knowledge of their institutions’ LIC or possible plans, or to forward the survey to the most relevant person within their institution, otherwise. We chose to collect data from those with LICs, those planning LICs, and those without plans to better understand changes and possible future changes to the number of LICs on offer within the UK through an appreciation of how LICs are perceived more broadly.

Following survey completion, participants could volunteer to participate in a semi-structured interview, conducted by the research team using video conferencing software. Semi-structured interview prompts are available (supplementary material). The focus of interviews for those with LICs was disruption and adaptation in the wake of Covid-19, for those planning LICs was disruption to planning, and for those without LICs and no plans was barriers to implementation and changing perspectives in the wake of Covid.

MB (PhD student), AM (GP and HoT), and KA (GP and HoT) conducted all interviews, which ranged in duration from 17 to 51 minutes. MB manually transcribed all interviews verbatim and anonymised them for analysis.

We held discussions regarding the adequacy of the data sample, guided by Malterud’s concept of qualitative ‘information power’ – the point at which there is sufficient data to answer the research questions of a study [15]. After 25

survey responses and a convenience sample of 12 interviewees, the authors considered the study to have ‘information power’ and so closed interview recruitment.

Data analysis

MB and NM undertook frequency counts on quantitative survey questions. MB and NM also led in pooling and analysing all qualitative survey responses and interview data using Braun and Clarke’s approach to thematic analysis [16]. We chose to analyse all data together as we wanted to be able to answer all three of our study research questions holistically, across all data. First, MB and NM read and re-read all transcripts to foster data familiarity. MB and NM coded all transcripts, assigning descriptive labels to transcripts to summarise content. MB and NM met to discuss findings and collate codes into a unified codebook, and potential early themes. MB recoded all transcripts using this codebook and reviewed all themes, checking coded sections within each theme for accuracy and consistency. MB defined and named each theme, presenting them as a narrative report.

Results

Quantitative

Twenty-five survey responses were received, representing twenty of the thirty-three GMC registered UK medical schools. Twelve faculty completed voluntary follow-up interviews. Of the faculty completing follow-up interviews, eight were at institutions with LICs, two were at institutions planning LICs, and two were at institutions without and not actively planning LICs.

One institution reported that the delivery of their LIC was unaffected by Covid-19, with the remaining institutions reporting that delivery had been negatively affected by the pandemic. Nine institutions agreed that

Table 1. Quantity of LICs (active and planned), and status at time of survey.

Number of LICs currently	Status of LICs at the time of survey	Number of LICs actively planned	Number of institutions without LICs
13	• 1 not running • 5 running unchanged • 7 running with alterations	2	7 (3 institutions likely to create an LIC in the future)

the LIC within their institution was easier to adapt in response to Covid-19 than the block rotations they hosted. A summary of the quantity of LICs reported, and their status, is provided in Table 1.

The structure and setting of the thirteen LICs varied. These variations are reported in Table 2. Not all reported LICs were full-time, some interspersed LIC sessions throughout the academic year.

Interview participant demographics are provided in Table 3. We have intentionally excluded institution represented, as are concerned this could lead to identification of participants when presented alongside job role. Detailed demographic information was not collected from survey participants.

Qualitative

Four themes were constructed following thematic analysis:

- (1) Navigating uncertainty
- (2) Factors facilitating adaptations
- (3) Barriers to adaptations
- (4) Futureproofing and development

Quotes are labelled with participant numbers and data source.

Table 2. Summary of structure and setting of reported LICs.

Setting	Number of students	Year of study	Duration (weeks)
Primary care: 9	Range 8–400	1 st year: 2	Range 3–44
Primary care with follow up in secondary care: 3	1 st year placements range: 108–250	2 nd year: 3	1 st year placements range: 3–10
Non-responders: 1	2 nd year placements range: 290–400	3 rd year: 2	2 nd year placements range: 12–28
	3 rd year placements range: 6–18	4 th year: 7	3 rd year placements range: 44
	4 th year placements range: 8–370		4 th year placements range: 26–45

Table 3. Interview participant demographics.

