

# Assessing Self-Reported Readiness of Medical Students Transitioning to Clinical Clerkship at the University of Ottawa

Neel P. Mistry<sup>1</sup>, Stefan de Laplante<sup>1</sup>, Craig M. Campbell<sup>1</sup>

<sup>1</sup>Faculty of Medicine, University of Ottawa

<sup>2</sup>Department of Family Medicine, L'Hôpital Montfort, Ottawa

**Corresponding Author:** Neel Mistry (nmist066@uottawa.ca)

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## ABSTRACT

**Introduction:** The transition from pre-clerkship to clinical clerkship is a pivotal moment for medical students. Limited evidence exists in the literature on the elements that contribute to a successful transition. To make the transition as seamless as possible, exploration of these elements is paramount to better inform curricular improvements.

**Methods:** We collected student feedback using surveys to generate recommendations for improvement with regard to clerkship preparedness at the University of Ottawa Faculty of Medicine. The students assessed were from the MD2021, MD2022, MD2023 and MD/PhD cohorts. Likert-type and open-ended questions were used and the survey was open from October 10 to October 31, 2020. Open ended questions were analyzed using a content analysis method.

**Results:** We obtained 176 respondents (37% response rate), of which 158 provided consent and completed the survey. Students in the post-transition group were less anxious about what to expect in clerkship, compared to their pre-transition colleagues. In terms of students' self-evaluated comfort level performing some Entrustable Professional Activities (EPAs), the most significant difference was completing a thorough history and physical examination (2.9/5.0 vs. 3.3/5.0,  $p < 0.05$ ) for the pre- and post-transition Anglophone cohorts. Content analysis revealed the two main stressors for incoming clerks were inadequate clinical skills training in pre-clerkship and lack of clarity around clerkship roles, responsibilities, and expectations.

**Conclusion:** Improvements can be made in pre-clerkship through the integration of small-group orientation sessions, formative OSCEs, accelerated review of pre-clerkship material in the transition-to-clerkship curriculum, and clerkship simulation sessions to facilitate a seamless transition to clerkship at the University of Ottawa.

## RÉSUMÉ

**Introduction:** Le passage du pré-externat à l'externat clinique est un moment charnière pour les étudiants en médecine. Des améliorations peuvent être apportées au programme d'études afin de mieux préparer les étudiants à l'externat. Nous avons recueilli les commentaires des étudiants afin de formuler des recommandations pour améliorer la préparation à l'externat à la Faculté de médecine de l'Université d'Ottawa.

**Méthodologie:** Nous avons créé un sondage sur la transition avant et après l'externat pour les étudiants en médecine de la Faculté de médecine de l'Université d'Ottawa. Les groupes évalués provenaient de cohortes différentes. Nous avons utilisé des questions de type Likert et des questions ouvertes. L'enquête était ouverte du 10 octobre au 31 octobre 2020. Microsoft Excel 2016 a été utilisé pour l'analyse des données.

**Résultats:** Nous avons obtenu 176 répondants (taux de réponse de 37 %), dont 158 ont donné leur consentement et ont répondu à l'enquête. Les étudiants du groupe post-transition étaient moins anxieux à propos de la transition vers l'externat par rapport à leurs collègues pré-transition, la différence la plus significative se présentant lors de la réalisation d'une anamnèse et d'un examen physique approfondis (2,9/5,0 versus 3,3/5,0,  $p < 0,05$ ). Les deux principaux facteurs de stress pour les nouveaux externes sont l'insuffisance de la formation aux compétences cliniques avant l'externat et le manque de clarté quant aux rôles, responsabilités et attentes de l'externat.

**Conclusions:** Des améliorations peuvent être apportées au pré-externat par l'intégration de séances d'orientation en petits groupes, d'ÉCOS formatifs, d'une révision accélérée du matériel de pré-externat et de séances de simulation d'externat afin de faciliter une transition harmonieuse vers l'externat à l'Université d'Ottawa.

**Keywords:** Clerkship, medical education, curriculum renewal

## INTRODUCTION

Medical students face numerous challenges as they traverse the medical education continuum.<sup>1</sup> Differing expectations between clerkship faculty and incoming students with regards to clinical-skills training is one such example of said challenges. The transition from pre-clerkship to clerkship is the first of many such transitions that trainees encounter on their journey to becoming independently licensed physicians.<sup>2</sup>

In most four-year medical programs, pre-clerkship comprises the first two years of medical school, while clerkship entails the last two.<sup>3</sup> Traditionally, pre-clerkship uses formal large and small-group educational activities to teach fundamental topics and core competencies. On the other hand, clerkship focuses on the development of practical clinical skills through mandatory and elective placements in various clinical environments.

