



# Development and sustainment of professional relationships within longitudinal integrated clerkships in general practice (LICs): a narrative review

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## Abstract

**Background** Longitudinal integrated clerkships (LICs) are a relatively new model of clinical medical education, whereby students participate in patient care over time and develop relationships with those patients', their clinicians, and other health care staff involved in the care of those patients. It has been called 'relationship-based education' but, to date, no review has investigated the development and impact of these central relationships within this curricula model.

**Aims** The aim of this study is to review the literature pertaining to relationships in LICs, specifically to understand how they come about and how they affect learning.

**Methods** The search strategy systematically explored PubMed, ERIC (EBSCO) and Academic Search Complete, using key words and MESH terms. Original research published in peer-reviewed journals between January 2007 and August 2020 that were written in the English language were included in the review.

**Results** After applying set inclusion and exclusion criteria, 43 studies were included in this review. A qualitative thematic analysis was undertaken, and results were synthesised narratively. Four distinct categories were identified: defining relationships in LICs, developing relationships in LICs, relationship maintenance and multi-stakeholder impact.

**Conclusions** The longitudinal integrated clerkship model of clinical education facilitates the development of meaningful triangular relationships between student, clinical teacher and patient, which are the central drivers of successful learning within the context of an LIC. These relationships are nested in a set of important supporting relationships involving other supervisors, the medical school and university, the practice clinical and administrative team and peers.

**Keywords** General practitioners · General practice · Longitudinal integrated clerkship · Medical education · Medical students · Relationships

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## Introduction

Undergraduate medical education has been described as ‘a series of transitions between phases of the journey’ towards a career in medicine [1]. Increased demand for medical student places, coupled with limited access to patients and difficulties with teaching students in secondary care, has contributed to the growth of general practice as a setting for medical education [2]. Problems with traditional secondary care placements include lack of exposure to undiagnosed patients, fragmentation of students’ supervision, limited opportunity for repeat consultations with patients and lack of relationship with tutors [3]. This has led to the adoption of an alternative approach to medical placements in which students take part in immersive clinical clerkships of longer duration in general practice [4]. Longitudinal integrated clerkships (LICs), by definition, are longer than 8 weeks duration, thereby facilitating the development of deeper relationships between students and tutors, staff and patients [5]. LICs promote a more person-centred approach to clinical medicine than traditional models, while being at least as effective in promoting knowledge acquisition [6, 7]. General practice is a popular setting for LICs as clinicians there tend to see a broader spectrum of conditions [8, 9] and place particular emphasis on doctor-patient relationship and patient-centred care [10, 11].

Student satisfaction with LIC placements tends to be high [12] and the positive impact of LICs on students choosing careers in rural and primary care medicine has been described [13–15]. Many students are given an opportunity to develop their own skills and build relationships with patients during the rural LIC [16]. Three principles that underpin the student experience in LICs have been described: continuity of patient care, continuity of supervision and continuity of curriculum [17]. The defining features of a LIC are that students participate in patient care over time, develop relationships with said patients’ clinicians and meet the majority of the year’s core clinical competencies through the experience [6]. Hirsh et al. outlined ‘relationship-based education’ as a core feature of LICs, whereby the student develops meaningful working relationships with other members of a practice [12], under continuous mentorship [18].

Very little has been reported on the influence of these relationships, particularly their impact on supervisors. Worley surmises that the benefits of the relationships developed in community-based clerkships are a “win-win” for all stakeholders [19] whilst Howe has suggested that supervisory responsibility can boost morale [20]. Others have been more trepidatious and have suggested that supervisors’ central roles in integrating students within clinical teams can potentially increase stress levels for general practitioners (GPs) [21].

The aim of this study is to conduct a narrative review of the literature pertaining to relationships within LICs, to understand how they come about and how they affect learning.

## Methods

### Search strategy

The search strategy involved searches of PubMed, ERIC (Ebsco) and EMBASE databases by entering the following keywords and MeSH terms: medical AND (‘students’/exp OR students) AND (‘experiences’/exp OR experiences) AND (‘longitudinal’/exp OR longitudinal) AND (‘clerkship’/exp OR clerkship) AND mentor (mentor\* OR general practitioner) AND (‘experiences’/exp OR experiences) AND (‘longitudinal’/exp OR longitudinal) ([Appendix A](#)).

