



Obstetrical Hemorrhage Simulations and their Impact on Use of an Obstetrical Hemorrhage Risk Assessment Tool

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Background

- Since 2003-2004, rates of maternal mortality in the United States increased by almost 27%¹.
- Hemorrhage has been identified as the cause for death in 11.4% of cases of maternal mortality².
- California has seen decreases in maternal mortality due to efforts to identify preventable contributors to maternal death¹.
- UCHealth Memorial North and UCHealth Memorial Central have recorded increased cases of mortality and severe morbidity related to maternal hemorrhage.
- The **Obstetrical Hemorrhage Risk Assessment Checklist**, which assists in identifying high risk patients, has been available to L&D providers and staff since 2017 but has seen inconsistent, and inaccurate, use.

Aim Statement

Aim 1: Through the use of the OB Hemorrhage Simulation Workshops, we aim to increase 90% of providers' and staff comfort utilizing the **Obstetrical Hemorrhage Risk Assessment Checklist** to 'very comfortable'.

Aim 2: Increase the accurate use of the risk assessment tool following the simulation workshops as reflected by chart review.

Methods

1. Implement OB Hemorrhage Simulation workshops from August 16th – October 23rd, 2019 and collect pre-/post- surveys assessing provider confidence.
2. Conduct chart review of patients with >1000 mL of blood loss to audit of implementation and use of **Obstetrical Hemorrhage Risk Assessment Checklist** pre-/post- workshop intervention.

