



# Comparing Procedure Times and Provider Satisfaction of a Novel Sterile Barrier with Conventional Sterile Technique



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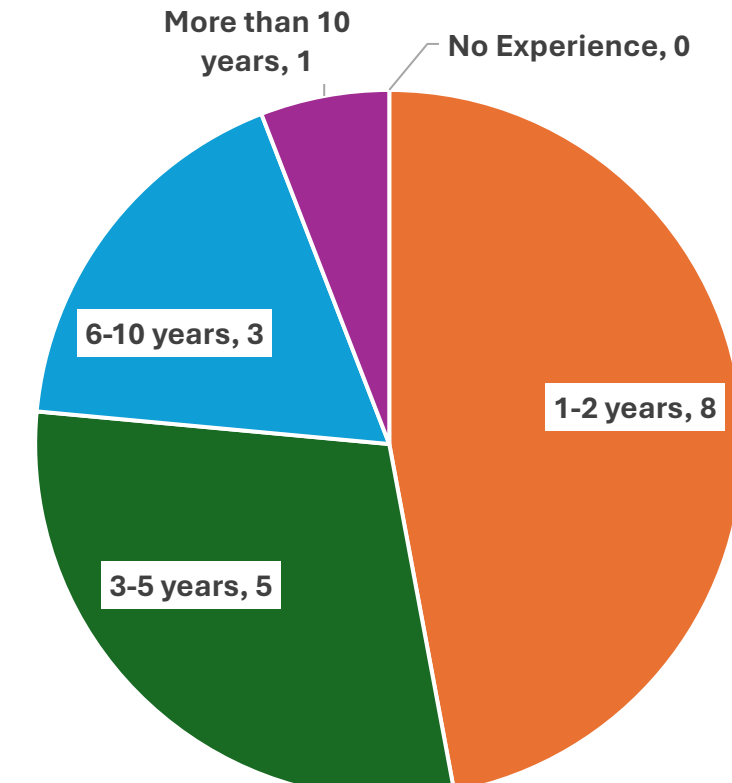
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## Introduction

- Sterile technique prevents dangerous and costly Central Line Associated Bloodstream Infections (CLABSI) and Surgical Site Infections (SSI) (1)
- Sterile technique is expensive- both in terms of medical waste and increased procedure times. OR time costs roughly 37 dollars per minute. (2)
- This study compares conventional sterile technique with a Novel Sterile Barrier technique designed with the purpose of reducing procedure times, reducing medical waste, and increasing sterility and provider satisfaction.
- This study explores procedure times and provider satisfaction.
- Participants included SRNAs at Albany Medical College.

## Who participated?

How many years of experience do you have in a job that requires weekly venipuncture or arterial puncture?



Estimate the number of arterial lines you have placed before this experiment.

