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### Addressing COVID-19 in the surgical ICU: Incidence of antibodies in healthcare personnel at a quaternary care center

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# Addressing COVID-19 in the surgical ICU: Incidence of antibodies in healthcare personnel at a quaternary care center

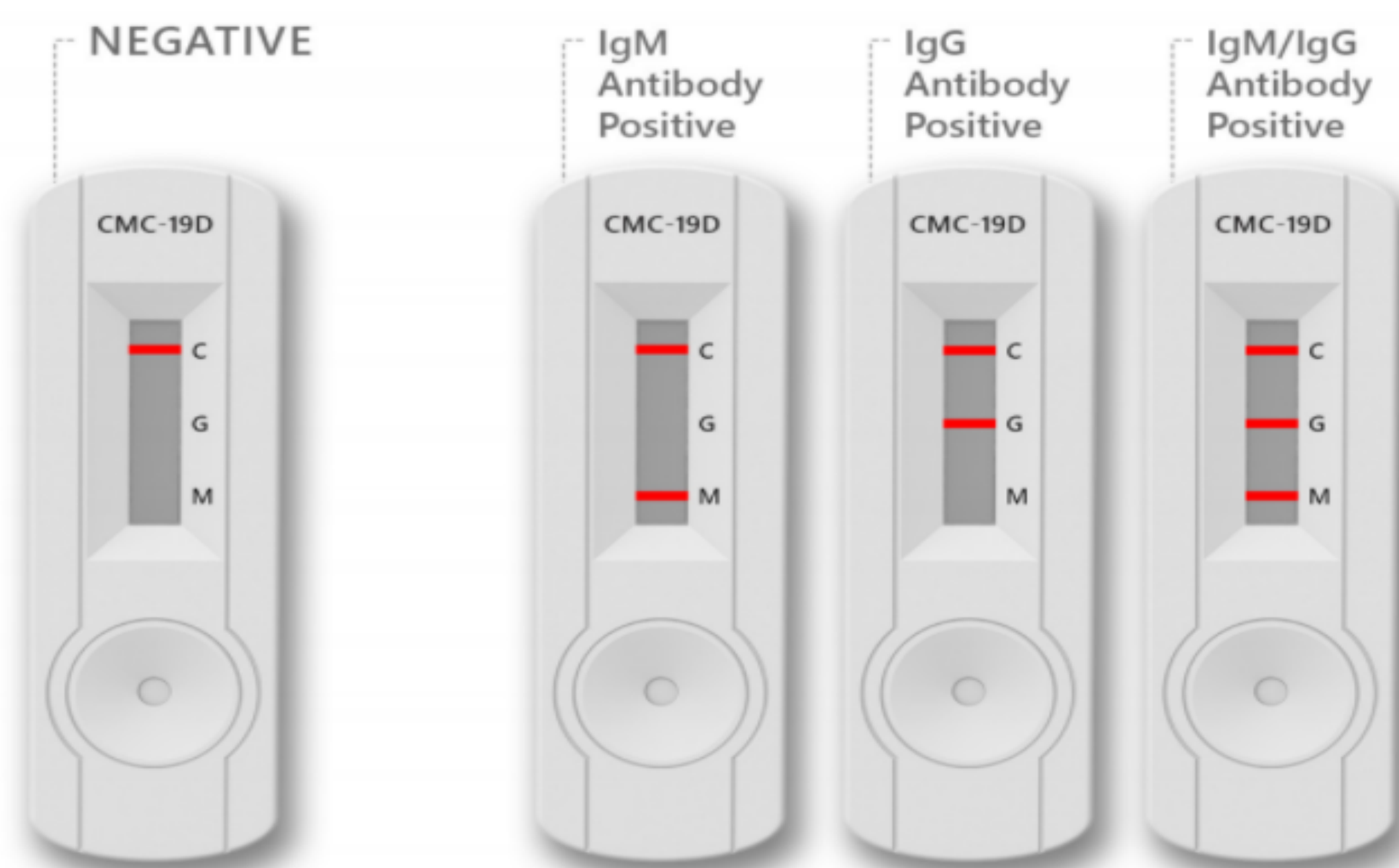
Bloom A, Romano I, Natour AK, Ulrich E, Cheung W, Hayes L, Chaudry Z, Zervos M, Suleyman G, Johnson J, Falvo A, Gupta A, Kabbani L  
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## Background