Results

A. Participant Demographics

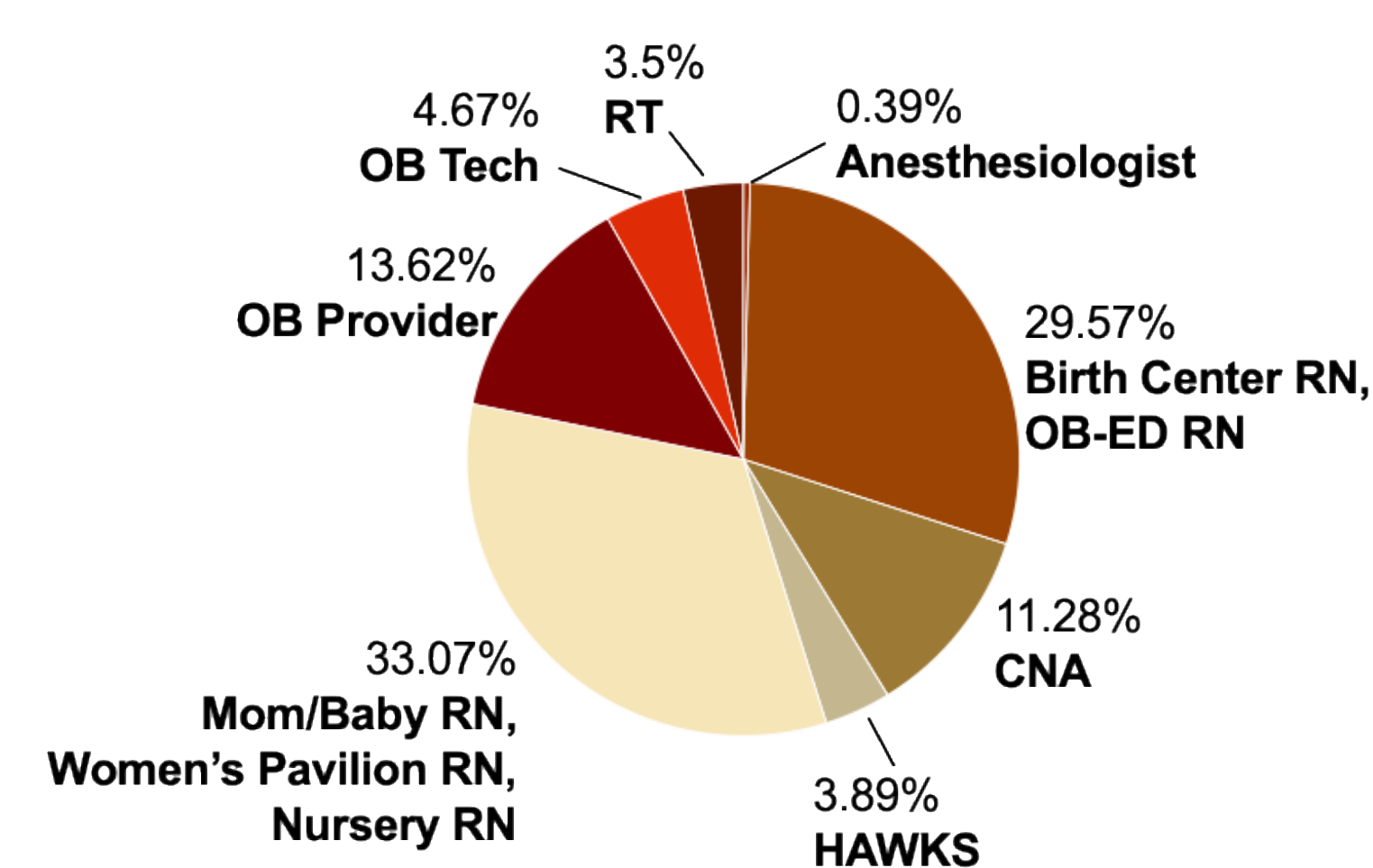


Figure 1: Simulation attendee demographics. 62.64% of attendees were registered nurses (n=161). 23.34% were other support staff such as unit CNAs (n=29), OB Tech (n=12) and RT (n=9). 13.62% were OB providers including MD, DO, and Certified Nurse Midwives (n=35). The HAWK is an Obstetrical Care Resource Nurse (n=10).