## Appendix A. Search strings

### Inclusion and exclusion criteria

Research papers published in peer-reviewed journals from January 2007 until September 2020 that were written in the English language were included in the search. Exclusion criteria were papers not written in the English language, research protocols, commentary pieces and studies that explored the experiences of students who were not medical students. Papers that did not pertain to experiences of mentors or medical students or specifically to LICs were also excluded. Reference lists were also searched using the search strings for relevant eligible papers.

### Screening

Literature was reviewed independently by two researchers (JO’D, AO’R) using the inclusion and exclusion criteria outlined above. Any disagreement about whether a paper should be included was discussed among two researchers until consensus (JO’D, AO’R). The articles were assessed thematically for their content related to LICs. The results are presented under themes which were categorised by two researchers (JO’D, AO’R) ([Fig. 1](#)).

## Results

The initial search yielded 2482 papers which was reduced to 2324 after the removal of duplicates. Selected papers were initially screened by title and subsequently screened on their

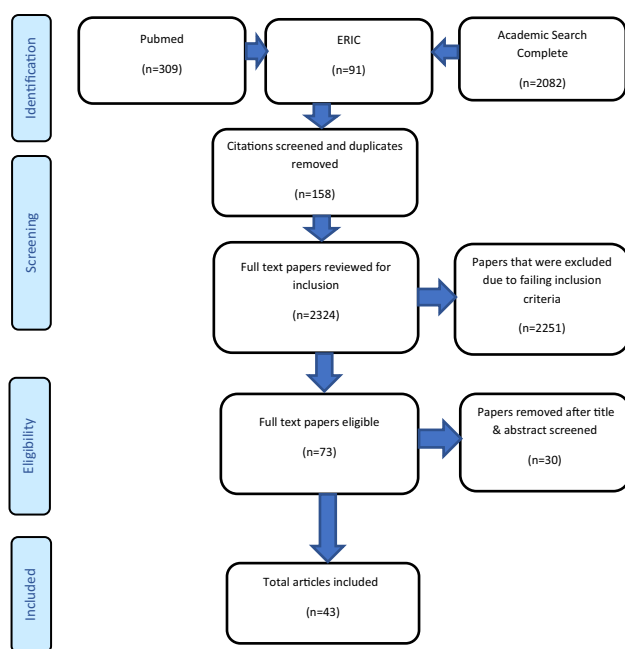


Fig. 1 PRISMA diagram

abstract or full manuscript. Forty-three studies were selected for final review (Table 1) as they were published between January 2007 and August 2020, in English, and were focused on LICs. Four main themes were identified:

1. Defining relationships in LICs
2. Developing relationships in LICs
3. Relationship maintenance
4. Multi-stakeholder impact

### Defining relationships in LICs

Hudson described teaching as a “tradition of medical practice that goes back to Hippocrates” and a fundamental feature of this tradition is the “reciprocal benefit” of relationships formed during LICs for GP supervisors, students and community [22]. The relationships between students, supervisors and patients are central to LIC programmes, and several models for this triangular relationship have been described [23–25] (see Fig. 2). It has been suggested that this triangular model be expanded to encompass relationships between supervisors and the medical school and between students and the wider community [26]. Relationships between students and other practice staff are also considered important [16, 27]. For LICs in hospital settings, the central role of relationships between a hospitals’ culture, students, patients and secondary care supervisors was described [5].

Birden et al. reported that graduates from an LIC continued to value the relationships formed during the programme during their early years as a junior doctor [28]. However, some problems with relationships have become apparent, including social isolation in remote areas [29], loss of contact with students’ families and difficulties coping with personal problems [30]. Relationships in LICs are “not universally positive” [31, 32], chiefly due to personality clashes, though these are uncommon and tend to be managed satisfactorily [33]. Consequently, graduates of LIC programmes have advised that prospective students considering taking part should be open to close therapeutic and professional relationships [34]. Accordingly, medical schools have emphasised the importance of having a mechanism for managing relationships with GP tutors when they break down or fail to form in a therapeutic manner [35].