At the University of Ottawa (uOttawa) Faculty of Medicine, Unit IV and Link Block are designed to facilitate the transition from pre-clerkship to clerkship. Unit IV represents the final nine weeks of pre-clerkship and is intended to focus on knowledge integration. In contrast, Link Block is a three-week formal introduction to clerkship. Here, students are introduced to key skills such as discerning their role as a member of the healthcare team, infection prevention and control, documenting a clinical encounter, and performing clinical procedures.<sup>4</sup> uOttawa is unique in that it has both Anglophone and Francophone medical streams with both streams having equivalent learning objectives. In terms of clinical exposure in pre-clerkship, both streams have a longitudinal curriculum of Clinical Skills during which students are exposed to both simulated and real patients in small group and individual sessions. These sessions are guided by a faculty member. Furthermore, students have the flexibility to explore clinical electives, although these were restricted during the COVID-19 pandemic. Clinical electives are non-mandatory placements that students organize on their own time in order to gain exposure to the clinical setting.

Existing literature suggests that among students entering clerkship, social dynamics of group work and a lack of clarity around roles and responsibilities seemed to be the biggest concerns.<sup>5,6</sup> These findings were confirmed by Wenrich et al., who garnered student and faculty opinion

on clerkship preparedness using a questionnaire at the University of Washington School of Medicine in 2010.<sup>7</sup> Interestingly, with regards to advanced clinical skills (e.g., preparing Subjective, Objective, Assessment and Plan (SOAP) clinical chart notes), students' expectations of themselves were significantly higher than the expectations clerkship faculty had for them given their level of training. These studies insinuate that interventions must be placed to align student and faculty expectations so that incoming clerks do not feel overwhelmed.<sup>8-11</sup>

There is limited evidence on the elements that contribute to a successful transition to clerkship.<sup>12-15</sup> We conducted this study to 1) describe and contrast medical students' self-reported readiness for the transition to clerkship from both language streams and 2) garner student feedback on their experience with Unit IV and how it could be improved. This research arrives at an opportune time given that the uOttawa MD Program is undergoing Curriculum Renewal.

## METHODS

### Survey design

Our anonymous survey was inspired by findings from Artino et al.<sup>16</sup> It was divided into four components: student demographics, clerkship preparedness, core competencies, and curricular reform. We prepared two different versions of the survey: pre-transition (for MD2023 and MD/PhD students who were yet to enter clerkship, at the time; **Appendix A**) and post-transition (for MD2021, MD2022, and MD/PhD students who had entered clerkship, at the time of survey dissemination; **Appendix B**) The abbreviation MD\*\*\*\* indicates the year the medical students would graduate from medical school. For example, the MD2023 cohort students are expected to graduate from the 4-year undergraduate medical school program in the year 2023. The MD/PhD cohort abbreviation references the students that are simultaneously enrolled in the Medical Doctorate (MD) and the PhD program. They typically would complete their degree over a 7-year period. The pre-transition survey assessed students' concerns with starting clerkship, while the post-transition survey focused on changes that could facilitate this transition. Entrustable Professional Activities (EPAs) were used to help guide generation of nine questions on the survey.

Our survey was designed using SurveyMonkey and was

available in English and French. The survey was open from October 10 to October 31, 2020, with weekly reminders sent to eligible students.

## Statistical analysis

Anonymous data was exported from SurveyMonkey and analyzed by [Blinded]. Microsoft Excel 2016 (Microsoft, Albuquerque, USA) was used to calculate the mean and standard deviation for Likert-type scale questions. We ran two-sample t-tests to assess statistical significance ( $p < 0.05$ ). Open ended questions were analyzed using a content analysis method that focused on themes. We allowed for a flexible coding process whereby each author provided input on possible broad themes. Consensus was first sought by NPM and SDL. In the event consensus was not obtained, CMC's opinion was sought. We focused on frequency of themes and present this data below.

## Approval and funding

Research Ethics Board (REB) approval for this study was obtained from l'Hôpital Montfort (primary review) and uOttawa Health Sciences Network (expedited review). A copy of the participant consent form is found in **Appendix C**. This study was funded by the uOttawa Faculty of Medicine Summer 2020 Studentship and the Association Médicale Universitaire de l'Hôpital Montfort (AMUHM).

