



Four for the Price of One: Achieving Competencies of Multiple Clerkships with Rural Family Physicians

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ABSTRACT

Introduction: Longitudinal Integrated Clerkships (LICs) allow medical students to participate in comprehensive care of patients over time and meet core clinical competencies over several disciplines concurrently. Most urban LICs have large pools of preceptors that include many subspecialists. In rural communities, family physicians often provide many aspects of care. We will examine how requirements of multiple core clerkships can be met with rural preceptors led by family physicians. **Methods:** We will examine a pilot program that combined five traditional clerkships (primary care, ob-gyn, surgery, inpatient medicine, and emergency care) into LICs in rural communities. Students logged all patient experiences including patient age, complaints and diagnoses, level of student involvement, clinical setting, and preceptor. Students also logged involvement in procedures and surgeries. We examine how learning objectives of clerkships traditionally led by sub-specialists can be met with rural preceptors. **Results:** Medical students were able to meet the majority of required core competencies while working with family physician preceptors. On average, students met greater than 97% of competencies on average across all 5 traditional clerkship blocks included in the LIC. **Discussion:** Our findings support the case that a large number of sub-specialist preceptors is not required to teach the core competencies of the clerkship year. This research lays an important foundation for further research to explore the possibility of rural LICs as a method to increase rural practice and address rural health shortages in Colorado.

INTRODUCTION

It has been well established that there is a shortage of rural primary care physicians in the United States.¹⁻⁵ While it is estimated that approximately 20% of the US population lives in rural areas, rural practice accounted for only 9% of physician practice location in 2000.² At the end of the 20th century, only 50% of towns in Colorado with a population of 1500 or less had a physician,³ and the chance that a medical graduate would enter practice in a rural area has decreased by 40% nationwide in the first two decades of the 21st century.⁴ Health disparities have been described between rural and metropolitan communities,^{1,6} and it is established that a community's health depends on access to care.¹

One method for intervention has been the development of rural longitudinal curriculums that seek to train students at rural sites for extended periods of time, often encompassing multiple traditional clerkship blocks.⁸⁻¹⁰ The Cambridge-Integrated-Clerkship at Harvard Medical School is a year-long LIC, and data from studying their students found that LIC students had greater satisfaction with their education, performed as well or better on standardized measures of performance, and were more patient centered than their peers in a traditional curriculum.¹³ Rural LICs seek to capture the benefits of the longitudinal experience for learners while also encouraging more students to seek out rural practice after medical school. In a qualitative review of 58 publications on LICs comparing over 300 LIC students to over 1600 traditional curriculum peers, Walters et al found that students who completed rural longitudinal rotations were positively influenced to live and work in rural areas.¹⁴

The University of Colorado School of Medicine is in the process of undergoing a large curriculum reform. In the current curriculum, the Rural Track at the University of Colorado has an Integrated Longitudinal Medicine Clerkship (ILMC) which runs for 3 months and includes the traditional clerkships of outpatient medicine as well as a shorter, 1-month, inpatient medicine. One of the largest changes to come as part of the curriculum reform is a shift to an all-longitudinal integrated clerkship (LIC) model for the clerkship years of medical school. As part of the curriculum reform a pilot program was instituted during the 2019-2020 academic year in which five, third year students underwent an expanded ILMC spanning 6 months encompassing the clerkships of Inpatient/Outpatient medicine, Emergency medicine, General Surgery, and OB/GYN. While there is a significant body of literature demonstrating the efficacy of LICs, there is much heterogeneity in the length and composition of the rotations studied, as well as the specialty of clinical preceptors involved in LIC education.^{8-13,16,17} Since family medicine providers are best suited to meet the unique needs of rural and frontier communities, and rural LICs encourage rural practice, there is value in understanding if the expanded ILMC run by family physicians can fulfill the requirements for medical education at CU.

Aim 1: These authors will determine if students in the expanded ILMC met 90% or more of the clinical competencies averaged across the five clinical blocks included in the LIC while spending the majority of their time with family medicine preceptors.

Aim 2: As there is importance in understanding how the ILMC can be expanded to a year long program under the new curriculum, these authors will determine to what extent students met the curriculum competencies of core clinical year blocks not included in the expanded ILMC.