Age (range in years)	Gender	LIC at institution?	Job role
33–58	M:F 7:5	Yes: 8 Planning: 2 No: 2	LIC lead: 6 Dean/vice-dean: 2 Head of undergraduate teaching: 2 Head of GP teaching: 2

Navigating uncertainty

Faculty spoke at length of the changes and uncertainty they had to navigate because of Covid-19. For those with new LICs, the uncertainty of the pandemic made implementation especially difficult. Adapting to online communication and learning was discussed as a steep learning curve by faculty from many institutions, with a preference for LICs to run face-to-face highlighted.

It was the worst possible timing, but ... we've been planning it for two years ... so, we just have to suck it and see.

Participant 2, interview, planning LIC

The uncertainty generated by changes in the wake of Covid-19 was perceived by staff to have negatively influenced students' wellbeing and perceptions of the LICs they were involved in.

I think there's quite a lot of anxiety amongst the [LIC] students ... that they're going to struggle to meet the outcomes ... of the year.

Participant 1, interview, LIC

LIC supervisors and tutors were also negatively affected by this uncertainty. Some faculty described tutors withdrawing from LIC teaching to focus on uncertain clinical pressures.

The GPs kind of say, "Well look, there's Covid going on. We're completely stressed and don't know what's going on." ... probably about 50 percent withdrew.

Participant 11, interview, LIC

That said, there was a general sense of agreement amongst participants that LIC placements has been less negatively affected by Covid-19 than block rotations at the same institutions. The longitudinal nature of placements and factors facilitating adaptations (e.g. the fact many LICs were based largely within primary care), discussed in-depth below, were listed as reasons for this judgement.

Of course, it's impacted it, but it has impacted it much less than students on traditional block placements ... the students doing the LIC, the impact has been on secondary care ... if we'd consider their primary care attachments, they have ... proceeded as planned ...

Participant 5, interview

Factors facilitating adaptations

The flexibility of LIC structure and the impact of this flexibility on programme delivery was commonly mentioned as a factor which facilitated adaptation to LIC programmes.

Fewer adaptations needed to the LIC because it is inherently more flexible

Participant 1, survey, LIC

Some participants believed that the setting of LICs in primary care made them easier to manage during Covid-19. Across those hosting LICs and those without LICs, there was a perception that general practice teaching, in general, was easier to adapt than secondary care teaching. Resilience was most evident when student numbers were small, facilitating placement, or when placements (including LICs) were rural in nature, where students could be placed in areas with low case rates.

It has been much easier to continue with LIC placements due to there only being 1 student in most practices.

Participant 3, survey, LIC

Relationships featured prominently in participants' discussion of factors facilitating LIC adaptations. Close working relationships between institutions and LIC tutors that pre-dated the pandemic were facilitative, and investing in faculty development was, therefore, seen as advantageous.

We have the advantage of having really loyal teachers ... we've managed to get agreed a faculty development day ... I think our teachers are really hungry to feel like they're part of the bigger ...

Participant 6, interview, LIC

Such relationship development between institutions and faculty led to tutors acting as vocal LIC advocates, which facilitated adaptations in LICs that ran in more geographically disparate areas.

... having strong advocates for it in our regions has been really helpful ... because they've provided strong leadership ...

Participant 5, interview, LIC

Relationships that developed over time between LIC tutors and students were also seen as increasing tutor engagement, even during Covid-19, as tutors began to trust students over time.

The impact of Covid has been pretty significant ... the students go back to the same practices and that really helps ... the trust tends to be there. They are familiar faces ... so the GPs are much more happy ... to have students with them.

Participant 11, interview, LIC

Finally, adapting institutional communication strategies in a way that offered explicit guidance regarding the expectations of tutors, and in a way that was sensitive to the clinical pressures many were experiencing was seen as facilitative.

I produced a document, which was guidance for GP tutors, and that was ... explicit about this is what we expect you to be doing.

Participant 5, interview, LIC

... the way you get around [communication difficulties] ... wait until things settle, minimise unnecessary communications, you're not overburdening people with information ...

Participant 10, interview, LIC

Barriers to adaptations

Barriers to adapting LIC programmes during Covid-19 were also discussed. Logistical issues were prominent, with concerns regarding adequate space for social distancing within general practices, and how to reduce the risk of transmission to students.

... you have to think of a strategy ... to support community teachers with the logistics, sometimes it's the technology, social distancing is then a big issue because what do you do with students sitting in the room ...