## RESULTS

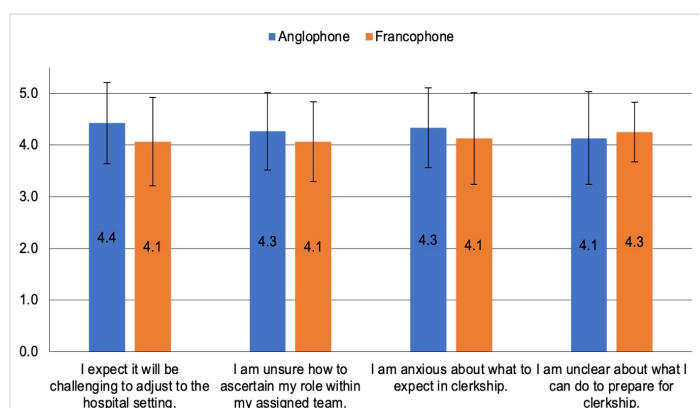
Invitations were sent to 500 MD and MD/PhD students at uOttawa. We obtained 176 respondents (37% response rate; 127 Anglophone and 49 Francophone), of which 158 (110 Anglophone and 48 Francophone) provided consent and completed the survey. 39.9% of respondents were from the MD2023 (pre-transition) cohort, 56.3% from the MD2022 and MD2021 (post-transition) cohorts and 3.8% were from the MD/PhD cohort. Prior to entering medical school, most (61.4%) of respondents had completed a bachelor's degree.

## Clerkship preparedness

Under clerkship preparedness, pre-clerkship students were asked to comment on how they felt with regard to the upcoming transition to clerkship using Likert-type scale (1 = strongly disagree and 5 = strongly agree). Students

in the Anglophone stream reported greater concerns compared to their Francophone colleagues on all but one occasion. The difference between both streams ranged from adjusting to the hospital setting (mean difference +0.3;  $4.4 \pm 0.8$  Anglophone vs.  $4.1 \pm 0.9$  Francophone) to being effectively prepared for clerkship (-0.2;  $4.1 \pm 0.9$  Anglophone vs.  $4.3 \pm 0.6$  Francophone). The differences between both streams were not statistically significant (**Figure 1**).

MD2021, MD2022, and MD/PhD students in clerkship (post-transition) were asked to reflect on their transition by responding to the same four Likert-type scale questions. They reported feeling less anxious, in retrospect, compared to pre-clerkship students. The greatest difference between streams was with regard to adjusting to the hospital setting (+0.3;  $3.5 \pm 1.0$  Anglophone vs.  $3.2 \pm 1.1$  Francophone) and the least difference was for clarity of clerkship roles and responsibilities (-0.1;  $3.6 \pm 1.1$  Anglophone vs.  $3.7 \pm 1.2$  Francophone). These differences between streams were not statistically significant (**Figure 2**). Interestingly, when asked to reflect on their comfort level to perform some EPAs, the Anglophone post-transition group was more comfortable with some EPA performance compared to the Anglophone pre-transition group. The most significant difference was with completing a thorough history and physical examination ( $2.9/5.0$  vs.  $3.3/5.0$ ,  $p < 0.05$ ). The remainder of the data concerning self-reported comfort level with performing various EPAs for the Anglophone and Francophone cohorts were not statistically significant, especially when comparing the pre- and post-transition cohorts of the same language stream (see **Appendix D**). For brevity's sake, the table was not included in the body of the results section.



**Figure 1. Comparison of student perspectives (1 = strongly disagree and 5 = strongly agree) on the upcoming transition to clerkship between the Anglophone and Francophone stream, with error bars indicating standard deviation.**

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**PRE-TRANSITION SURVEY (MD2023, MD/PhD)**


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*What are you most concerned about with respect to the transition from pre-clerkship to clerkship? (n=56)*

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Lacking clinical skills or experience - Being ready to work with patients, and thoroughly assess and treat patients independently.  
- The practical aspects including history taking, physical exam skills and developing differential diagnoses.