METHODS

These authors examined a pilot program at CU that combined five traditional clerkships (primary care, ob-gyn, surgery, inpatient medicine, and emergency care) into an LIC in rural communities. Students logged all patient experiences in a de-identified logger. Data captured included patient age, complaints and diagnoses, student involvement, clinical setting, and preceptor. Clerkship competencies are a standardized list of conditions that students at CU must see or read about to meet the clinical requirements for a block.

Aim 1: Diagnoses from the patient logger for each student were compared to the clerkship competencies of the five clinical blocks included in the extended ILMC: CPC (Community and Primary Care), HAC (Hospitalized Adult Care), EC (Emergency Care), OPC (Operative and Perioperative Care), and OB/GYN (Obstetrics and Gynecology). Additionally, the preceptor specialty for all patient encounters for all students was pooled and analyzed.

Aim 2: Diagnoses from the patient logger for each student were compared to the clerkship competencies of the four clinical blocks not included in the extended ILMC: NC (Neurologic Care); ICAC (Infant Child and Adolescent Care); MSK (Musculoskeletal Care); PSYC (Psychiatric Care).

CONCLUSIONS

- Aim 1:** The students who participated in the Extended Rural Longitudinal Integrated Clerkships successfully met the core requirements for five blocks of the clinical year while spending the majority of their time with family medicine preceptors.
- Aim 2:** Students in our study met the requirements for the MSK rotation, and came very close in Neurology and Pediatrics without any emphasis on exposure in these areas.
- Our findings support the case that a large number of sub-specialist preceptors is not required to teach the core competencies of the clerkship year. This research establishes an important foundation for further research exploring extended rural LICs at CU to increase physician presence in rural practices and address rural health shortages in Colorado.

RESULTS

- Aim 1:** Students met greater than 97% of competencies, on average, across all 5 traditional clerkship blocks included in the LIC (Figure 2). Additionally, family physicians represented the majority of clinical precepting time at 42% of preceptor specialty, overall (figure 1). Following Family Medicine in descending order, students spent time with General Surgery, OB/GYN, Emergency Medicine, and a wide range of subspecialists (figure 2)
- Aim 2:** Four out of five of students met all musculoskeletal clerkship requirements. Students met the majority of the requirements for pediatrics (87% of requirements met on average) and neurologic care (80% on average); a minority of psychiatric care requirements were met, students met 60% of the requirements on average. (figure 3).

Table 1. Rural sites/location by Student with information on Population

Student	Location/Site	City in Colorado	County Population ¹⁸
Student #1	Rio Grande Hospital & San Luis Valley Hospital	Del Norte	11,267
		Alamosa	16,233
Student #2	Wray Community District Hospital	Wray	10,019
Student #3	Prowers Medical Center	Lamar	12,172
Student #4	Arkansas Valley Regional Medical Center	La Junta	18,278
Student #5	Delta Community Memorial Hospital	Delta	31,162

