

How Do Graduates of Longitudinal Integrated Clerkships Fare on the Medical Council of Canada Qualifying Exam Part II?

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Abstract

The longitudinal integrated clerkship (LIC) model has recently become a popular educational model for training clinical clerks. LICs permit students to train in multiple disciplines concurrently and typically in rural practice sites. Because little is known about how graduates of LIC programs fare in residency, the purpose of this study was to compare the clinical performance of residents who graduated from rural longitudinal integrated and urban rotation-based clerkships on the Medical Council of Canada Qualifying Exam Part II (MCCQE Part II) taken 16 months into residency. Participants included medical school graduates from the classes of 2009, 2010 and 2011 at the University of Calgary. Each of the 34 LIC students were prospectively matched (first on Medical Skills II course performance, then grade point average) with 4 students from the traditional rotation-based (RB) stream to serve as controls ($n = 136$). A dataset containing 170 graduates was forwarded to the Medical Council of Canada (MCC) who subsequently supplied MCCQE Part II pass/fail status and total score for each resident, and returned the dataset for our analysis. Data were analyzed using chi-square and analysis of variance. The final dataset for analysis consisted of 30 (88%) LIC graduates and 115 (85%) RB graduates. Analysis revealed a similar MCCQE Part II pass rate for LIC (28/30; 93.3%) and RB (107/115; 93.0%) graduates, $p > 0.05$. The MCCQE Part II mean total score for the LIC graduates ($M = 527.4$; $SD = 64.3$) did not differ from the mean total score ($M = 529.9$; $SD = 61.4$) reported by the RB graduates, $F = 0.04$, $p = 0.85$. Completing the majority of clerkship in a rural community over an extended period allowed LIC graduates to perform as well as their peers on a measure of clinical skills taken 16 months into residency.

Keywords

Longitudinal Integrated Clerkship, Clerks, Clinical Skills, Residency, Medical Council of Canada

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Qualifying Examination Part II

1. Introduction

The longitudinal integrated clerkship (LIC) model permits students to train in multiple disciplines concurrently while a rotation-based (RB) model requires students to rotate through mandatory disciplines in blocks of varying lengths. LIC students train in rural practice sites while RB students typically train in urban tertiary teaching hospitals. Recently LICs have become a popular educational model for training clinical clerks. Providing student continuity with both patients and preceptors and offering students the opportunity to perform “doctor-like” roles are some of the noted advantages of the LIC model (Hauer et al., 2012).

The University of Calgary recently implemented (Class of 2009) a LIC program available to students in the third and final year of the undergraduate program. Details of the Calgary program are outlined elsewhere (Woloschuk, Myhre, Jackson, McLaughlin, & Wright, 2014) but briefly, students spend 32 weeks in a rural community under the supervision of a family physician who serves as the primary preceptor. Students simultaneously complete core clinical training in anesthesia, emergency medicine, family medicine, obstetrics and gynecology and psychiatry as well as some exposure to internal medicine, pediatrics and surgery. At the completion of 32 weeks students return to Calgary where they complete a short 4 week burst of rotation-based training in each of internal medicine, pediatrics and surgery. All students write the same examinations regardless of clerkship stream.

It was recently reported that LIC students in the Calgary program performed as well as RB students on various performance measures in clerkship (Myhre, Woloschuk, Jackson, & McLaughlin, 2014) and residency according to program director ratings collected at the end of the first post-graduate year (Woloschuk et al., 2014). These findings are consistent with the results of a recent review of LIC programs indicating that students who train under the LIC model perform at least as well and sometimes better on knowledge and clinical skills when compared to their RB peers (Walters et al., 2012). Because LICs are a recent innovation, little is known about how LIC students in general perform beyond their undergraduate training. The purpose of this study was to add to our understanding about the post-graduate performance of LIC students by examining how LIC graduates fare on the MCCQE Part II (first attempt) taken approximately 16 months into postgraduate training. The MCCQE Part II employs an Objective Structured Clinical Examination (OSCE) format that measures a candidate’s clinical skills (Reznick et al., 1993).