- There is concern that frontline healthcare personnel (HCP) are at increased risk of exposure to COVID-19 compared to the general population
- Multiple studies have demonstrated significant seroprevalence of COVID-19 antibodies in HCP<sup>1,2,3,4</sup>
- Increased seropositivity has been associated with reduced use of personal protective equipment (PPE) along with reported PPE shortages<sup>5</sup>
- This investigation aims to determine the seroprevalence of COVID-19 in frontline HCP working at a quaternary care center that was heavily impacted by the initial surge of COVID-19, while also identifying underlying factors associated with increased seropositivity

## Methods & Materials

- HCP who participated in the management of COVID-19 patients were recruited from April 27 to May 13 of 2020
- Unidentifiable demographic data was collected, including a questionnaire to identify potential exposure, symptoms, medical comorbidities, and adherence to PPE usage on a scale of 1 to 5 (1 being always, 5 being never)
- Serological testing was performed using CMC-19D SARS-CoV-2 (COVID-19) Rapid Antibody Test manufactured by Audacia Bioscience
- Seropositivity was captured by formation of a dark band at the G (IgG) and C (control) positions on the test device, while IgM alone was considered a false positive
- Pearson chi-squared and Fisher exact tests were performed to analyze categorical variables
- SPSS version 27.0 was used for statistical analysis (SPSS, Armonk, NY)



## Bibliography

1. Steensels D, Oris E, Coninx L, et al. Hospital-Wide SARS-CoV-2 Antibody Screening in 3056 Staff in a Tertiary Center in Belgium. *JAMA*. 2020;324(2):195. doi:10.1001/jama.2020.11160
2. Baker JM, Nelson KN, Overton E, et al. Quantification of Occupational and Community Risk Factors for SARS-CoV-2 Seropositivity Among Health Care Workers in a Large U.S. Health Care System. *Ann Intern Med*. Published online January 29, 2021. doi:10.7326/M20-7145
3. Shields A, Faustini SE, Perez-Toledo M, et al. SARS-CoV-2 seroprevalence and asymptomatic viral carriage in healthcare workers: a cross-sectional study. *Thorax*. 2020;75(12):1089-1094. doi:10.1136/thoraxjnl-2020-215414
4. El Bouzidi K, Pirani T, Rosadas C, et al. Severe Acute Respiratory Syndrome Coronavirus-2 Infections in Critical Care Staff: Beware the Risks Beyond the Bedside. *Critical Care Medicine*. 2021;49(3):428-436. doi:10.1097/CCM.0000000000004878
5. Self WH, Tenforde MW, Stubblefield WB, et al. Seroprevalence of SARS-CoV-2 Among Frontline Health Care Personnel in a Multistate Hospital Network — 13 Academic Medical Centers, April–June 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(35):1221-1226. doi:10.15585/mmwr.mm6935e2