B. What is your level of comfort with using the obstetrical hemorrhage risk assessment?

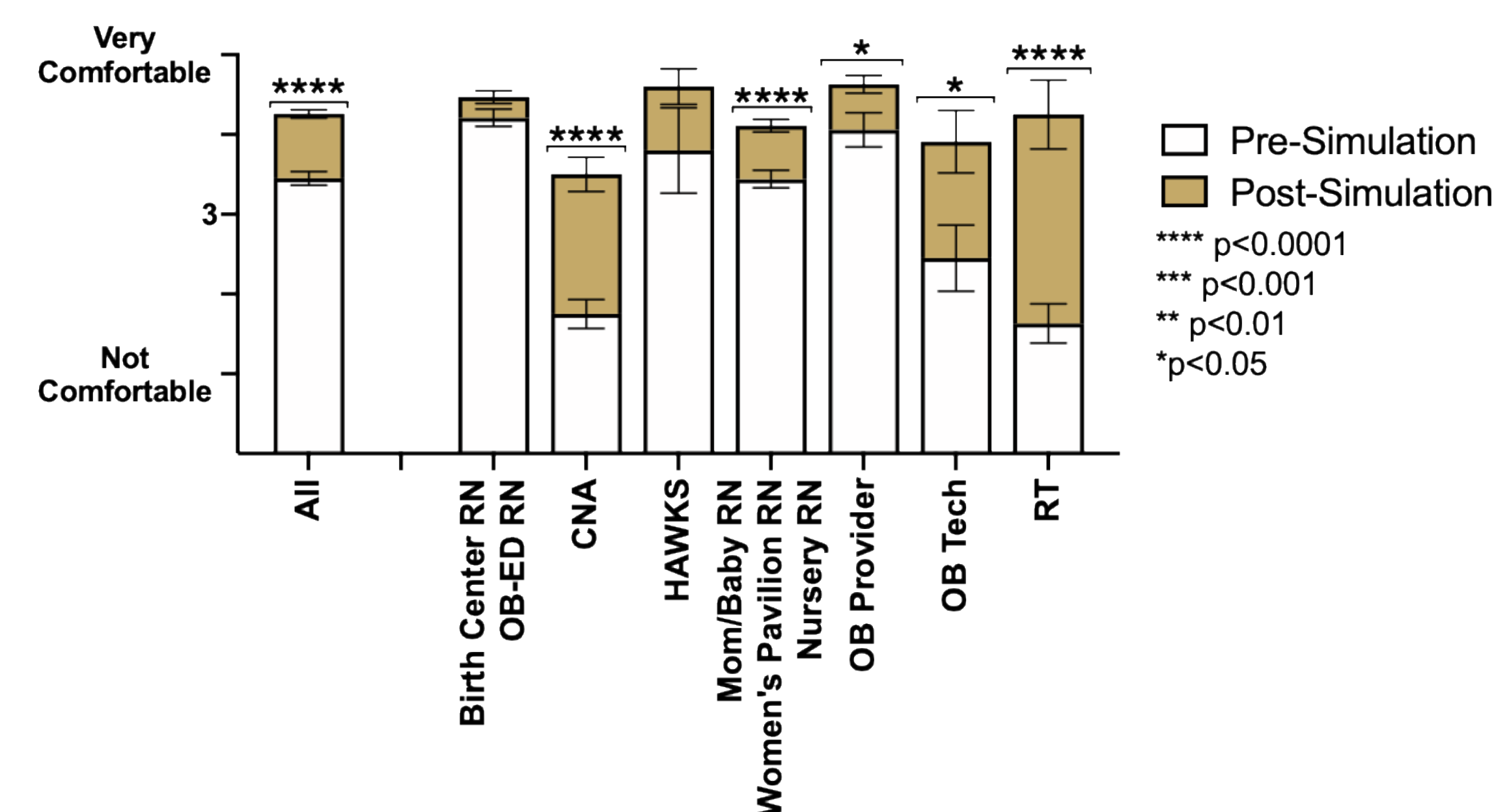


Figure 3: Responses to the pre/post-survey question "What is your level of comfort with using the obstetrical hemorrhage risk assessment?" based on provider and staff specialty. Overall, there was a significant increase in level of comfort for all groups combined. Significant improvements for the CNA, MB/WP/Nursery RN and RT groups ($p < 0.0001$). OB providers and OB techs also saw minimally significant increases in their comfort with the risk assessment tool ($p < 0.05$). No significant change was observed for the Birth Center/OBED RN's or HAWKS.