### Developing relationships in LICs

Birden describes the role of the supervisor: to monitor students, identify deficits, give appropriate feedback, agree action plans and monitor subsequent progress. As students stay longer at a clinical site, their supervisors develop an understanding of their abilities and allow them to work with more independence, leading ultimately to an “immersive experience” for students [28]. The development of trust over time between student and GP supervisor enables students to take on a doctor-like role in a supportive environment [36, 37] (see Table 2). Supporting the student’s participation is a key role of the GP supervisor [36]. As the supervisor-student relationship grows, the students perceive the relationship as less of a hierarchy and more of a partnership [37, 38], facilitating gradual exposure to patient care [23, 39–43], which Latessa et al. surmise increases student opportunities for learning [44]. As trust develops over time, it leads to increased inclusion in the team and a sense of belonging [45]. Consequently, students start to identify more as an authentic member of staff and identify their mentors as clinical role models [37, 43, 46, 47]. When students have a trusting relationship with their supervisors, they interpret feedback in a more constructive way [48]. Witney et al. found that patients in rural LICs, compared with traditional block clerkships, reported more opportunities to consult with patients through the course of their illness, which helped build relationships [9]. Garne et al. reported that, as patients get to know students over time, they develop rapport which can benefit patient care [33]. Daly et al. describe how geography in LICs can be ‘a double-edged sword’, whereby rural and remote places can lead to social isolation for students, but can also provide them a more immersive experience in the community [49]. “Relationship building by students” within LICs helps learners to cross boundaries within and between communities of practices [45, 49], involving

**Table 1** Outline of studies

Title	Author, journal, year	Location	Study design	Important outcomes for LICs
Reflective Writing as a Window on Medical Students' Professional Identity Development in a Longitudinal Integrated Clerkship	Adams et al., <i>Teaching and Learning in Medicine</i> , 2020	Denver, USA	45 reflective essays from 15 students while enrolled in an 11-month LIC	Immersing students in an LIC that prioritizes continuity with vulnerable patients and faculty role models in an urban underserved setting can result in the construction of a professional identity
Learning through service: a qualitative study of a community-based placement in general practice	Tanna, Fyfe and Kumar, <i>Education for Primary Care</i> , 2020	London, UK	4 focus groups with 18 students over two years	Responsibility within the clinical team paired with robust supervision and feedback supported student learning and confidence in dealing with uncertainty and complexity
The role of vertically integrated learning in a rural longitudinal integrated clerkship	Beattie et al., <i>BMC Med Education</i> , 2019	Australia	Interviews with 15 students on LIC	Clearer structuring of learning objectives, format and content for vertically integrated learning sessions in General Practices is a critical area for improvement
It takes a community to train a future physician: social support experienced by medical students during a community-engaged longitudinal integrated clerkship	Dubé, Schinke and Strasser, <i>Canadian Medical Education Journal</i> , 2019	Canada	Interviews with 12 participants at three points in 2011/2012, an innovative qualitative method during the clerkship, the guided walk	Continuity with clinical teachers during longitudinal placements is conducive with the development of meaningful relationships and is an effective way of fostering students' competency development
Community Preceptors' Motivations and Views about Their Relationships with Medical Students During a Longitudinal Family Medicine Experience: A Qualitative Case Study	Rodriguez et al., <i>Teaching and Learning in Medicine</i> , 2019	Canada	6 focus groups with 43 GP preceptors and several organizational documents relative to the course	Course coordinators have introduced modifications aimed to improve the program, and then facilitate their educational commitments and foster the development of richer relationships with student
The Art (and Artifice) of Seeking Feedback: Clerkship Students' Approaches to Asking for Feedback	Bing-You et al., <i>Academic Medicine</i> , 2018	Maine, USA	Interviews with 14 students (8 LIC and 6 block rotation)	Authors offer a prototype curriculum that may facilitate students' development of feedback-seeking skills
It's all about relationships	Cunic et al., <i>Perspectives on Medical Education</i> , 2018	Canada	Nine interviews with current LIC family physician preceptors from three LIC sites	Rural family medicine preceptors developed engaging and trusting relationships with students over time
Learning to be a doctor: Medical students' perception of their roles in longitudinal outpatient clerkships	Golden et al., <i>Patient Education and Counselling</i> , 2018	Chicago, USA	Interviews with 35 students (19 from ECHMH (education centred medical home) programme and 14 IP (individual preceptorship) programme and 2 who transferred from IP to ECHM)	Students in both programmes identified mentors as a key player in their development of clinical skills, growing confidence and competency
Medical students, early general practice placements and positive supervisor experiences	Henderson et al., <i>Education for Primary Care</i> , 2018	Queenstown, Australia	Interviews with 33 students in Year 2 and Year 4 programme and 25 GPs	Positive GP supervisor experiences in LICs can be influenced by student attributes and attitudes to learning