## Results

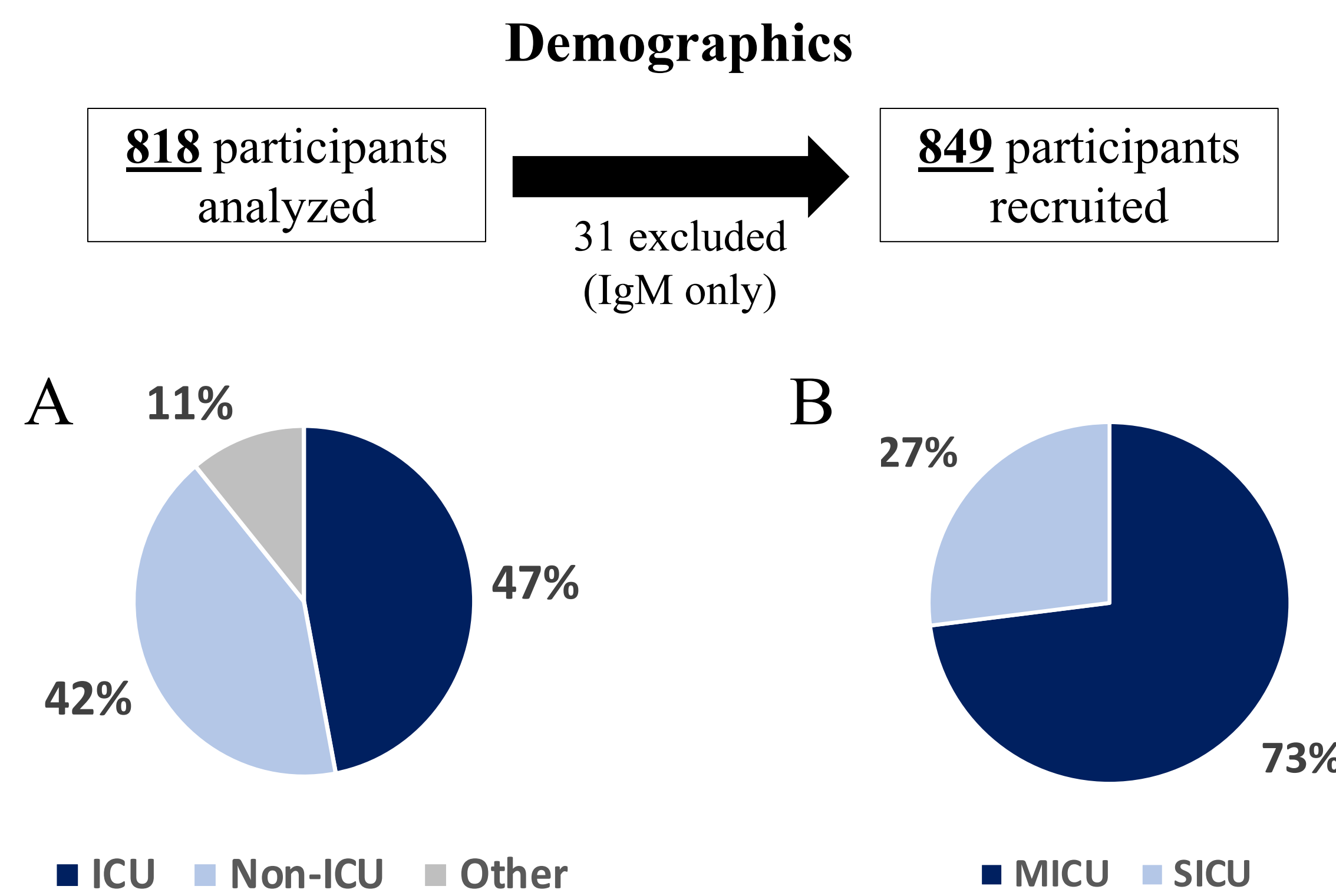


Figure 1. Sample size. A. HCP working in ICU (358), non-ICU (346), and other (N=87) settings. B. ICU personnel working in MICU (N=231) versus SICU (N=84) settings

	PPE usage during patient contact (N=777)		PPE usage outside patient contact (N=782)	
		n(%)		n(%)
1		600 (77.2)	1	460 (58.8)
2		65 (8.4)	2	188 (24)
3		10 (1.3)	3	86 (11)
4		8 (1)	4	31 (4)
5		94 (12.1)	5	17 (2.2)