C. All Pre-Simulation and All Post-Simulation

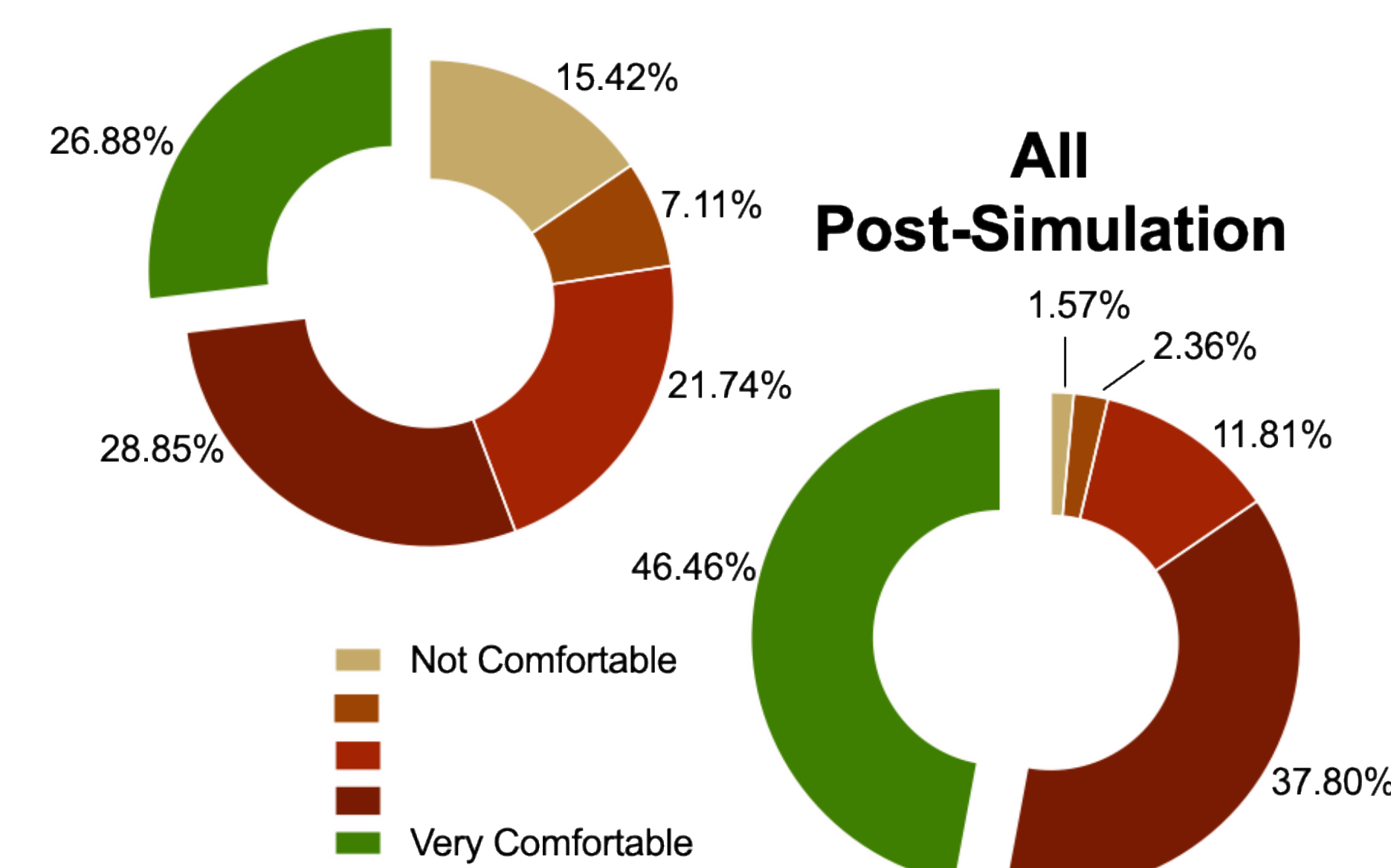
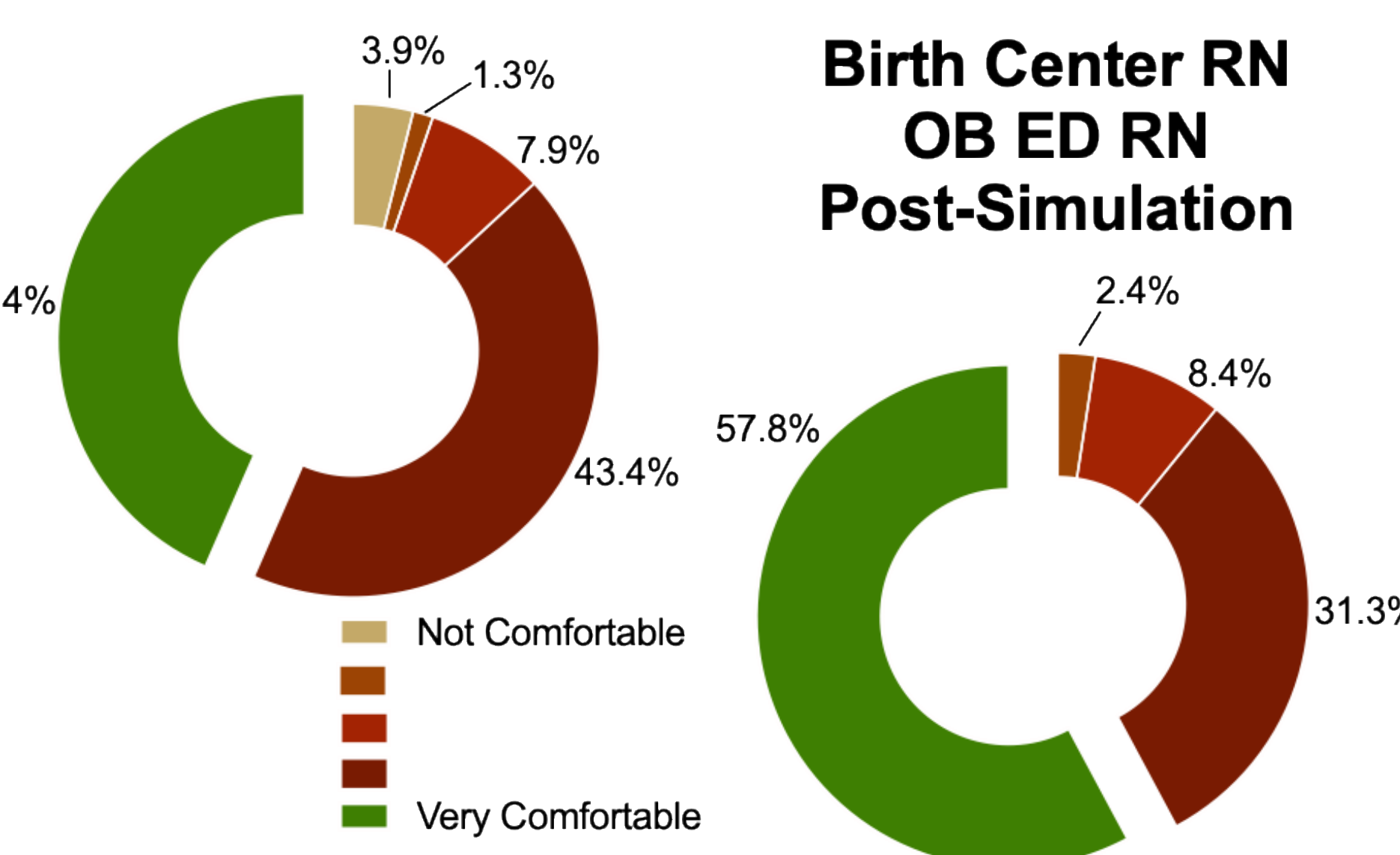