2. Methods

This study was part of a comprehensive 3-year evaluation plan that studied various outcomes of the LIC program at the undergraduate and post-graduate levels. Participants included medical school graduates from the classes of 2009, 2010 and 2011 at the University of Calgary. To study clinical skills performance each of the 34 LIC students was prospectively matched at the start of clerkship (first on Medical Skills II course performance, then grade point average) with 4 students from the traditional rotation-based (RB) stream to serve as a control ($n = 136$). Matching performance on the Medical Skills II course was selected because of similarities with the MCCQE Part II in content and exam format. A dataset containing 170 graduates was forwarded to the Medical Council of Canada (MCC) who subsequently supplied MCCQE Part II pass/fail status and total score for each resident, and returned the dataset for our analysis. MCC policy restricts release of the MCCQE Part II subscale scores. All participants provided written consent for us to obtain their MCCQE Part II scores from the MCC. Because 4 graduates of the LIC stream had not yet taken the exam the respective RB controls for those 4 LIC graduates were removed from the dataset. Additionally, 5 RB graduates who were serving as control participants had not taken the exam and therefore had no MCCQE Part II score. As a result 5 LIC graduates had 3 rather than 4 control participants. MCCQE Part II performance served as dependent variables while clerkship stream (LIC vs. RB) served as the independent variable. The distribution of exam scores was examined for normality. The pass/fail data were analyzed using chi-square while exam scores were subjected to an analysis of variance. All data analyses were carried out using STATISTICA Version 12. The study received ethical approval from the Conjoint Health Research Ethics Board of the Faculties of Medicine, Nursing, and Kinesiology at the University

of Calgary.

3. Results

The final dataset for analysis consisted of 30 (88%) LIC graduates and 115 (85%) RB graduates. Various indicators of normality including a histogram, skewness, kurtosis, and the Kolmogorov-Smirnov test confirmed that the overall dataset of 145 exam scores was normally distributed. Of the 30 LIC graduates, 24 (80.0%) were training in family medicine while 89 (77.4%) of the 115 RB graduates were training in disciplines other than family medicine. Analysis revealed a similar MCCQE Part II pass rate for LIC (28/30; 93.3%) and RB (107/115; 93.0%) graduates, $p > 0.05$. The MCCQE Part II mean total score for the LIC graduates ($M = 527.4$; $SD = 64.3$) did not differ from the mean total score ($M = 529.9$; $SD = 61.4$) reported by the RB graduates, $F = 0.04$, $p = 0.85$.

4. Discussion

This study compared the performance of LIC and RB graduates on the MCCQE Part II that measures clinical skills and found no difference between the two groups on both pass rate and total score. Graduates who trained primarily under generalists and completed most of their core clerkship training in rural sites performed as well on the licensing exam as their rotation-based peers who trained primarily in tertiary teaching hospitals. These results are consistent with the findings previously reported for this matched cohort on measures of clinical skills at the undergraduate level (Myhre et al., 2014). It appears that expanding clerkship training into community practices for longer periods and across multiple disciplines is not only viable but can be done without detriment to the student's performance later in training. The LIC model may open a myriad of new training opportunities for clinical clerks and addresses the need for more generalist based instruction for medical students (Fraser, 1991).

The literature is replete, and this paper supports previous work demonstrating the academic equivalency of the LIC and RB models. However, if the LIC model provides students with various educational advantages that are purported to facilitate learning, why is the performance of our LIC cohort not superior? The reasons for this have yet to be elucidated and at this point we can only speculate. For example, possibly the measures we have used across the continuum are not sensitive to the nuances of the LIC experience or that some elements of LIC, which we are unaware of, counteract the noted advantages. Further study is required to illuminate this issue.

This study has limitations that should be noted. Our study had a small sample size and participants were from a single medical school which is three years in duration so the findings may not generalize to students who graduated from other schools. Because the MCCQE Part II is taken approximately 16 months into post-graduate training it is not known what impact residency training itself has had on these results considering that most of the LIC graduates were training in family medicine while most of the RB graduates were training in a wide range of other specialties. To maintain continuity the same matched cohort to compare clinical skills performance at both the undergraduate and post-graduate levels was used. Considerable time elapsed between the start of clerkship when the groups were matched and taking of the MCCQE Part II.

5. Conclusion

Completing the majority of clerkship in a rural community over an extended period allowed LIC graduates to perform as well as their peers on a measure of clinical skills taken 16 months into residency.

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