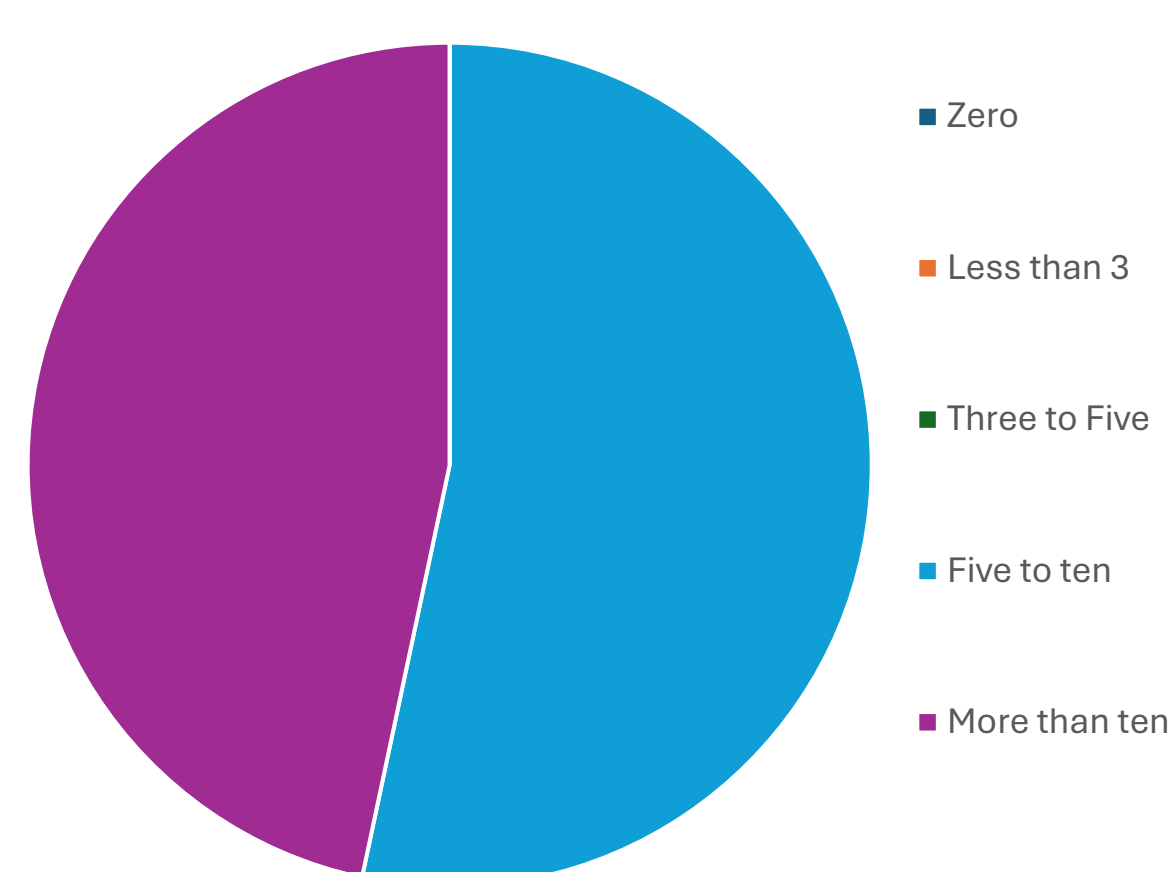


Fig 1: Responses to demographic questions

- Most participants had 1-2 years (8 participants) or 3-5 years (5 participants) of experience in a job that requires weekly venipuncture or arterial puncture
- All participants reported having placed at least 5 arterial lines.
- Most participants reported having placed 5-10 arterial lines placed before the experiment. (8 participants)
- The second most common response was more than ten arterial lines placed before the experiment. (7 participants)