**Table 1** (continued)

Title	Author, journal, year	Location	Study design	Important outcomes for LICs
Block versus longitudinal integrated clerkships: students' views of rural clinical supervision	Witney et al., Medical Education, 2018	Australia	Survey of student responses from 13 medical schools	Students recognised that their supervisors helped them learn clinical skills and provided them with opportunities to engage with patients
Students' experiences of role, relationships and learning in two clerkship models	Konkin and Suddards, Medical Education, 2017	Alberta, Canada	Reflective conversations with 73 medical students	It is important for medical schools with LICs followed by rotation-based clerkships (RBC) to consider the differences between these two clerkships as experienced by students in order to determine how best to support students
Graduates' Perceptions of Learning Affordances in Longitudinal Integrated Clerkships: A Dual-Institution, Mixed-Methods Study	Latessa et al., Academic Medicine, 2017	USA	Electronic surveys (n= 114) and 20 semi structured interviews of LIC graduates	Students identify and value LIC elements that foster engagement, empowerment, and sense of belonging
Effectiveness of a rural longitudinal integrated clerkship in preparing medical students for internship	Birden, Barker and Wilson, Medical Teacher, 2016	NSW, Australia	Interviews with 14 junior doctors	The junior doctors believed that the relationships formed on LICs with peers, supervisors and the community enhanced their sense of professionalism and their understanding of health system
Preceptor teaching tips in longitudinal clerkships	Latessa et al., Clinical Teacher, 2016	North Carolina, USA	Interviews with 27 medical students	The longitudinal relationship of preceptor and student in LIC models affords specific, important opportunities for teaching and learning
Social learning in a longitudinal integrated clinical placement	Roberts et al., Advances in Health Sciences Education, 2016	NSW, Australia	Interviews with 18 medical students	The way in which students form and maintain social bonds through their interactions and relationships on LICs is explained
Transition processes through a longitudinal integrated clerkship: a qualitative study of medical students' experiences	Dubé et al., Medical Education, 2015	Ontario, Canada	Interviews with 12 medical students	The importance of faculty support was outlined. The personal and ethical considerations that emerge for students from relationships with patients was described
Who should choose a rural LIC: A qualitative study of perceptions of students who have completed a rural longitudinal integrated clerkship	Konkin and Suddards, Medical Teacher, 2015	Alberta, Canada	Interviews with 110 medical students	Students undertaking LICs should understand the importance of close therapeutic and professional relationships, according to graduates from a LIC-based programme
Rural longitudinal integrated clerkships: changing interests and demographics of medical students	Myhre et al., Canadian Journal of Rural Med, 2015	Canada	Surveys of 321 medical students	Potential students were concerned about the effect of social isolation in rural LICs on their existing relationships

Table 1 (continued)