Participant 10, interview, LIC

... our concerns about keeping the students safe. So, normally, they might be going into places where AGPs [aerosol generating procedures] were happening ... because of Covid, we've had to make a fairly blanket statement that students shouldn't be involved in AGPs

Participant 1, interview, LIC

Though adapting institutional communication strategies facilitated programme adaptations, communication with faculty and tutors in and of itself often posed a difficulty. Some noted there was an increased need for communication because of the rapidly changing landscape during Covid-19, whilst others commented on difficulties engaging busy staff in institutional communications.

... needed more communication [during Covid-19] e.g. weekly emails ...

Participant 18, survey, LIC

... trying to communicate logistics ... when everyone had a lot of clinical pressure was challenging ...

Participant 10, interview, LIC

Notable amongst participant data were comments regarding difficulties accessing secondary care for programmes depending on patient follow up in settings outside of general practice. Unpredictable and uncertain clinical pressures were identified as a barrier, as were staff and PPE shortages.

... one of the fantastic ideas of the LIC ... is ... follow the patient through. In reality, some have really struggled with that. And that has been a Covid thing because hospitals find themselves much ... busier in a less predictable way.

Participant 5, interview, LIC

... I remember having a discussion with ... a cardio lab saying, "One of my student's patients is having an angiogram. Please, could my student come and watch?" And it was just, no, because of wearing PPE, less staff.

Participant 2, interview, planning LIC

Futureproofing and development

Considering recent events and changes, faculty also contemplated how to futureproof LIC programmes for potential future disruptions. Discussion largely concerned preparation for online education and remote consulting.

The biggest thing is making sure we have a digital backup for everything.

Participant 10, interview, LIC

The advent of video consulting ... I'm sure will make it much easier for students to contact their ... patients

Participant 11, interview, LIC

For institutions without LICs, both the pandemic and recent increases in medical student numbers made the prospect of developing an LIC in future more attractive. The flexibility of the programme and the benefit of increased patient contact for programmes running in students' traditionally pre-clinical years were appealing.

... with the medical school expansion ... we've essentially nearly doubled ... we still need to give quality placements ... whether a longitudinal clerkship would fit with that ...

Participant 9, interview, no LIC

My perception would be it [Covid-19] has increased the students' enthusiasm [for an LIC] because they've just had even less clinical contact than they would have done before.

Participant 7, interview, no LIC

For those actively planning LICs, Covid-19 had disrupted existing plans. Some pilot programmes were delayed, and new concerns raised by both students and faculty posed barriers in planning.

Covid has delayed our pilot

Participant 8, survey, planning LIC

... concerns from students regarding adequate curriculum coverage through an LIC which they have not experienced before especially when clinical exposure has already been affected by Covid ... challenges recruiting GPs to take LIC students ...

Participant 10, survey, LIC

Discussion

The results of this study speak to the evolving UK landscape of LICs and offer several recommendations regarding increasing UK LIC sustainability.

LICs in the UK are increasing in self-report frequency. In 2018, 9 LICs were reported [10], whilst we have documented the presence of 13 LICs, with 2 more actively planned. It seems that the appetite for LICs in the UK is continuing to increase, often for logistical reasons such as managing student numbers. Participants in this study also reported an increased drive to develop LICs as the value of programme flexibility has been recently made apparent during Covid-19. It is important to note that it is likely that not all the LICs reported in this study would conform to the international definition of LICs [17], though encouraging UK institutions to self-define respects the diversity of the current UK landscape regarding clinical educational placements [10]. The findings of this survey demonstrate an increase in appetite for both comprehensive LICs within the UK, that would meet strict international criteria for classification as an LIC, but also for longitudinal placements [18] in more junior years of medical school. Guidance on what constitutes an LIC within a UK context would be beneficial and should be a focus of future research.