Figure 2. Percent of Clerkship Competencies met by student for ILMC Blocks

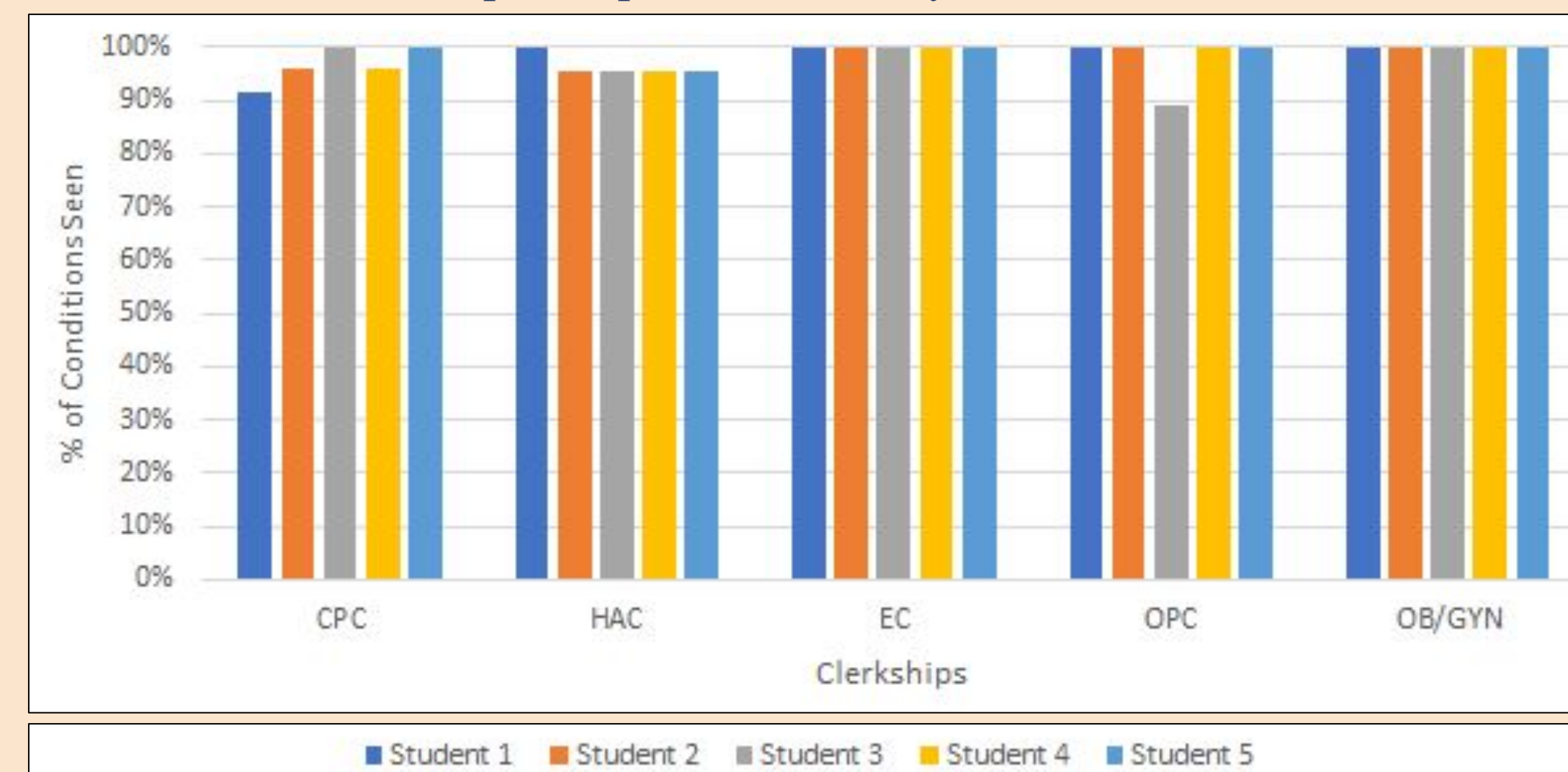


Figure 2. Percentage of clerkship competencies met per clerkship for each student solely through patient encounters. CPC (Community and Primary Care); HAC (Hospitalized Adult Care); EC (Emergency Care); OPC (Operative and Perioperative Care); OB/GYN (Obstetrics and Gynecology)