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Lacking clarity on clerkship roles, responsibilities & expectations - What is my role and how do I successfully carry out that role? \*  
- Expectations during clerkship, structure and details on clerkship routine, roles during urgent situations. \*  
- Mon rôle au sein d'une équipe de soin n'est pas clair, en plus, je n'ai pas eu l'opportunité de compléter des stages cliniques et je ne suis pas très familière avec l'environnement. \*

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*What changes to the current curriculum could better prepare you for clerkship? (n=55)*

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Practical skills & strategies - Better incorporate lectures for more practical things (how to write discharge notes, how to write admission orders, how to summarize a case, how to use Electronic Medical Record \*  
- Teachings about "soft skills" (i.e., how to appropriately gown ourselves or a patient) \*

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Curricular changes - Earlier exposure to patients on the medical or surgical ward specific to each teaching unit \*  
- Perhaps have a review unit or other suggested ways of reviewing material

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**POST-TRANSITION SURVEY (MD2021, MD2022, MD/PhD)**


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*What were you most concerned about with respect to the transition from pre-clerkship to clerkship? (n=76)*

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Lacking clarity on clerkship roles, responsibilities & expectations - Not knowing what my role was/being unhelpful in the team.  
- Expectations my team had for me and not knowing my role.  
- What was expected of us during the different rotations, how the different units worked.  
- Je ne comprenais pas ce qui était demandé de moi. Je ne comprends toujours pas ce qui est demandé de moi. Je me sens totalement perdu au sujet des aspects administratifs. \*

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Lacking clinical skills or experience - How to ensure that I remembered all the content from pre-clerkship  
- Knowledge and clinical ability with regard to physical exam and plan development, management and implementation.

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*What changes to Unit IV could better prepare incoming students for clerkship? (n=76)*

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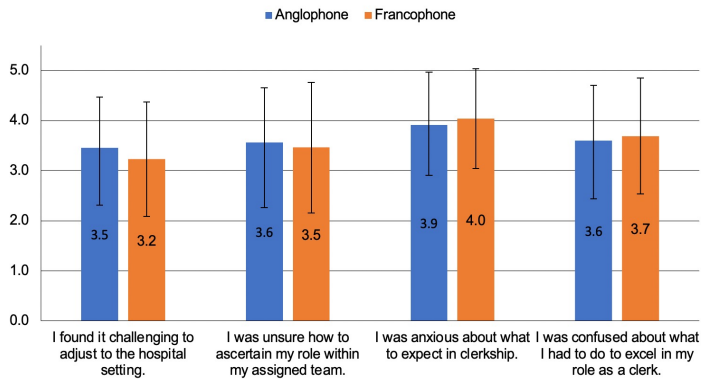
Clerkship preparation & training: clinical skills - Longer link block at hospital  
- More hands-on simulation, more practice in physical exam, case management, case-based learning (CBL) around important and common cases. \*  
- ÉCOS avant de commencer l'externat

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Clerkship preparation & training: logistics - Explain how ward medicine logistically works (ex. who you need to contact to fax prescriptions, how to print lists for your team to round with).  
- More practice on one-liner summaries, more practice in what to check on morning rounds, more practice on case presentations, more practice on note taking (red flag questions)

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Table 1. Student feedback to open-ended responses evaluating the transition to clerkship with suggestions for future improvement (\*corrected for spelling and/or punctuation).



**Figure 2. Comparison of student perspectives (1 = strongly disagree and 5 = strongly agree) on the previous transition to clerkship between the Anglophone and Francophone stream, with error bars indicating standard deviation.**

In addition, students in the pre-transition and post-transition survey were asked to comment on aspects of the transition that concerned them. Comments were summarized into themes and the top two themes for each question are shown in **Table 1** (see **Appendix E** for a complete list).

A common concern raised by pre-clerkship students (pre-transition group) was lacking clinical skills or experience as exemplified by “Ne pas être capable d’écrire des bonnes histoires de patient et faire des présentations de cas efficaces” and “La prise en charge de patients réels”. Other common themes included apprehension about lacking the skills needed to succeed as clerks and lacking clarity about their roles and responsibilities. One comment particularly highlights this: “Expectations during clerkship, structure and details on clerkship routine, roles during urgent situations”.

Students in clerkship who had transitioned and reflected on the transition (post-transition group) had similar fears when starting clerkship. Students noted that they were unsure about their roles as clerks, whether or not they were adding value to the team and lacked clarity with regard to expectations: “What my role was and whether I had the appropriate skill level to accomplish them”; “The long hours, vast amount of knowledge, strict expectations from preceptors”; “Je ne connaissais pas les attentes de moi”. Additionally, students provided insight into managing work-life balance: “I was unsure of how to structure my studying and my time outside of clinic” and “High expectations, high stress, workload”.

