Staphylococcus Aureus carriage rates of CSP Student Athletes Living on Campus vs Off Campus

Azeezat Oluwa, Dr. Amanda Brosnahan, Dr. Taylor Mach
Science department, Concordia University-Saint Paul

Background

The purpose of this study is to determine if there is a difference in the carriage rate in student athletes that live on campus and those that live off campus. Student athletes already spend most of their time together so it will be interesting to note if there is a difference if more time than the standard practices and games, they have played a role in the carriage of *S. aureus.*

Staphylococcus aureus is a gram-positive bacteria that is the cause of a lot of major infections like pneumonia, endocarditis, toxic shock syndrome and more. *S. aureus* can be found on 30% of adults in the nose and 20% on the skin. Most carriers do not know that they have it(2).

12 Personal Samples

Positive

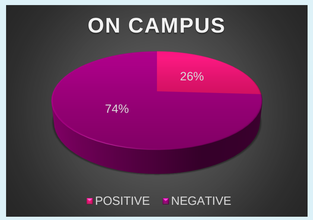
0702	0716	0728	0760	0989	1006

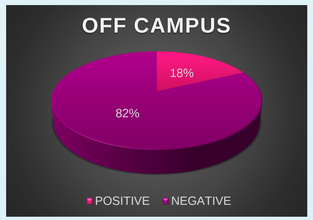
Negative

0240	0563	1004	1023	1049	1071

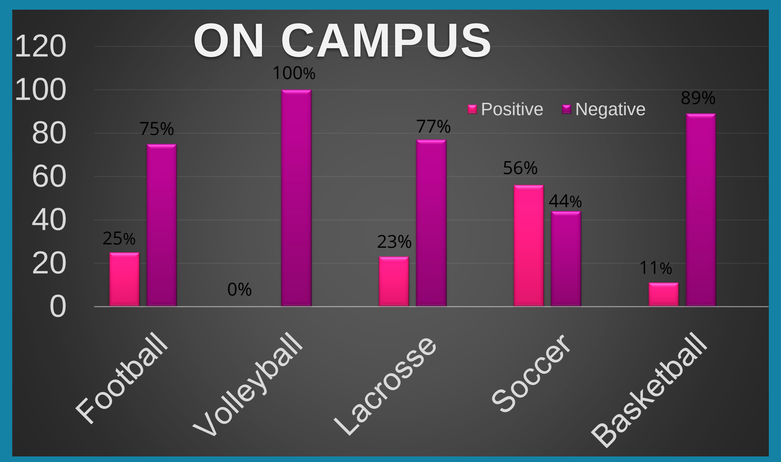
Athletes Studied

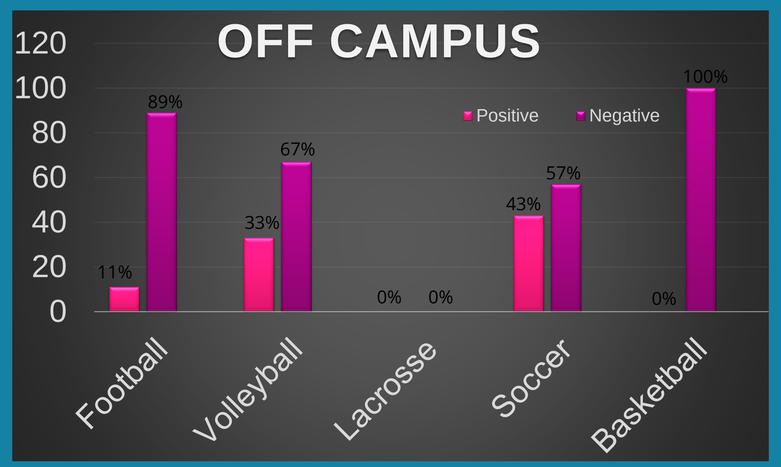
Total Athletes studied: 143
Athletes on Campus: 104
Athletes off Campus: 39





CSP Athletes on the Soccer Team Above National Average Rate for *Staphylococcus aureus*





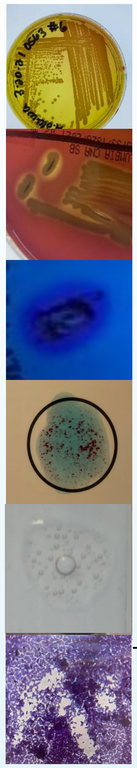
Conclusion

The purpose of the study was to determine if there was a difference in the carriage rate for student athletes living on campus as opposed to off campus. It was found that for most of the teams, the difference in the carriage rate was below the national average, which is 33%(1). The CSP soccer team, however, was above the national average, both on and off campus. They had about a 50% carriage rate both on and off campus. Further testing in the future could determine the cause for why the CSP soccer teams average was higher than most.

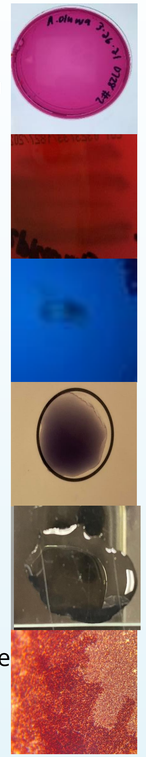
Methodology

Nasal Swabs were collected from the studied individuals. The swabs were processed and tested to determine if the sample is a *Staphylococcus aureus* carrier. In order to be positive for *S. aureus,* the sample had to be positive for all the following tests: MSA, DNAase, CNA, catalase, coagulase, and gram stain (3).

Positive **Negative**



MSA
Tests for the fermentation of mannitol.
CNA
Tests the ability of the bacterium to rupture the red blood cells
Dnase
Tests the ability of the bacterium to hydrolyze DNA, seeing that purple halo
Coagulase
Tests for the bacterial enzyme that coagulates blood
Catalase
Tests for the reduction of Hydrogen peroxide, the bubbles
Gram Stain
Tests for morphology of the bacterial cells



Acknowledgements

Special thanks to Dr. Patrick Schlievert (University of Iowa) for helpful conversations. This research was partially funded by several CSP Faculty Development Grants. This work has IRB approval from CSP (studies 2016_42 & 2018_37)

References

1. (2010, February).Minnesota Department of Health. Causes and Symptoms of Staphylococcus Aureus Minnesota dept. of health. Retrieved Nov 07, 2018 Stoppler, M.C.(n.d(

2. Bush, L., MD, FACP, Charles E. Schmidt College of Medicine, Florida Atlantic University. (2021, March). Staphylococcus aureus infections - infections. Retrieved April 07, 2021, from https://www.merckmanuals.com/home/infections/bacterial-infections-gram-positive-bacteria/staphylococcusaureusinfections#:~:text=Staphylococcus%20aureus%20is%20the%20most,valve%20infecs%2C%20and%20bone%20infections.

3. Brosnahan, Amanda. "Day 7: Making Posters" SCI 435. 8 Apr. 2021, Concordia University- Saint Paul.

CSP SCIENCE