Figure 1. Average Percent of Time Spent with Preceptors by Provider Specialty

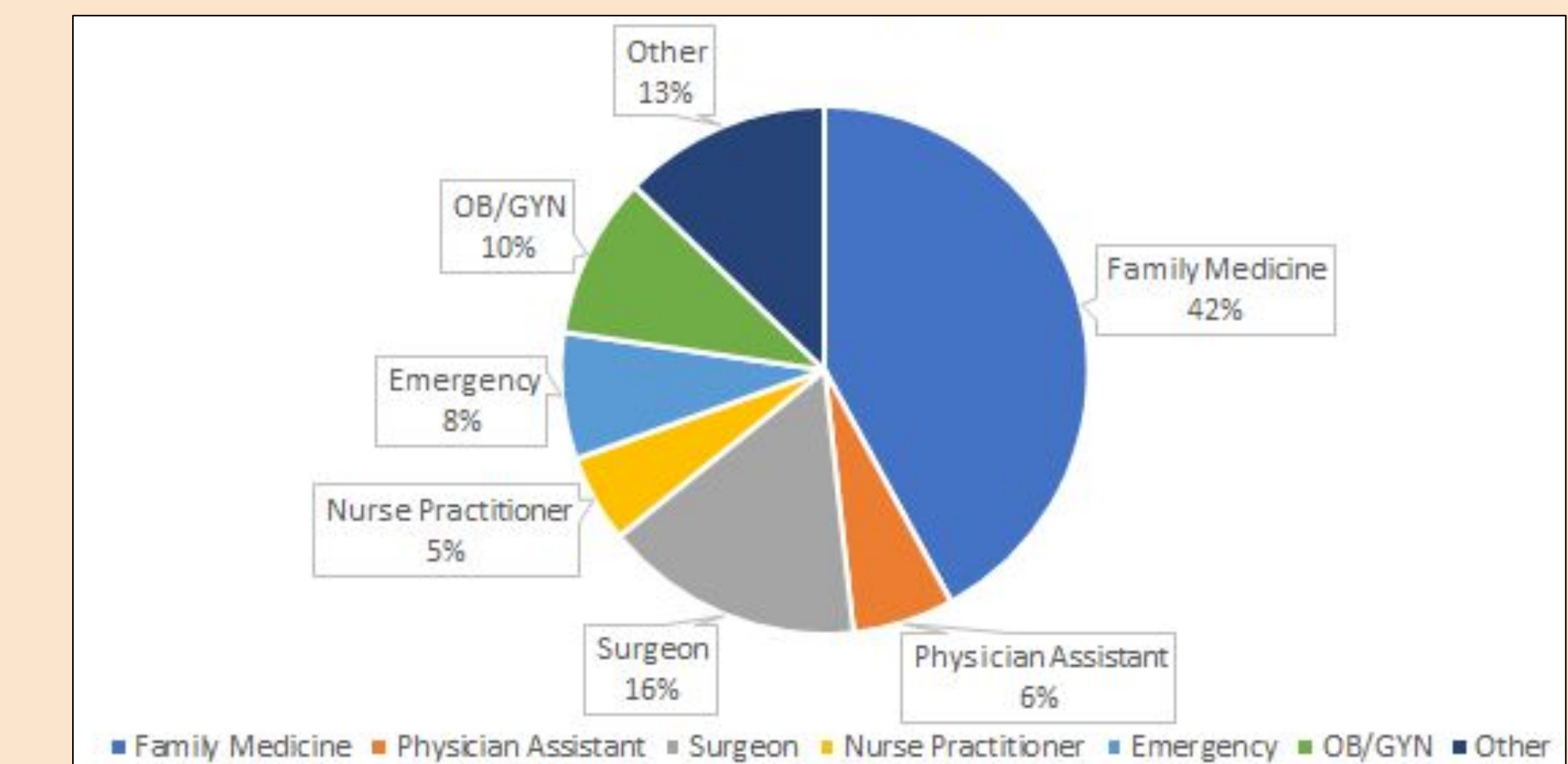


Figure 1. Percentage of Time Students Spent with Family Physicians and Other Specialties at Rural Sites. "Other" included a wide range of subspecialists (Cardiology, Neurology, Gastroenterology, etc.). NP and PA were of any specialty.