## What did participants think?

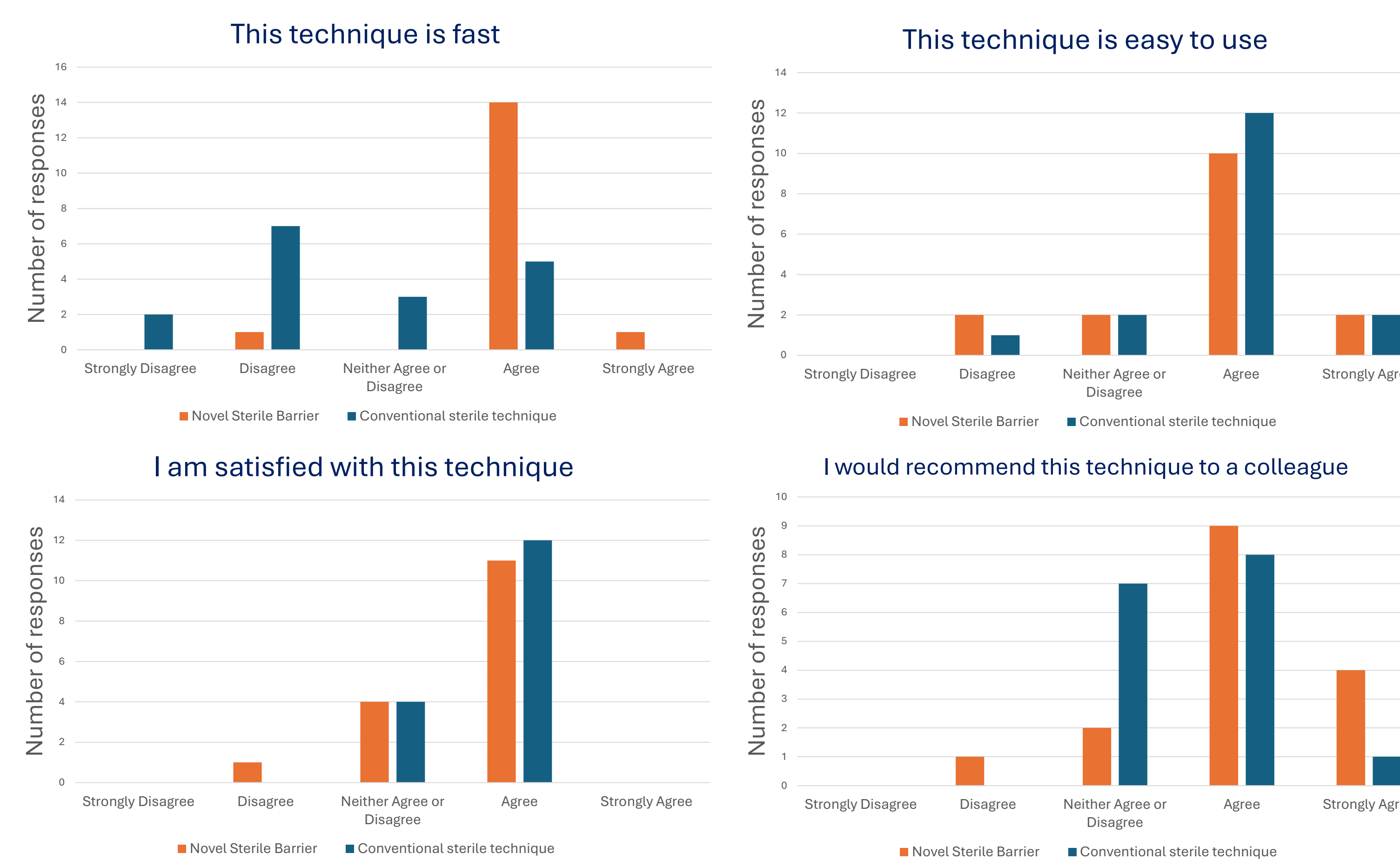


Fig 2: Frequencies of responses to Likert Scale questionnaire

## Which was faster?

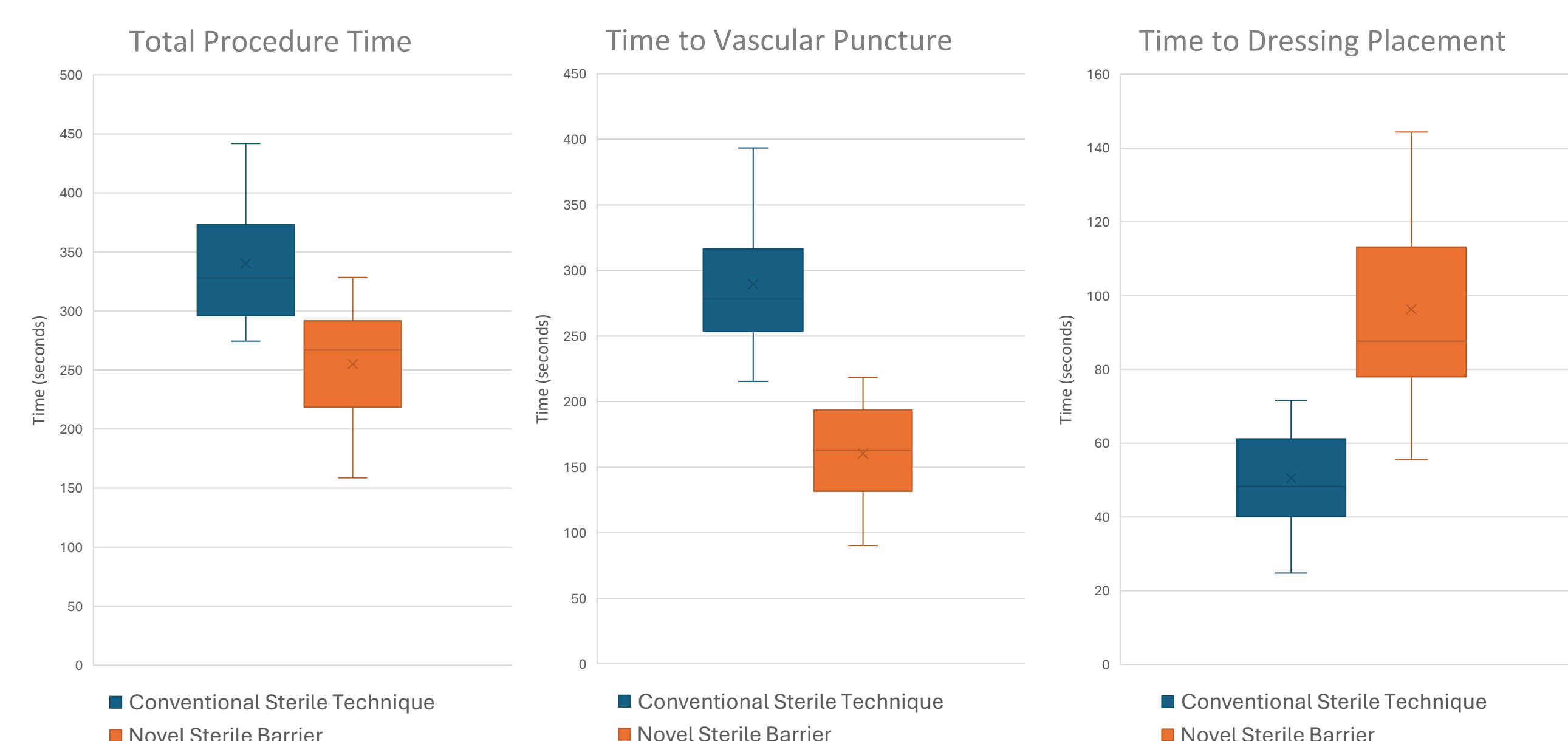


Fig 3: Distributions of procedure times

Total Procedure Time by Individual

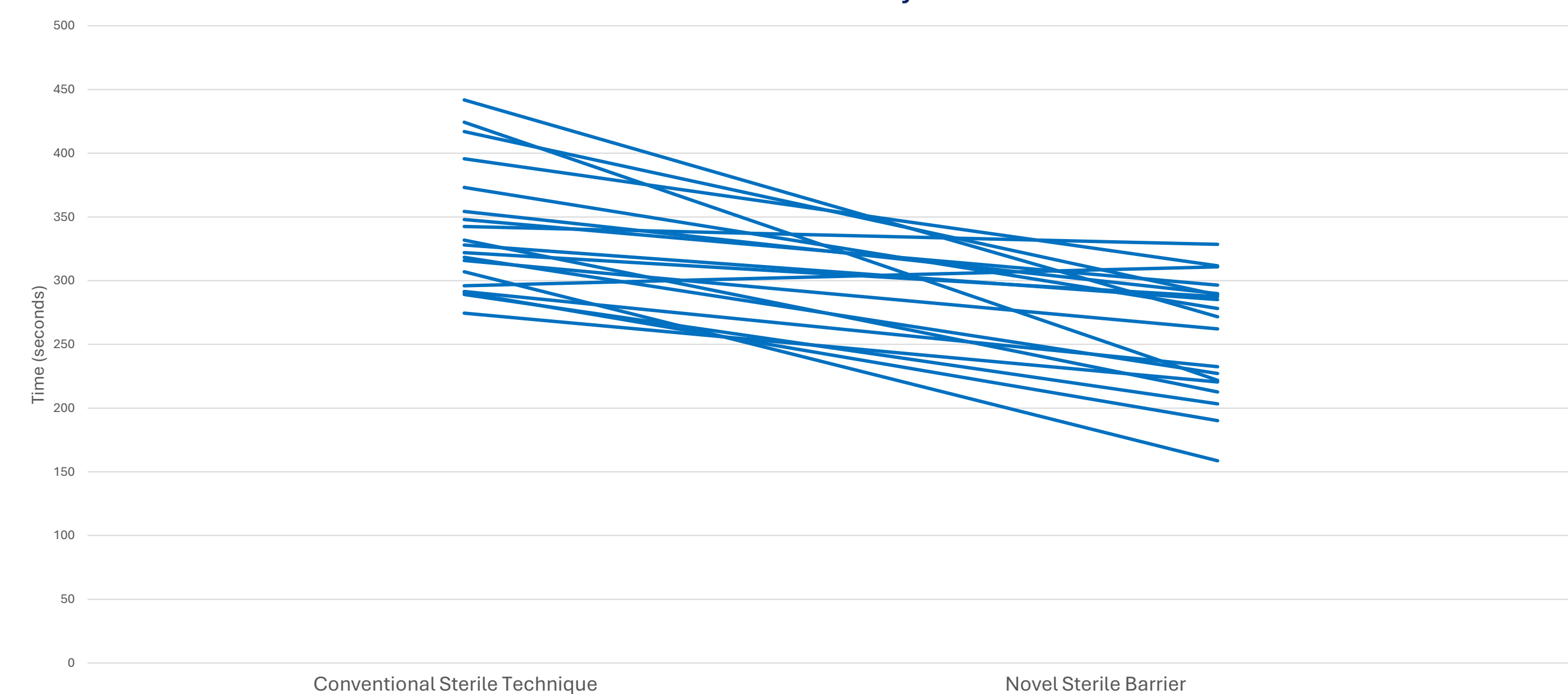


Fig 4: Individual comparisons of procedure times

## Survey Results

- **Speed of technique:** More participants agreed or strongly agreed that the Novel Sterile Barrier (15) was fast compared with Conventional Sterile Technique (5).
- **Ease of use:** A majority of participants either agreed or strongly agreed that both techniques were easy to use.
- **Satisfaction:** 11 participants agreed that they were satisfied with Novel Sterile Barrier 12 agreed that they were satisfied with Conventional Sterile Technique.
- **Recommendation:** More participants agreed or strongly agreed that they were likely to recommend the Novel Sterile Barrier (13) compared with Conventional Sterile Technique (9).

## Time Trial Results

- The data were analyzed using a paired t-test.
- Novel Sterile Barrier was faster than Conventional Sterile Technique with average procedure times of 257 seconds and 340 seconds, respectively. (p= .00000122)