A core finding of this research concerns the importance of relationships in facilitating LIC adaptations. O'Doherty et al. draw attention to the fact that relationships between students, tutors and patients are drivers of successful learning within LICs internationally, noting that these connections are supported by relationships with other faculty, the medical school, and institutions [19]. Simply put, successful learning within LICs is supported by multi-dimensional relationships. Similarly, our results highlight that successful adaptations to learning are supported by relationships between faculty and institutions. Bartlett et al. highlight that managing change proactively and focusing on building relationships when developing LICs improves sustainability [11], which this work has highlighted holds true in times of international crises for both new and established programmes. Investing in faculty development and support was seen as facilitative when it came to making rapid

changes because of Covid-19. Creating an educational community of practice for faculty, where LIC tutors are united by mutual engagement (interaction with one another including sharing of practice), joint enterprise (establishing shared goals and accepting accountability for enterprise), and shared repertoire (community routines, language, and stories generated through shared practice over time) [20–23] fosters positive working relationships between institutions and faculty and facilitates faculty support [24,25]. Institutions interested in improving the sustainability of their LIC should consider how to create such a community of practice amongst faculty e.g. dedicated faculty development days, access to shared resources, and through creating interactive peer networks [26,27]. These measures are still possible, perhaps even more so, within the virtual sphere, which looks set to endure beyond the context of the current pandemic globally.

Barriers to adapting LICs during Covid-19 have also been reported in this research, particularly access to secondary care. Johnston highlights that primary and secondary care within the UK exist as 'different paradigms' that are not always well connected [28]. Covid-19 has illuminated this difference in reference to adapting LICs, many of which are primarily based within primary care within the UK. Institutions may wish to consider how to increase connection between primary and secondary care settings when developing and implementing LICs in the future to bridge these paradigms and engage secondary care staff in the early stages of development to increase buy-in. Clarity regarding the role of LIC students within secondary care settings may be beneficial – pre-pandemic, the flexibility of students' role within secondary care was a strength of the model, but barriers to access concerning PPE and social distancing have highlighted that, in some secondary care settings, the lack of a defined role means students are viewed as non-essential, and their access to these settings is impeded. Working with secondary care colleagues to create a flexible, but defined role within secondary care for LIC students may go some way to addressing this barrier in future.

Though barriers were reported, reassuringly, LICs within the UK have been relatively resilient to the disruption caused by Covid-19. Indeed, participants believed LICs to be more resilient than block rotations within their institutions due to the inherent flexibility of the model, and trust established between tutors and students, a finding supported by Webb et al. in their recent letter summarising recent experiences at Cardiff Medical School [29]. Smaller scale, more geographically dispersed LICs based in general

practice seemed to be most resilient to disruption, which perhaps also indicates readier adaptation of general practice placements during times of crisis. This bears important weight in developing sustainable programmes of medical education more broadly for the future, where the likelihood of further pandemics and crises is, unfortunately, high [30]. Increasing LIC implementation within the UK (and beyond), and considering the advantages of smaller scale, dispersed, primary care models, may go some way to safeguarding medical education against future crises.

Limitations

There are some limitations to this research. We only solicited the views of institutional educational leaders regarding the experiences of adapting programmes, rather than LIC tutors or students. Further research would be useful to illuminate these experiences and highlight any differences in accounts. The voluntary, small-scale nature of many UK LICs may have self-selected for resilient students, which may have mitigated some of the perceived negative impacts of Covid-19 in comparison with students' block counterparts. Though we circulated our survey to all medical schools our response rate was 60.6%, and so this research cannot be seen as a comprehensive report of all UK LICs. We only tested the face validity of our survey, future research might consider the use of validated tools in this area. Given that we asked institutions to self-define as hosting an LIC, or not, some reported programmes are unlikely to meet international criteria for definition as an LIC. Though this is a limitation of this research, it aligns with approaches within previous UK survey data [10], facilitating easier comparison. Future work which moves towards a definition of LICs within the UK would be beneficial.

Conclusion

By highlighting the relative resilience of UK LIC placements during Covid-19, these findings offer important insight for the future development and delivery of sustainable LICs. Given that LIC use within the UK is increasing, and the value of flexibility highlighted within higher education during Covid-19 seems to have increased the appetite for LICs further, ensuring that both new and established LICs are sustainable will be of increasing importance within UK medical education. Analysing the experiences of institutional educational leaders during Covid-19 has highlighted that relationship development,

which may be achieved through creating educational communities of practice, is essential in facilitating rapid programme adaptations in times of widespread change, improving the sustainability of LICs. Institutions may also wish to consider the ways in which they can promote connection between primary and secondary care. With an increased future likelihood of global crises, and increasing use of the LIC educational model, it is critical that institutions take immediate steps to improve the sustainability of LICs within UK medical education.

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