Title	Author, journal, year	Location	Study design	Important outcomes for LICs
Overcoming challenges in primary care education: a trial of a longitudinal integrated clerkship in a rural community hospital setting in Japan	Takamura, Ie and Takamura, Education for Primary Care, 2015	Japan	Interviews with 1 medical student, 1 GP supervisor	Benefits of deeper relationships the student built with patients, supervisor and practice staff are outlined
Profiles of rural longitudinal integrated clerkship students: A descriptive study of six consecutive student cohorts	Brooks, Eley and Zink, Medical Teacher, 2014	Minnesota, USA	Survey of 205 medical students	The role modelling and mentorship provided by supervisors can impact the future careers of students
Unfreezing the Flexnerian Model: introducing longitudinal integrated clerkships in rural communities	Bing-You et al., Rural and Remote Health, 2014	Maine, USA	9 GPs for interviews and 84 GPs for survey	Relationships in LICs can improve supervisor morale and energy
What is the impact of longitudinal rural medical student clerkships on clinical supervisors and hospitals?	Connolly, Sweet and Campbell, Australia Journal of Rural Health, 2014	Melbourne, Australia	Interviews with 15 senior medical and nursing staff	For hospital based LICs, the symbiotic relationship between hospital, student and patient was described
Clinical scholarship among preceptors supervising longitudinal integrated medical clerkships in regional and rural communities of practice	Weston and Hudson, Australian Journal of Rural Health, 2014	NSW, Australia	Interviews with 26 GPs	The relationships between medical schools and supervisors as well as the student and the community were reported
Student perceptions of assessment and feedback in longitudinal integrated clerkships	Bates et al., Medical Education, 2013	Canada	Interviews with 13 medical students	Good student-supervisors relationships, through monitoring and feedback encourage honesty and reflection
Effects of longitudinal small-group learning on delivery and receipt of communication skills feedback	Chou et al., Medical Education, 2013	USA	Interviews with 46 medical students and survey on perceptions of feedback	Students who have undergone LICs are better able to give and receive feedback than students from traditional placements
What factors in rural and remote extended clinical placements may contribute to preparedness for practice from the perspective of students and clinicians?	Daly et al., Medical Teacher, 2013	Australia	Interviews with 42 medical students, supervisors and clinicians	Responsibilities for students, supervisors and medical schools for optimising relationships on LICs were identified
Longitudinal integrated rural placements: a social learning systems perspective	Daly et al., Medical Education, 2013	Australia	Interviews with 34 medical students and supervisors	Communities of practice are the relationships in which students learn and connectivity is the way that students set boundaries and move through them during the placement
Toward a Global Understanding of Students Who Participate in Rural Primary Care Longitudinal Integrated Clerkships: Considering Personality Across 2 Continents	Eley et al., Journal of Rural Health, 2013[30]	USA and Australia	Questionnaires with 302 medical students	Similar personality patterns are evident in US and Australian students who pursue rural medical education

**Table 1** (continued)

Title	Author, journal, year	Location	Study design	Important outcomes for LICs
Beyond the honeymoon period: keeping preceptors and practices wedded to the longitudinal integrated clerkship (LIC) model	Garne et al., Unpublished, 2013	NSW, Australia	Interviews with 10 practice managers and 8 supervisors	Outlined the relationships between students and patients and students and supervisors but also the role of the medical school in funding and resources
Outcomes of Different Clerkship Models: Longitudinal Integrated, Hybrid, and Block	Teherani, Irby and Loeser, Academic Medicine, 2013	San Francisco, USA	12 focus groups in total (3 cohorts of LIC students, 3 cohorts each of students from each hybrid model, and 3 cohorts of block clerkship students)	Key differences in student experiences and outcomes between the continuity clerkship models (LIC and hybrid) and block clerkships reinforce the literature and the educational framework for continuity in clinical learning. The benefits to student outcomes seem to increase with greater opportunities for continuity
More Is Better: Students Describe Successful and Unsuccessful Experiences With Teachers Differently in Brief and Longitudinal Relationships	Hauer, Academic Med, 2012	USA	Interviews with 29 students on LIC and 25 on traditional placements	The deepening of relationships on LICs allowed students to feel as if they were in a partnership and could influence their own learning
The role of role: learning in longitudinal integrated and traditional block clerkships	Hauer et al., Medical Education, 2012	San Francisco USA	Interviews with 54 medical students	Continuity allows deeper relationships to develop with benefits of enhanced motivation and improved self-perceived confidence
Rural longitudinal integrated clerkships: lessons from two programs on different continents	Couper, Worley and Strasser, Rural and Remote Health, 2011	Australia, Canada	126 interviews with supervisors and staff and focus groups with 52 medical students in two medical schools	Encouragement of strong peer-to-peer student relationships to help counter social isolation of remote placements
Faculty verbal evaluations reveal strategies used to promote medical student performance	Hauer et al., Medical Education, 2011	California, USA	Discussions between preceptors from different disciplines regarding student progress	Relationships between student and supervisor facilitated insights into student progression
Engaging rural preceptors in new longitudinal community clerkships during workforce shortage: a qualitative study	Hudson, Weston and Farmer, BMC Family Practice 2011	NSW, Australia	Interviews with 28 GPs	The benefits of the longitudinal relationship between supervisor, student and community were described
Demonstrating the value of longitudinal integrated placements to general practice preceptors	Walters et al., Medical Education 2011	South Australia	Interviews with 21 GPs, 4 practice managers, 7 students	Through the supervisor-student relationship, GPs' perception of their own role develops
Is small beautiful? Student performance and perceptions of their experience at larger and smaller sites in rural and remote longitudinal integrated clerkships in the Rural Clinical School of Western Australia	Denz-Penhey and Murdoch, Rural and Remote Health, 2010	Western Australia	Surveys of students, exam results, interviews with students and staff	Continuity of relationships between students, supervisors and patients are important
'It's really, really good, but it could be a lot better': Qualitative evaluation of a Rural Clinical School, four years on	Denz-Penhey and Murdoch, Medical Teacher, 2009	Western Australia	Interviews with 60 students, 27 academic and 15 administrative staff	Not all relationships are positive. Poor feedback and supervisor defensiveness are factors in this. Supervisor support is needed