In terms of changes that could better prepare incoming

students for this transition, a focus on practical skills and strategies along with curricular changes seem to be key. Pre-clerkship students expressed struggling with “soft skills” such as donning and doffing PPE and writing discharge summaries. Some suggestions included: “more practice with clinical decision-making” and “témoignages d’étudiants d’années supérieures avec des astuces pour bien réussir”. Those in clerkship suggested increasing the duration of clinical skills training and reinforcing clerkship logistics prior to start of clerkship. In particular, they felt that more practice with physical exams and case management, as well as practical skills (i.e., verbal case presentation), may be beneficial in simulating the requirements of clerkship. Students highlighted the need for “more physical exam workshops, more hands-on training” as well as “... actual integration of all topics...”.

## DISCUSSION

In this study, a lack of clinical skills training, limited access to patient-related experiences, limited opportunities to practice clinical skills and lack of clarity on the roles, responsibilities, and expectations of clinical clerks appeared to be the greatest challenges to a seamless transition to clerkship at the uOttawa Faculty of Medicine. These findings are consistent with the literature.<sup>8,9</sup> When contrasting both language streams, no statistically significant differences were noted. The COVID-19 pandemic thoroughly impacted the learning activities of all our students. However, the MD2023 (pre-transition) cohort had their elective experiences and clinical skills training reduced when compared to the MD2021 and MD2022 (post-transition) cohorts. When reviewing the themes, students in the pre-transition group alluded that “nothing the curriculum can do – COVID is limiting observership”. This highlights the vast impact that COVID-19 had on pre-clerkship students’ exposure to the clinical setting.

Recommended changes to the pre-clerkship curriculum at uOttawa include providing a brief overview of clerkship roles and responsibilities in the form of case-based learning and small-group sessions, organizing regular formative Objective Structured Clinical Examinations (OSCEs) sessions prior to clerkship, hosting a faculty-led accelerated review of high-yield clinical content, and providing early exposure to patients in a broad array of clinical settings including in-hospital calls and simulation shifts.<sup>6-11</sup>

When specifically looking at the prevalent themes obtained from the post-transition cohort content analysis, lacking clarity on clerkship roles, responsibilities, and expectations, along with lacking clinical skills and experience, prevail. Recognizing that Link Block and Unit IV are designed to facilitate a smooth transition to clerkship, it is opportune that the uOttawa medical program is currently undergoing curricular renewal. Given the findings of our study, there appears to be room to improve both the Link Block and Unit IV, as per the recommendations described above.

Our study is not without limitations. We did not follow all of the steps outlined by Artino et al. to guide our survey design given financial and time constraints.<sup>16</sup> In fact, of the seven steps, we conducted a literature review, conducted (informal) interviews with the population of interest and developed items. Most importantly, our study did not monitor the same cohort over time. Hence, although students reported feeling less anxious about transitioning to clerkship after they had transitioned, this could be attributed to 1) recall bias by the post-transition students or 2) that post-transition students had less of their pre-clinical training disrupted by COVID-19 and thus felt better prepared.

## CONCLUSION

The transition from pre-clerkship to clinical clerkship is a pivotal moment for medical students. Among other challenges, adjusting to the hospital setting and a lack of clarity around clerkship roles and responsibilities can be daunting. Improvements should be made in pre-clerkship to include small-group sessions that highlight roles and responsibilities of clerks. Explicit education to focus on the competencies required to complete a thorough history and physical exam, generate a differential diagnosis, and enhance student familiarity with the clinical environment through simulation call shifts are offered as potential options. By providing early and frequent exposure to patients across multiple settings, we hope that students can better navigate the transition to clinical clerkship. Although the student feedback may inspire curricular reform at other institutions, we feel it is most applicable to the University of Ottawa Faculty of Medicine and to their Curriculum Renewal process. As the COVID-19 pandemic has shown, as educators we must prepare for future unexpected interruptions in educational activities

and seek other modalities, such as virtual care, to ensure we continuously offer the necessary skills training and exposure to our learners.

## LIST OF ABBREVIATIONS

OSCE	Objective Structured Clinical Examination
ÉCOS	Examen Clinique Objectif Structuré
EPAs	Entrustable Professional Activities
AMUHM	Association Médicale Universitaire de L'Hôpital Montfort
REB	Research Ethics Board
OML	One-Minute Learner
NPM	Neel Pradeep Mistry
SDL	Dr. Stefan de Laplante
CMC	Dr. Craig Murray Campbell

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