

# Title: Effects of Haemophilus Influenzae Infection on Breast Cancer Risk

Name of the Presentor and Affiliation

## Introduction

The purpose of this study was to evaluate the correlation between *Haemophilus influenzae* (*H. influenzae*) infections and the incidence of breast cancer.

## Methods and Materials

The data was provided by a Health Insurance Portability and Accountability Act (HIPAA) compliant national database to evaluate the patients infected versus patients not infected with *H. influenzae* using ICD-10 codes and ICD-9 codes between January 2011 and December 2019. Chi-squared, logistic regression, and odds ratio were utilized to test for significance and to estimate relative risk.

## Results

A database search between January 2011 and December 2019 resulted in 13,599 patients in both the infected and control groups, which were matched by age range and CCI. The incidence of breast cancer was 259 (1.905%) in the *H. influenzae* group compared to 686 (5.044%) in the No *H. Influenzae*/ control group. The difference was statistically significant with  $p < 0.001$  and (OR= 0.629, 95%CI 0.590- 0.680). Subsequent matching by antibiotic treatment resulted in two groups of 3,189 patients. The incidence of breast cancer was 98 (3.073 %) in the *H. influenzae* group compared to 171 (5.362 %) in the control group. The difference was statistically significant with  $p < 0.001$  and (OR= 0.610, 95%CI 0.543-0.684)

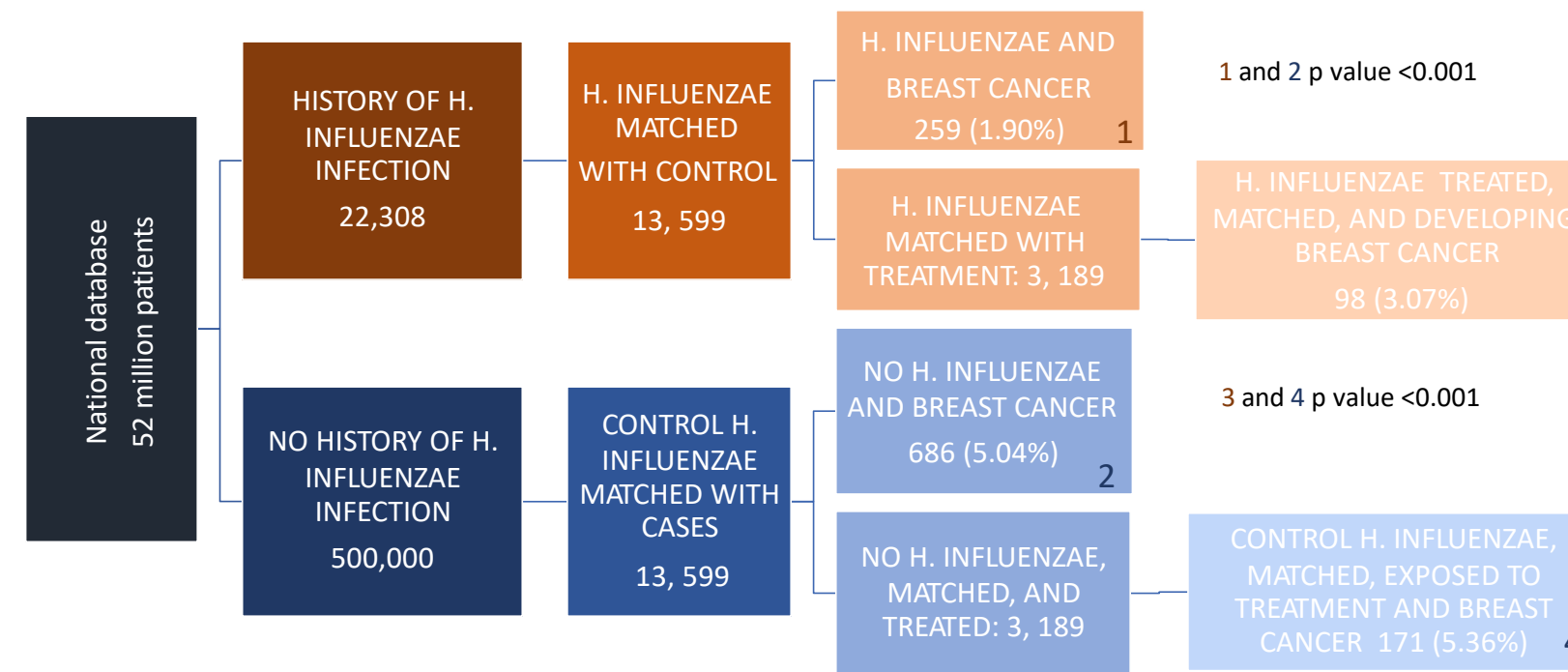


Figure 1: Stepwise description of the population contained at each level of the study.