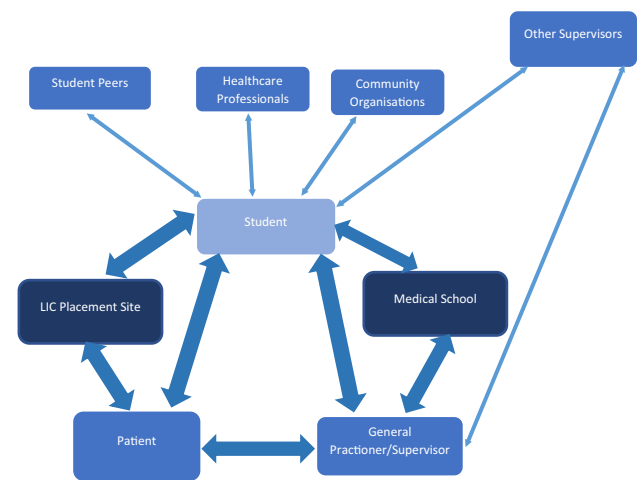
**Table 1** (continued)

Title	Author, journal, year	Location	Study design	Important outcomes for LICs
Learning Through Longitudinal Patient Care—Narratives From the Harvard Medical School—Cambridge Integrated Clerkship	Ogur and Hirsh, Academic Med, 2009	Massachusetts, USA	14 medical students allowed to give narratives	The deeper connection formed with patients during LICs allowed them to understand the context of illness in terms of family and community and to develop empathy
Burden, responsibility, and reward: precursor experiences with the continuity of teaching in a longitudinal integrated clerkship	Teherani et al., Academic Medicine, 2009	San Francisco, USA	Interviews with 27 GPs	Supervisors reported feeling the reward and satisfaction of observing student growth as they facilitated the students' role in more active patient care
Continuity in a longitudinal out-patient attachment for Year 3 medical students	Wamsley et al., Medical Education, 2009	USA	Interviews with 12 medical students	Continuity in the relationship allowed mentorship for students which enhanced knowledge, skills and their perception of themselves as future doctors
Longitudinal pedagogy: a successful response to the fragmentation of the third-year medical student clerkship experience	Bell et al., Academic Medicine, 2008	Massachusetts, USA	Questionnaire and Focus Group with 8 medical students	Relationships with patients promote positive attitudes and values as well as empathy in students
Student learning experiences in a longitudinal clerkship programme'	Mihalynuk et al., Medical Education, 2008	Canada	Interviews with 12 medical students	One of the most important enablers of learning was the year-long relationship with a supervisor

supervisors, faculty, patients, peers and communities. A key function of a supervisor is in connecting students to patients and helping students recognise that they are advocates for their patient [50]. During the LIC, students are able to build on their competencies and trust with patients and with the GP through parallel consulting [51]. Practice staff ensures that the highest quality of patient care is given, patient and student safety is ensured and that learning points can be identified for the student [51]. By having an LIC in general practice and a trusting relationship with the GP, the student can build on their clinical competencies for the future that are able to ensure any patient they will treat in the future receives the highest quality of care.

**Relationship maintenance**

It is recognised that appropriate support, supervision and opportunity for reflection are needed to optimise relationships within LICs [32, 52]. Medical schools can support relationships by investing in GP supervisors both in their professional development as supervisors and through allocation of resources, such as protected time [53]. For the process to be successful, it is imperative that medical schools identify suitable supervisors, who should then be supported in their own teaching and mentorship skills [54]. Similarly, students undertaking LICs must understand the importance of close therapeutic and professional relationships, according to graduates from a LIC-based programme [34] (see Fig. 2). Students should be orientated properly by faculty before undertaking the placement and be taught strategies to become self-directed learners who are able to capitalise on learning opportunities offered within an LIC [54]. A curricular framework such as education continuity could be used to develop effective relationships between staff and students. By having ownership of the curriculum,



**Fig. 2** Dynamic relationships in a LIC



it can foster a learning environment that is both learner- and patient-centred, developing clinical competencies and enhancing role modelling and mentoring [17].