Figure 2. PPE usage of all HCP during and outside patient contact

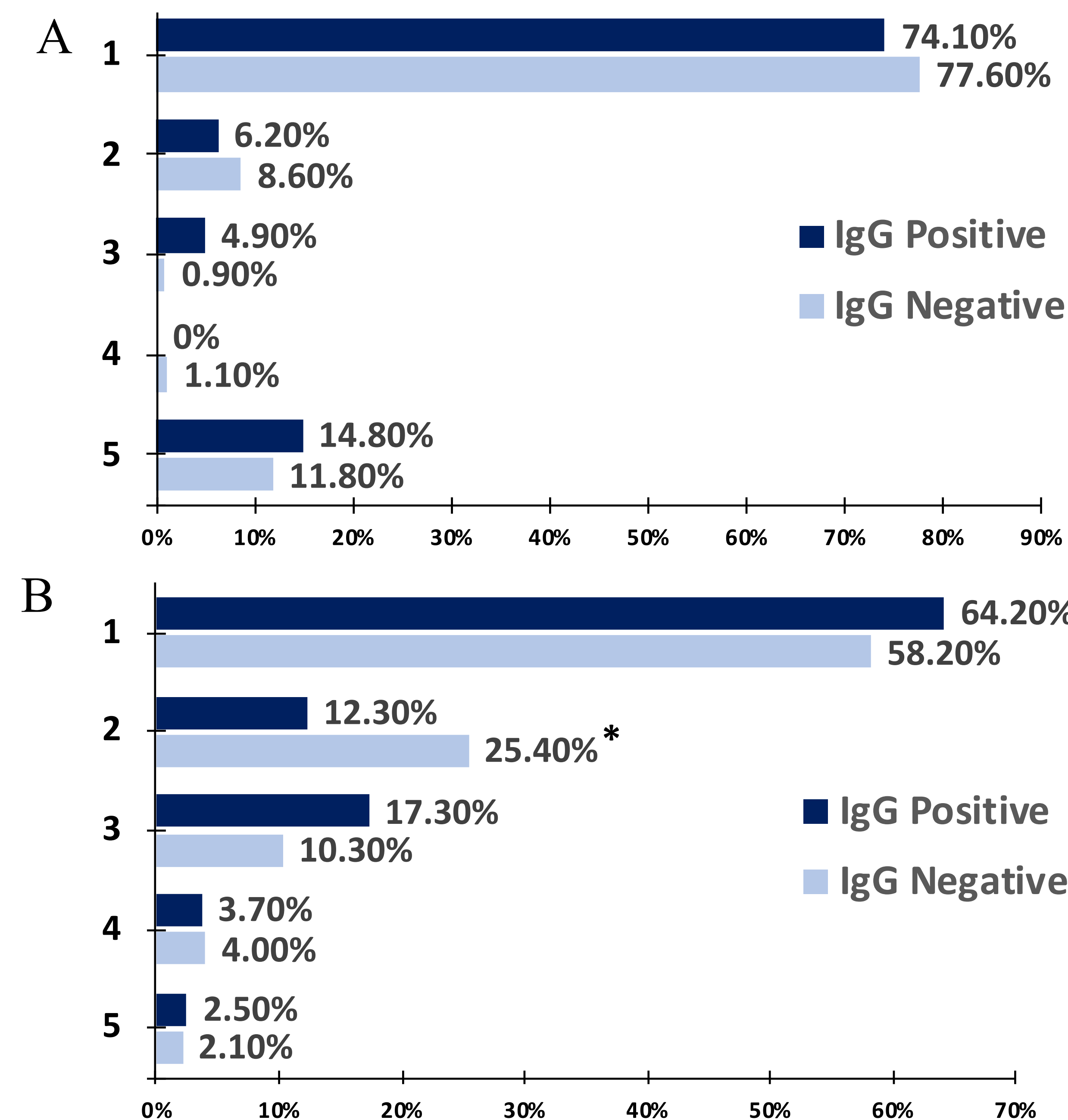


Figure 3. Comparison between IgG negative and positive HCP. A. Reported PPE usage during patient contact (p=0.063). B. Reported PPE usage outside patient contact (p=0.04).

