



# The Impact of Early Procedural Exposure on Preclinical Medical Student Confidence

## Wayne State University School of Medicine Procedures for Future Physicians

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### Introduction

Preclinical involvement in procedural training is an essential part of medical school curricula and represents a core competency for medical students entering clerkships and residency.<sup>1</sup>

To prepare students for clerkships, "transition to clerkships" courses have been implemented just prior to entering the clinical setting. Despite this additional training, medical students often experience a lack of confidence in their procedural skills. Medical students' lack of confidence can hinder active participation in patient care and subsequent learning during clinical years.<sup>2,3</sup> Therefore, it is crucial to explore the impact of early procedural exposure throughout the preclinical years on students' confidence levels.

This project explores whether increasing medical student exposure of medical procedural skills during the preclinical years will help increase their level of confidence in performing and/or assisting in these skills upon entering their clerkship years. This information may be used to inform the development of future medical school curriculums.

### Methods

This cross-sectional study took place at an urban, single-campus medical school in the midwest. The study included first- and second-year medical students who attended a one-day event designed to introduce them to various medical specialties and hands-on procedural skills. The event featured interactive workshops led by medical students and board certified physicians, offering practical experience and instruction across different procedural areas.

Pre- and post-event surveys were conducted to evaluate students' self-assessment of confidence levels, their perception of procedural exposure during the preclinical years, and the influence of the event on their confidence with procedural skills. Both quantitative and qualitative data were collected using a 10-point Likert scale (10 indicating high confidence) and open-ended free response questions.

The mean confidence level likert scores for each procedure ("pre" and "post") were compared using unpaired t-tests to determine differences between pre-event and post-event confidence. Significance was set at an alpha of 0.05.