### Multi-stakeholder impact

Hauer et al. reported that the relationships helped to “anchor [the] professional development” of students [38]. Students can improve their social skills and understanding of society by getting involved in the community [25] and community-based activities beyond the consulting room [26]. These insights facilitate the growth of empathy and a patient-centred approach [17]. Relationships developed over time with patients help students to consider the professional, ethical and personal aspects of medicine, including the family context [55]. Students perceived themselves as having an authentic role in patient care, increasing their confidence and motivation in contrast to students interviewed from traditional clerkships, who did not perceive this kind of collaborative relationship and the independence it confers [24, 46] (see Table 2).

Access to positive role models can also help students to reflect on their own well-being, which can enhance understanding of medical professionalism [56]. Further, mentors can impact the career choice of medical students [57]. It seems that the benefits of relationships continue beyond the duration of the LIC, as post-LIC students are better able to give peer-to-peer feedback regarding clinical and communication skills [58, 59] and are more likely

to seek appropriate assistance concerning gaps in their knowledge [25]. Relationships formed during LICs can also influence how supervisors perceive themselves—in fact, self-perception and satisfaction were the main drivers for supervisor involvement in Walters et al. research [23]. Similarly, Teherani et al. described how collegial relationships with students enabled a shared care approach to patients [53]. As a result of the relationship between supervisors and medical schools, the former’s self-perception changed from being a solo operator to part of belonging to a bigger institution [26]. For rural general practice, LIC relationships increase morale, energy and ultimately improve patient care [60]. GP supervisors and practice managers believed that relationships with LIC students improved the ambience and increased respect and relationships between GP colleagues [43, 47, 60]. The experience of relationships within hospital-based LICs has also been mainly positive, with strengthened professional identity development, improved reflective practice and the ability to engage in inter-professional education all reported [5]. Interestingly, Connolly et al. also report the potentially damaging effect of a disengaged student within LICs, highlighting the reciprocal nature of relationships, and the importance of student engagement in the inference of relationship-based benefits within LICs [5]. Sustaining or encouraging student engagement may necessitate additional student support, and it is crucial that medical schools with LICs to consider the differences between LIC and block clerkships as experienced by students [61].

**Table 2** Roles and consequences of stakeholders involved in relationships in LICs

	Role in supporting and developing relationships in LIC	Consequences of relationship in LIC
Student	Reflective practice Openness to relationships Intuitive and willingness to engage Readiness to accept feedback Professional approach	Greater access to patients Learning tailored to students needs Greater understanding of geographical and social context of health and illness Greater confidence in clinical and communication skills
Supervisor	Involvement of student in practice activities Communication with staff and patients Facilitation of learning by providing suitable patients for parallel consulting Integration of student with clinical team	Improved professional identity Improved practice morale Possible fall out of some relationships Maintains and gains new clinical knowledge
Patient	Willingness to have a consultation with a student	Opportunity to have symptoms and past history discussed Longer time to discuss social issues and concerns Has “fresh pair of eyes” evaluating their symptoms and signs
General practice staff	Administration Communication with patients Alternative source of learning to supervisor	Improved morale Extra demands on staff time Greater recognition of staff professional role
Medical school	Orientation for students Provision of adequate learning resources to students Provision of appropriate supervisor training Provision of suitable resources and funding to practices	Meeting capacity challenges in modern medicine Influence of medical school extends into community and becomes integrated into community

## Discussion

### Summary of main findings

This narrative review has identified that triangular relationships between students, GP supervisors and patients within LICs are the central drivers of success for this model of clinical education. These relationships are nested in a set of important supporting relationships involving other supervisors, the medical school and university, the practice clinical and administrative team as well as peers.