## Results

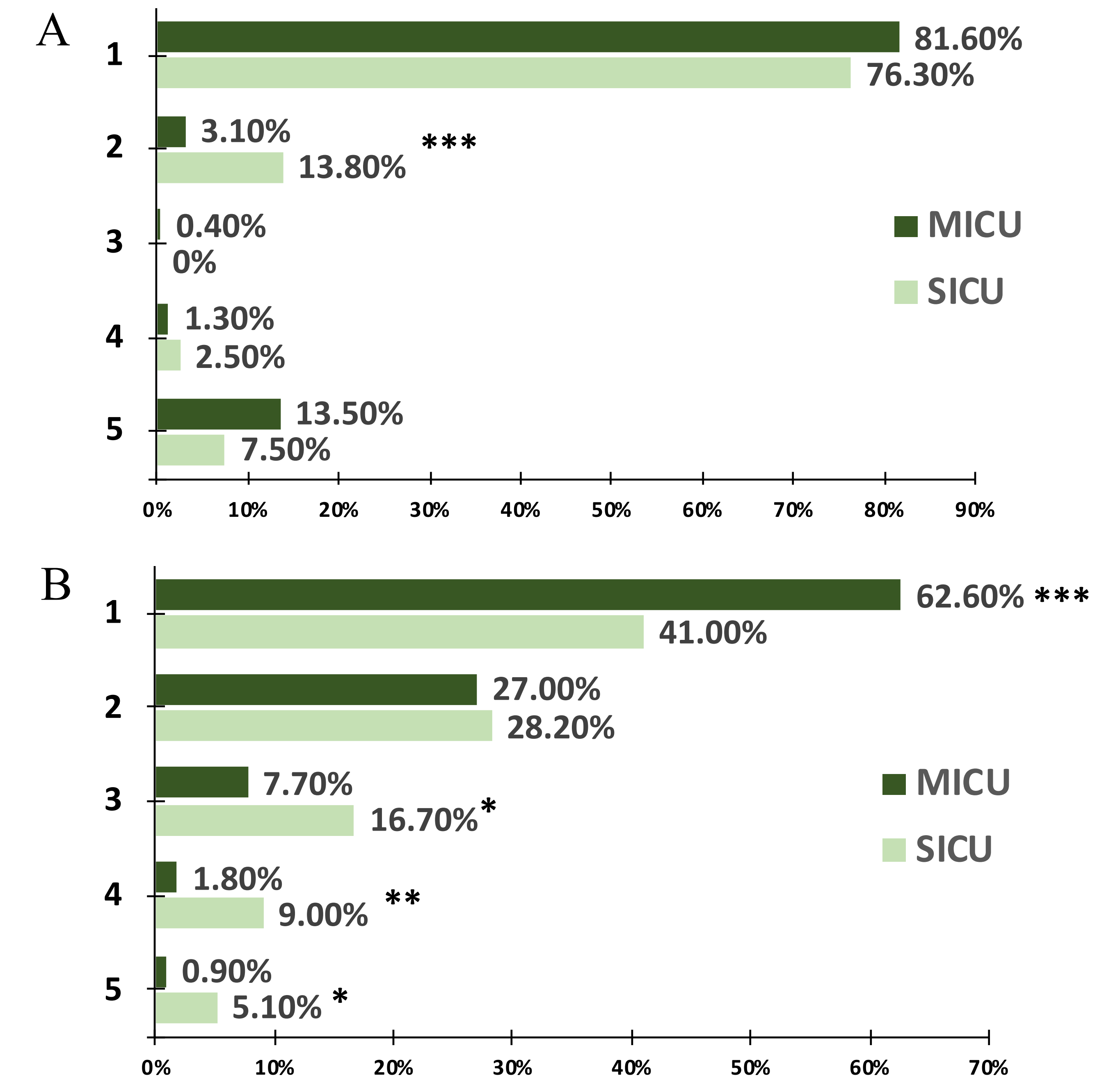


Figure 4. Comparison between medical and surgical ICU staff. A. Reported PPE usage during patient contact (p=0.007). B. Reported PPE usage outside patient contact (p<0.001).