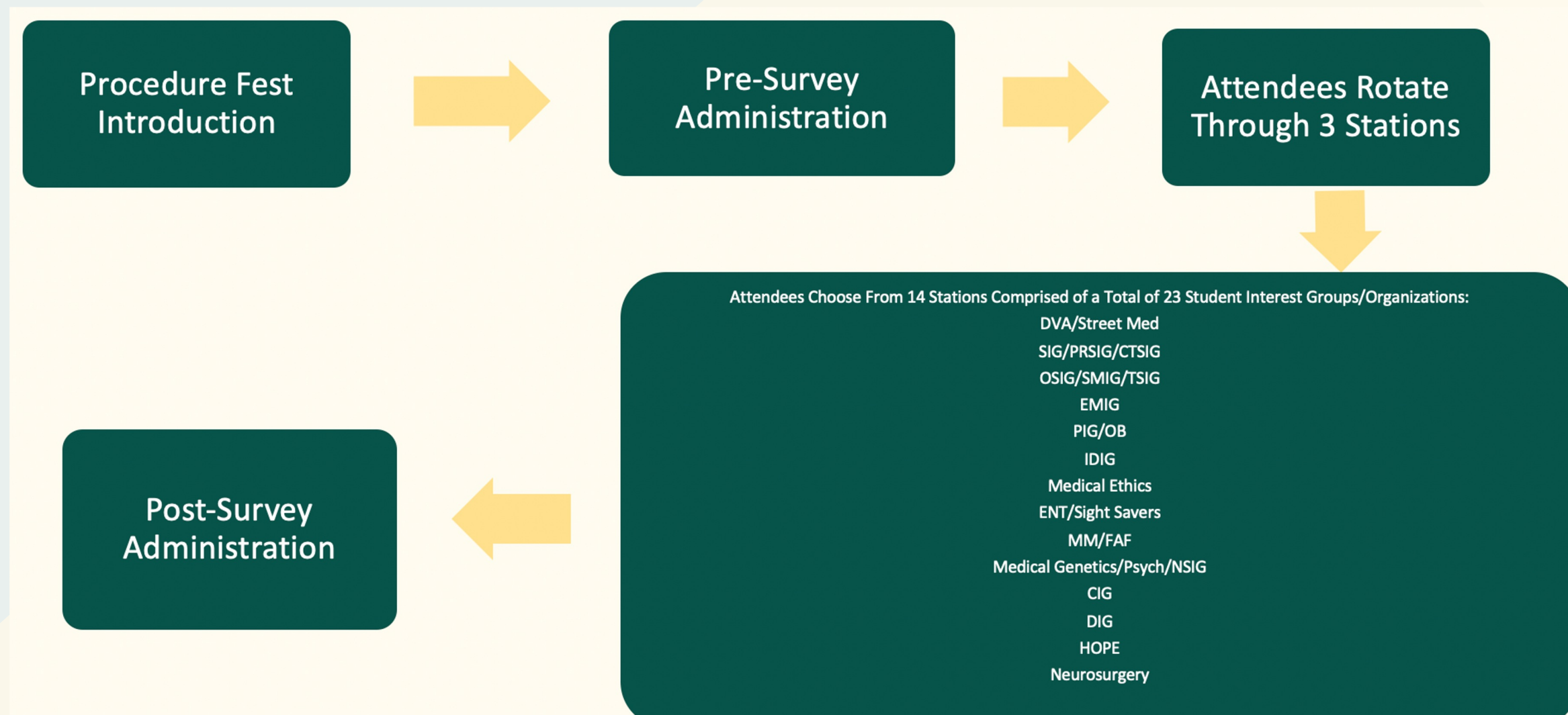


Figure 1. Procedure Fest schedule

### Results

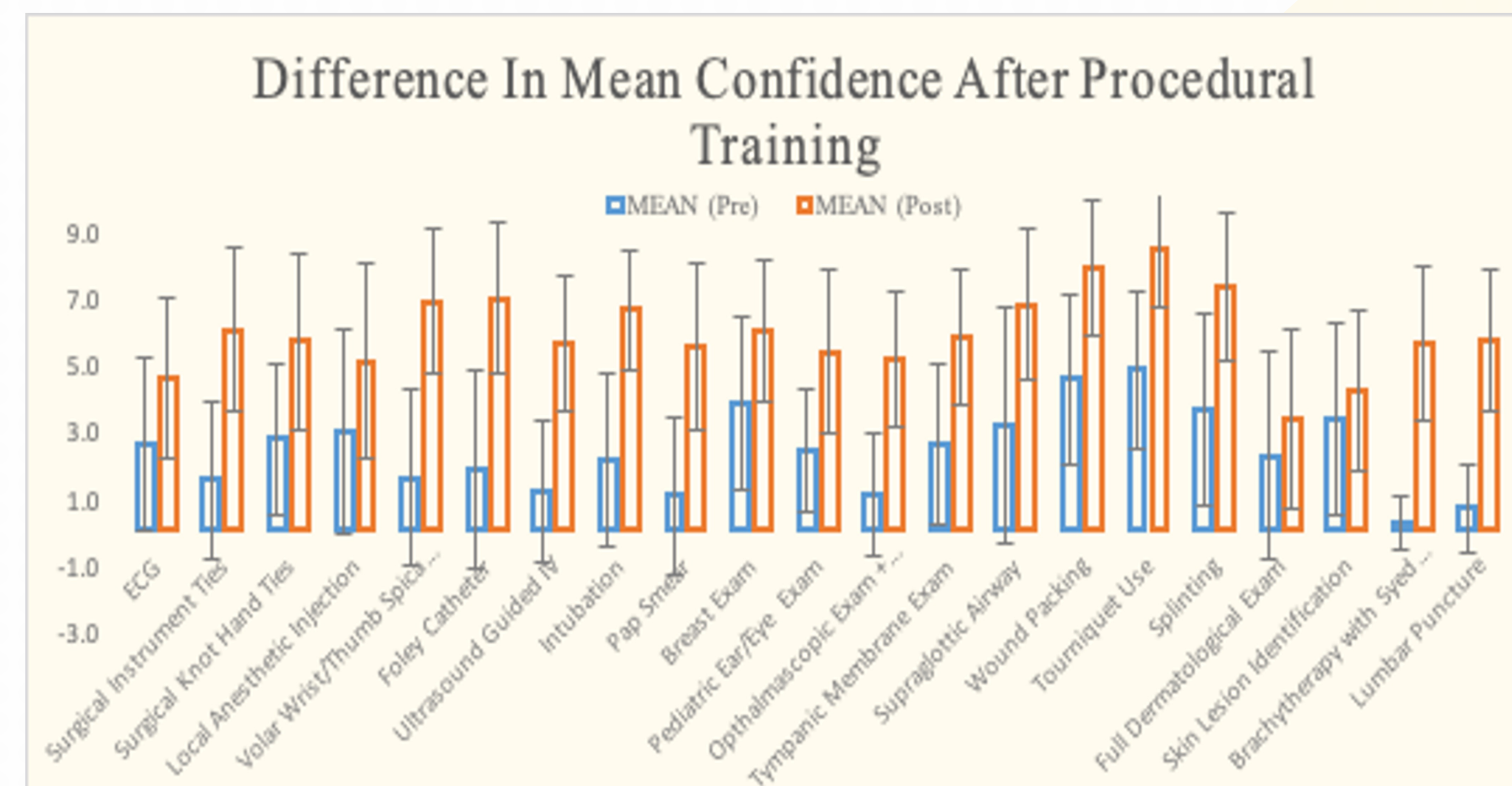


Figure 2. Differences in perceived preclinical student confidence in performing procedures before and after single procedural training session

- 8.7/10** Learning specialty procedures in the preclinical curriculum is important
- 8.9/10** Learning specialty procedures in their preclinical education will increase their confidence entering clinical rotations
- 4.4/10** The medical school curriculum contains enough procedural education opportunities

Figure 3. Average Student Levels of Agreement to Post-Event Questions (Likert scale questions with 10 being strongly agree and 1 being strongly disagree)

Every procedure saw statistically significant increases in student confidence performing the procedure or procedural skill with the exception of the dermatological skin exam and the identification of skin lesions. In addition, students agreed that learning procedures in their preclinical curriculum is important and will increase their confidence entering clinical rotations; however, they did not agree that their medical school curriculum contains enough opportunities for procedural education.

### Conclusion

- Our data supports the notion that **pre-clinical procedural skills exposure helps first- and second-year medical students improve perceived confidence.**