- Novel Sterile Barrier was faster than Conventional Sterile Technique from package opening to vascular puncture, with average times of 160 and 290 seconds, respectively. (p=.0000000120)
- Conventional Sterile Technique was faster than Novel Sterile Barrier from time of vascular puncture to dressing placement, with average times of 51 and 96 seconds, respectively. (p=.00000081)

## What did participants say?

- Four participants suggested improvements or criticized the dressing system of the Novel Sterile Barrier.
- Two participants said they would have preferred a larger work area than the one provided by the Novel Sterile Barrier kits.
- Two participants noted difficulty with ultrasound visualization when using the Novel Sterile Barrier.
- Two participants expressed that the Novel Sterile Barrier had great potential.

## METHODS

- Participants had an opportunity to familiarize themselves with the equipment prior to participating in the study.
- Participants were filmed performing a vascular puncture using the Novel Sterile Barrier and Conventional Sterile Technique in random order.
- Participants were given a paper with stepwise instructions for each technique during the study.
- Vascular punctures were performed on an ultrasound "phantom" designed to simulate vascular puncture.
- The following timepoints were recorded by 3 independent observers
  - Opening of package
  - Vascular access
  - Dressing complete
- An anonymous satisfaction survey was distributed on the following day.

## Discussion

- The data point to noninferiority of the Novel Sterile Barrier when compared to the Conventional Sterile Technique in the areas of provider satisfaction, ease of use, and recommendation to colleagues.
- Data points to superiority of the Novel Sterile Barrier in procedure times, and the average procedure time was 83 seconds faster in the Novel Sterile Barrier Group.
- The dressing components of the Novel Sterile Barrier kits should be improved to increase provider satisfaction and procedure times.

## Future Work

- The Office for Translational Research has approved plans for a provisional patent pending positive results from this study.
- Future studies may include kits specific to PICC line placements and spinal or epidural placements.
- The results of this study suggest further innovation of the Novel Sterile Barrier to shorten the time it takes to dress the site after vascular puncture.

## REFERENCES