Figure 2: Percentage breakdown of answers on pre-/post-simulation surveys for the question "What is your level of comfort with utilizing the Obstetrical Hemorrhage Risk Assessment Checklist for postpartum hemorrhage?" Prior to the OB hemorrhage workshop only 26.88% of attendees felt 'very comfortable' with the risk assessment tool. This increased to 46.46% of attendees who felt 'very comfortable' following the simulations. Overall, a majority (84.26% from 55.73%) of attendees felt that they were either 'comfortable' or 'very comfortable' by the end of the simulations. Ultimately, Birth Center/OB ED RN's use the risk assessment tool. This group had an increase from 43.4% to 57.8% 'very comfortable' following the workshop. Combined, the percentage of Birth Center RN's who answered 'comfortable' and 'very comfortable' showed a minimal change from 86.8% to 89.1% (pre-sim, post-sim respectfully).

Birth Center RN OB ED RN Pre-Simulation



D. Patient OB Hemorrhage Risk Assessment

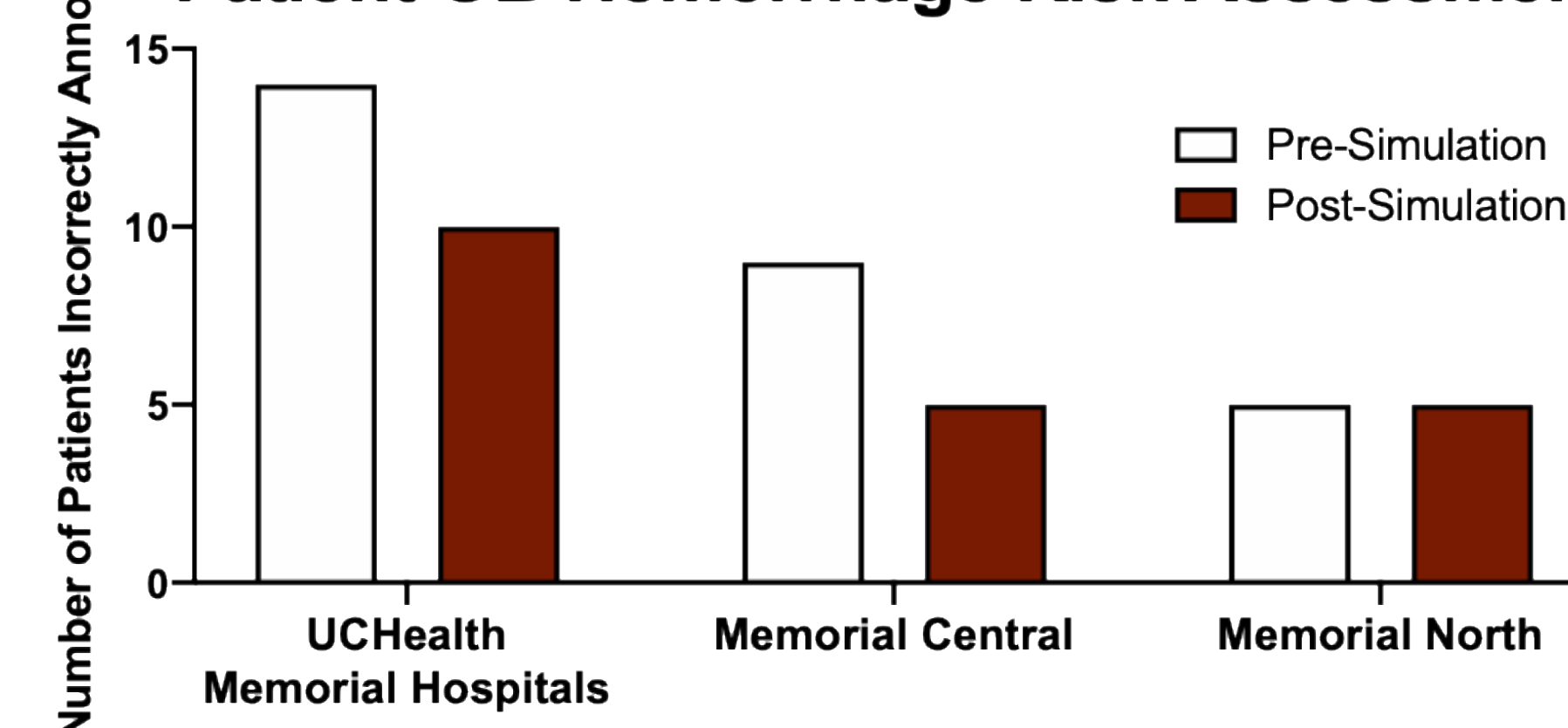


Figure 4: Accuracy of Patient OB Hemorrhage Risk determination by Birth Center and OB ED RNs prior to and following the implementation of OB Hemorrhage workshops. A chart review of 78 patients with blood loss >1000 mL from May 2019-August 2019 and October 2019-January 2020 was conducted. Discrepancy between recorded hemorrhage risk and re-calculated risk shows a total of 14/39 (35.8%) patients had their risk incorrectly annotated prior to the implementation of the workshop. Following the intervention this decreased to an inaccuracy in 10/39 (25.6%) patients. Inaccuracies decreased from 9/19 pre-simulation to 5/19 post-simulation (47.4% to 26.3%) at Memorial Central and remained unchanged at Memorial North.

Discussion

- Workshop participants were mostly registered nurses taking care of pregnant women, but the overall participation was diverse.
- Participant identified comfort with the **OB Hemorrhage Risk Assessment** tool increased following the workshops to a level of 'comfortable' or 'very comfortable'.
- Birth Center RN's, who are the responsible group for assigning risk, did not have a significant change in comfort using **OB Hemorrhage Risk Assessment Tool**.

While the chart review shows improved accuracy of the risk assessment tool at UCHealth Memorial Central following the workshops, limitations to the study include:

1. Alterations and edits were made to the risk assessment tool during the time period of chart review.
2. Risk may change throughout a patient's admission and this study limited it to risk at admission.
3. There was only a single reviewer.

Future Directions

- Develop and implement *Workshop B* to provide further training and practice in skills related to OB hemorrhage.
- Develop plan for recertification workshops.
- Develop consistency in documentation of **OB Hemorrhage Risk Assessment** as well as labor and delivery blood loss in the health record.
- Repeat the chart review after the next workshop given that the risk assessment tool has been finalized.

Acknowledgements

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Thank you!

References

1. MacDorman, M.F. et al., *Obstet Gynecol*, 2016.
2. Creanga, A.A., et al., *Obstet Gynecol*, 2017