Figure 3. Percent of Clerkship Competencies met by student for Non-ILMC Blocks

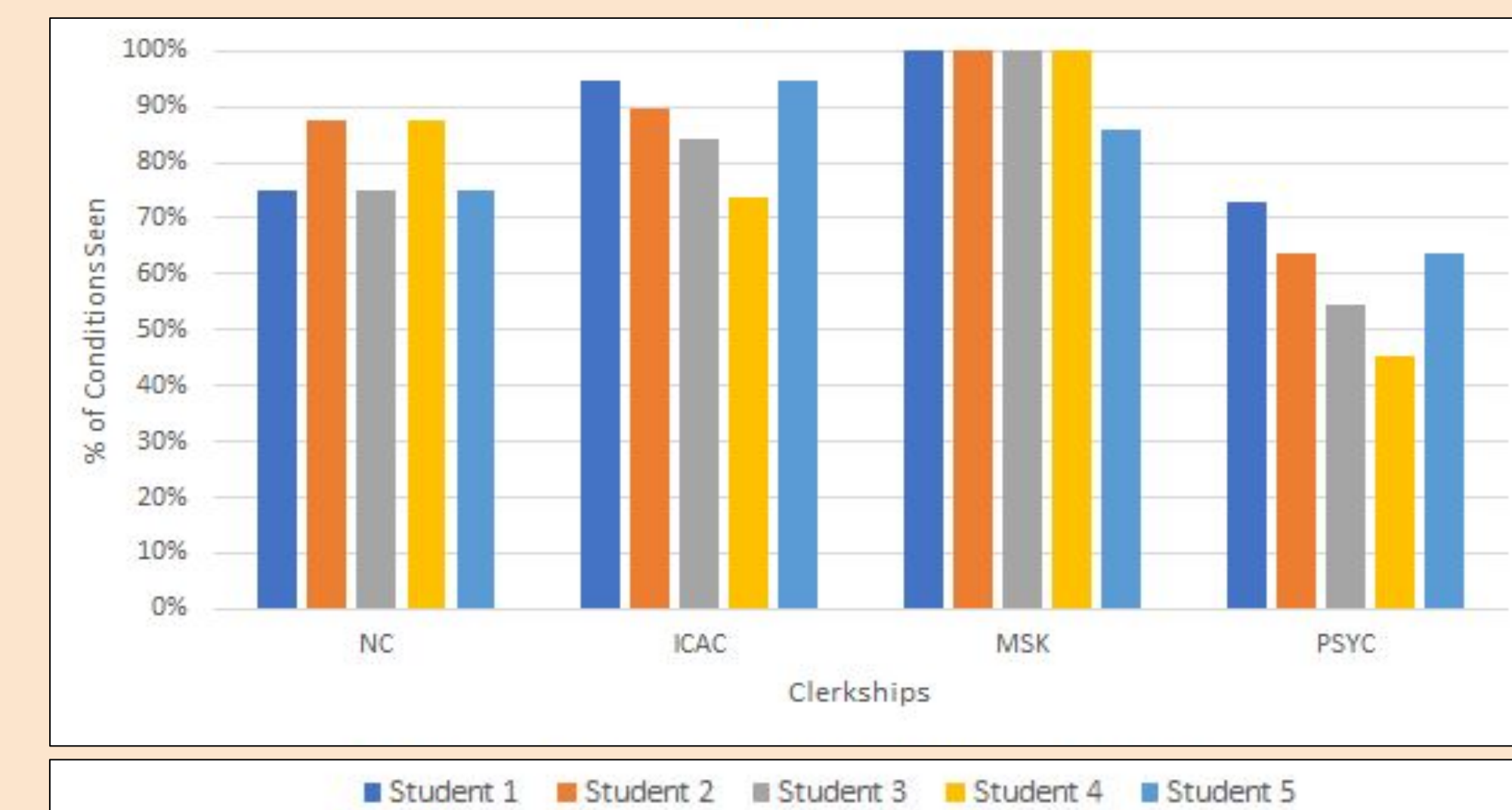


Figure 3. Percentage of Competencies met in clerkships beyond LIC requirements per student/site through patients alone. NC (Neurologic Care); ICAC (Infant Child and Adolescent Care); MSK (Musculoskeletal Care); PSYC (Psychiatric Care)

LIMITATIONS

Limitations: The primary limitation of the study was the reliance on self-reporting; students were depended upon to log their patient encounters reliably and accurately. Another limitation considered here is the small sample size, though finding positive results in such a small sample is very encouraging and suggests a real effect. In addition, Colorado is known to be a particularly strong state for training and utilizing family medicine physicians. This could limit external validity when attempting to apply these results to states where the availability of strong family medicine training full scope practitioners could be limited. Finally, three of the study participants are authors of this paper, introducing potential bias.

COMIRB, COI & FUNDING

A Quality Improvement COMIRB Exemption was obtained for this project. Conflicts of interest include that the authors are participating members of the Expanded ILMC Pilot Program. There were no monetary conflicts by any of the individuals involved in this project. No funding was obtained for this research.

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