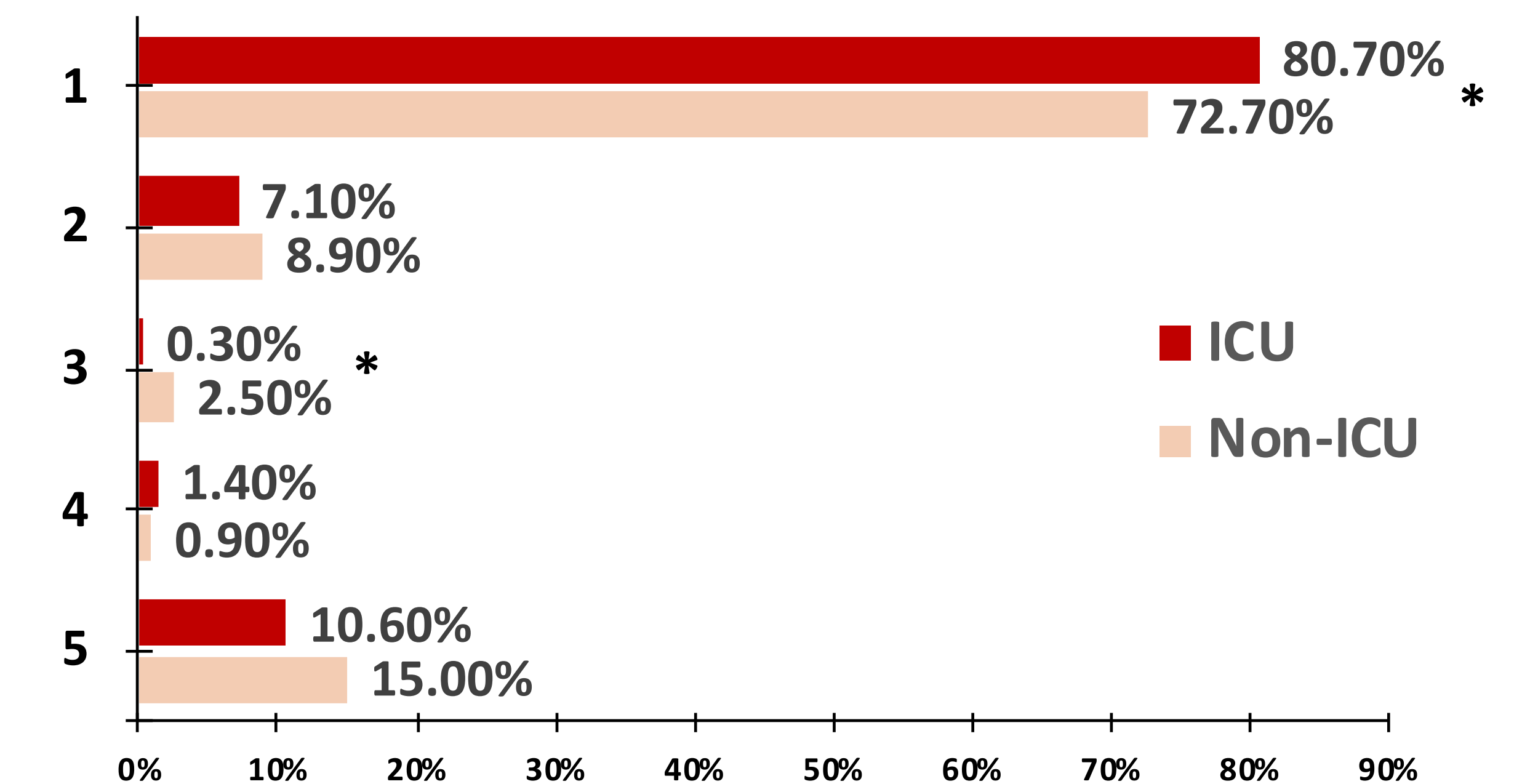


Figure 5. Comparison between ICU and non-ICU staff and reported PPE usage during patient contact (p=0.019)

## Conclusions

- Overall seropositivity of IgG antibodies was 10.6%
- Non-ICU personnel showed higher seroprevalence compared to ICU personnel, this may be attributed to decreased reported adherence to strict PPE usage in non-ICU areas compared to ICU areas during patient contact
- Compared to MICU, SICU personnel appeared to be less compliant with frequency of PPE use outside patient rooms
- Adherence to PPE usage outside patient contact was a predictor of seropositivity, and non-ICU personnel had a tendency toward high seroprevalence