Time is of the Essence:
A Systematic Characterization of Longitudinal Clinical Programs in US Medical Schools

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Longitudinal integrated clerkships (LICs) have emerged in response to perceived shortcomings of traditional rotations.

Characterizing the LIC typology
- Globally (Worley et al., 2016)
- Canada (Ellaway et al., 2016)
- United States

LICs are one subtype of the larger domain of longitudinal clinical programs (LCPs)
Research Aim

Identify and characterize all LCPs in LCME-accredited US medical schools, in order to:

1. Generate a representative list of current LCPs
2. Characterize LCPs according to their structure and stated programmatic goals

Our study complements recent typologies by surveying the US landscape and including LIC and non-LIC longitudinal programs.
LCP Eligibility

• ≥6 months in length

• Designed for undergraduate medical students

• Stated emphasis on longitudinality

• Offered continuity with patients

• Occurs in either the pre-clinical or clinical years

Photo credit: Center for Primary Care, HMS
**Methods**: Search strategy, Data extraction

**Online Search Strategy**

- Systematic keyword search of US medical schools’ websites and complimentary Google search
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Data Extraction & Synthesis

- **Program structure:** integration, participation, phase of training, date, length, type (LIC, patient attachment, clinic attachment)
- **Explicitly stated program goals**
Methods: Data coding, Association analysis

Data coding

• Qualitative coding framework used to categorize explicitly stated program goals
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Data coding

- Qualitative coding framework used to categorize explicitly stated program goals

Associations between program structure and goals

- Domains of program structure and program goals
  - Structure: program type, length, phase of training, % participation
  - Goals: exposures, skill development, understanding the patient experience, developing longitudinal relationships
Results
LCPs varied in program structure

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total programs identified (n = 98)</strong></td>
<td></td>
</tr>
<tr>
<td>Programs with stated goals</td>
<td>89 (90.8%)</td>
</tr>
<tr>
<td>Programs with no stated goals</td>
<td>9 (9.2%)</td>
</tr>
<tr>
<td><strong>Program length</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;1 year</td>
<td>12 (12.2%)</td>
</tr>
<tr>
<td>1 year</td>
<td>47 (48.0%)</td>
</tr>
<tr>
<td>&gt;1 to &lt;2 years</td>
<td>2 (2.0%)</td>
</tr>
<tr>
<td>2 to &lt;3 years</td>
<td>17 (17.3%)</td>
</tr>
<tr>
<td>3 to &lt;4 years</td>
<td>6 (6.1%)</td>
</tr>
<tr>
<td>4 years or greater</td>
<td>14 (14.3%)</td>
</tr>
</tbody>
</table>
### LCPs varied in program structure

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curricular Integration</strong></td>
<td></td>
</tr>
<tr>
<td>Curricular programs</td>
<td>95 (96.9%)</td>
</tr>
<tr>
<td>Extracurricular programs</td>
<td>3 (3.1%)</td>
</tr>
<tr>
<td><strong>Phase of training</strong></td>
<td></td>
</tr>
<tr>
<td>Programs exclusively in pre-clinical years</td>
<td>26 (26.5%)</td>
</tr>
<tr>
<td>Programs exclusively in clinical years</td>
<td>51 (52.0%)</td>
</tr>
<tr>
<td>Programs spanning pre-clinical and clinical years</td>
<td>21 (21.4%)</td>
</tr>
<tr>
<td><strong>Program type</strong></td>
<td></td>
</tr>
<tr>
<td>Longitudinal integrated clerkship (LIC)</td>
<td>26 (26.5%)</td>
</tr>
<tr>
<td>Patient attachment only</td>
<td>20 (20.4%)</td>
</tr>
<tr>
<td>Clinic attachment only</td>
<td>49 (50.0%)</td>
</tr>
<tr>
<td>Patient and clinic attachment</td>
<td>3 (3.1%)</td>
</tr>
</tbody>
</table>
LCPs had distinct, overlapping goals

- **Exposure**
  - Specific patient demographics
  - Specialties
  - Outpatient/Community based care
  - Social medicine

- **Recruitment**
  - Specific geographic area
  - Specific specialty

- **Skill development**
  - Clinical skills
  - Professional skills

- **Understanding the patient experience**

- **Foster longitudinal relationships**
  - Student-supervisor
  - Student-patient
  - Student-clinical team
  - Student-other

- **Integrate pre-clinical and clinical curricula**
LCPs had distinct, yet overlapping goals: Coding framework categorizing program goals (n=89, %)

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Recruitment</th>
<th>Skill development</th>
<th>Understanding the patient experience</th>
<th>Foster longitudinal relationships</th>
<th>Integrate pre-clinical and clinical curricula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific patient demographics</td>
<td>Specific geographic area</td>
<td>Clinical skills</td>
<td>Specific specialty</td>
<td>Professional skills</td>
<td>Student-supervisor</td>
</tr>
<tr>
<td>Specialties</td>
<td>Specific specialty</td>
<td>Student-patient</td>
<td>Outpatient/Community based care</td>
<td>Professional skills</td>
<td>Student-clinical team</td>
</tr>
<tr>
<td>Social medicine</td>
<td>37</td>
<td>25</td>
<td>40</td>
<td>8</td>
<td>27</td>
</tr>
<tr>
<td>17</td>
<td>6</td>
<td>44</td>
<td>11</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>79</td>
<td>11</td>
<td>65</td>
<td>19</td>
<td>33</td>
<td>11</td>
</tr>
</tbody>
</table>
LCP type is associated with goals related to primary care exposure and understanding the patient experience.
LCP phase of training is associated with the goal of developing clinical skills
Additional findings: no significant associations

We found no associations between program goals and either program length or rate of student participation.
Discussion: Landscape of US LCPs

- Programs **differ in structure**: type, length, rate of student participation, and phase of training

- Patient attachment programs were more likely to emphasize **understanding the patient experience**
  - Pair students with individual patients (e.g. senior mentor programs)

- Both clinic attachments and LICs place an emphasis on **primary care exposure and recruitment**

- Developing clinical skills?
Discussion: Implications for LCP Design

- A broader definition of longitudinal clinical programs is necessary
- Is longitudinality a goal, or a means to other ends?
- Towards “rational” evidence-based program design
  - Can LCPs offer the educational or healthcare delivery benefits that LICs have demonstrated?
  - Future research should clarify which program structures support desired goals and outcomes
Conclusions

• LCPs are increasingly common in US medical schools

• Further research is needed to clarify the significance of associations between program structures and goals

• Future design and implementation of LCPs should be rational and evidence based
  • Guided by educational principles, high quality research, and the needs of learners, patients, and society
Acknowledgments

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Key References


Thank you!

Questions?

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