### Comparison to existing literature

Trust and confidence developed by the student-supervisor relationship grow with time and experience and, accordingly, more exposure to patient care can gradually be facilitated, leading to deeper relationships with patients and their families [62]. A study of learning in primary care found two key inter-related elements leading to success on placement: the quality of the relationship with the GP supervisor and the development of trust between them [63]. It has been termed transformative learning, where the GP supervisor takes on a mentorship role [55] and the student takes on the role of a clinician [64]. Time and continuity are needed for these relationships to occur, both of which are emphasised by a LIC. Longitudinal clerkships can occur in other specialities such as general medicine or surgery but are often shorter in duration due to limited resources [65]. The Harvard Medical School-Cambridge Integrated Clerkship (HMS-CIC) has been taught longitudinally and based in the disciplines of internal medicine, neurology, obstetrics-gynaecology, paediatrics and psychiatry [66].

This review has not identified significant literature on strategies for dealing with poor relationships during LICs. Ellaway et al. propose that structures be in place for relationships that are more challenging [67]. Medical schools can improve their relationships with LIC sites through regular practice visits by faculty and valuing feedback from supervisors based on their experiences [68]. From a supervisors' perspective, the ability to foster good relationships is an essential skill [69]. Hudson et al. emphasise the importance of parallel consulting [68], which often becomes time neutral as the student develops in experience and confidence [70]. It has been suggested that a benefit for GP supervisors is a steady contribution of the student to the workload through a collaborative relationship [71]. The GP supervisor-student relationship within LICs is described as “a personal and reciprocal relationship” [72].

The value of relationships between students and patients is in the increased understanding of patient experiences

and opportunity to contribute meaningfully to their care [73]. Students within LICs work with and see different presentations from patients over time and work to ensure the best care is given across all healthcare settings [74]. The working relationships with patients that are developed during LICs tend to confer more understanding of the patient perspective [73]. Fortunately, positive attitudes towards the presence of students in consultations with GPs have been described by patients [75]. In addition, the relationship the student has with society or the community in which they work is considered key to retaining the rural workforce [15, 76].

The concept of connectivity has been identified in this paper as an important factor in the success of LICs, especially by Roberts et al. [45]. Possibly, the most important role of the GP supervisor, therefore, is to support students in becoming aware of their own professional boundaries [77]. This emphasis of the hidden curriculum in the formation of professional identity through positive student-GP supervisor relationships has been described [78]. Among the most important roles for a supervisor in any type of clerkship is to support students and promote their participation in patient care [79].

This review has identified two key factors regarding relationships within LICs: (i) the willingness of students to enter into mature relationships where they interact sensitively and confidently with patients and their families and (ii) the ability of students to collaborate responsibly with supervisors and accept feedback. Self-motivation and willingness to engage with learning opportunities as they arise are keys to successful clerkships [81]. We have identified feedback from supervisors as a core component in the students' development [11].

### Strengths and limitations

The strengths of this review are that this body of research adds to the emerging body of literature concerning the benefits of, and issues with, LICs. Another strength of this review concerns its novel focus—relationships within LICs—upon which the literature has not been previously synthesised. A limitation of this study is that, despite the systematic search strategy employed, relevant papers within databases not searched may have been missed. Much of the research has involved small studies that are specific to one particular school or type of programme and may not be generalizable [65].

### Implications for policy and research

A cohesive approach to relationships across multiple schools is needed to establish how exactly beneficial relationships

are formed and maintained during LICs, as well as how they can be supported and strengthened. Investigation of dysfunctional relationships and how to prevent and manage these is also necessary. Our recommendations include providing training for supervisors in regard to the building and maintenance of tutor-student relationships; creating orientation and pre-placement material for students to help them to understand the importance of relationships and how to engage successfully in building them; and supporting GP supervisors by providing them with ongoing training, resources and funding. Students should be given an opportunity to discuss and give feedback on their experiences on the LIC at the end of their placements to enable reinforcement of their learning experiences on their LIC. Finally, social isolation for students and tutors [29, 49] is an ongoing concern which warrants further investigation.

## Conclusion

This review has identified clearly what relationships exist in LICs, the nature of these relationships, and has illuminated how they are an essential part to successful learning. For LICs to maximally benefit their stakeholders and operate sustainably over time, medical schools must support and prioritise relationship development within longitudinal clerkships.

**Abbreviations** CLICs: *Consortium of Longitudinal Integrated Clerkships*; GPs: *General Practitioners*; LICs: *Longitudinal Integrated Clerkships*

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**Data Availability** All data is available for review by contacting the Principal Investigator at Jane.ODoherty@ul.ie.

## Declarations

**Consent for publication** All authors consent to publication of this paper.

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