- Integrating early procedural exposure in medical school curriculum can enhance a student's ability to become proactive and knowledgeable members of a care team during their clinical clerkships due to increased confidence in their own abilities.
- Students acknowledge the importance of procedural learning in their medical school curriculum and believe that it is an important element in their preparation for clinical rotations.
- Based on these results, we recommend that medical education institutions incorporate more procedural training in pre-clinical years, and that extracurricular organizations incorporate more procedural training in their events.



### Limitations

- Limitations of this study include short-term data collection at a single institution.
- Future research is necessary to determine the outcome of long-term pre-clinical procedural exposure on students and to analyze objective assessment of the procedural skills learned.

### References

1. McKinley SK, Sell NM, Saillant N, et al. Enhancing the Formal Preclinical Curriculum to Improve Medical Student Perception of Surgery. *J Surg Educ.* 2020;77(4):788-798. doi:10.1016/j.jsurg.2020.02.009
2. Peyre SE, Peyre CG, Sullivan ME, Towfigh S. A surgical skills elective can improve student confidence prior to internship. *J Surg Res.* 2006;133(1):11-15. doi:10.1016/j.jss.2006.02.022
3. Tomić V, Sporis G, Nizić D, Galinović I. Self-reported confidence, attitudes and skills in practical procedures among medical students: questionnaire study. *Coll Antropol.* 2007 Sep;31(3):683-8. PMID: 18041373.