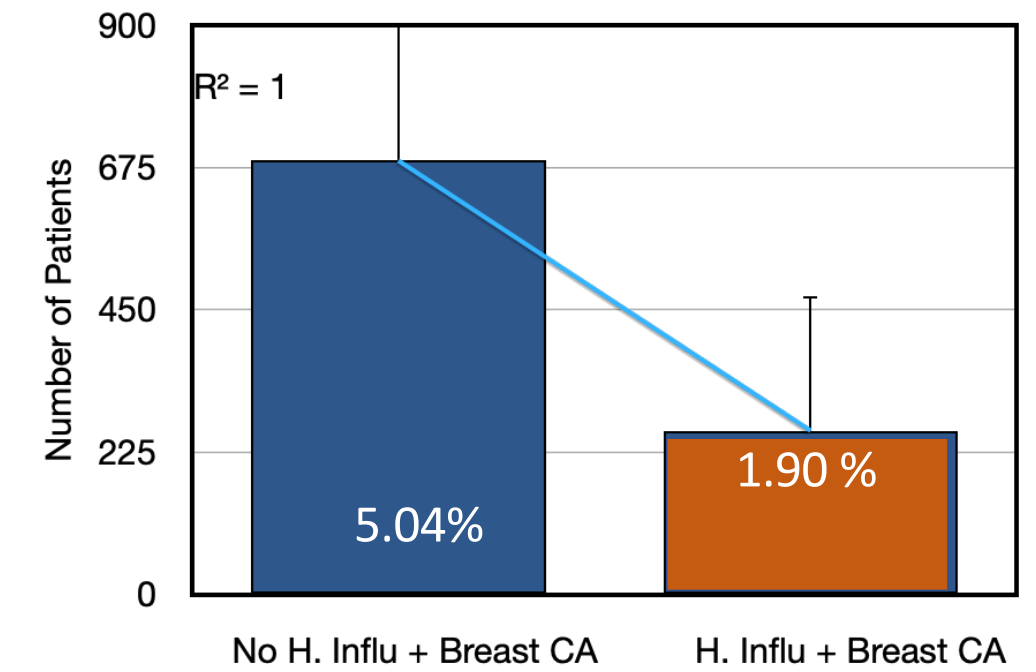


Figure 2: Comparison between total number of patients with Breast Cancer previously infected with *H. Influenzae* versus not infected.\*  $p = 0.001$

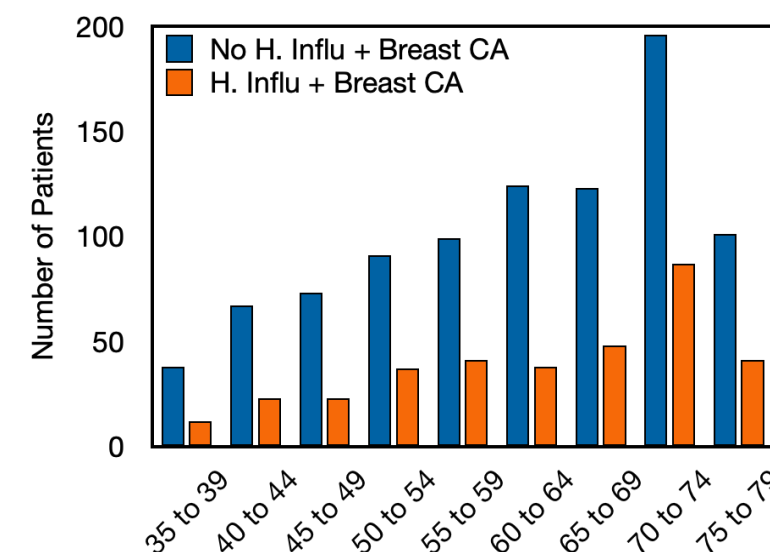


Figure 3: Incidence of Breast Cancer distributed by groups of age.

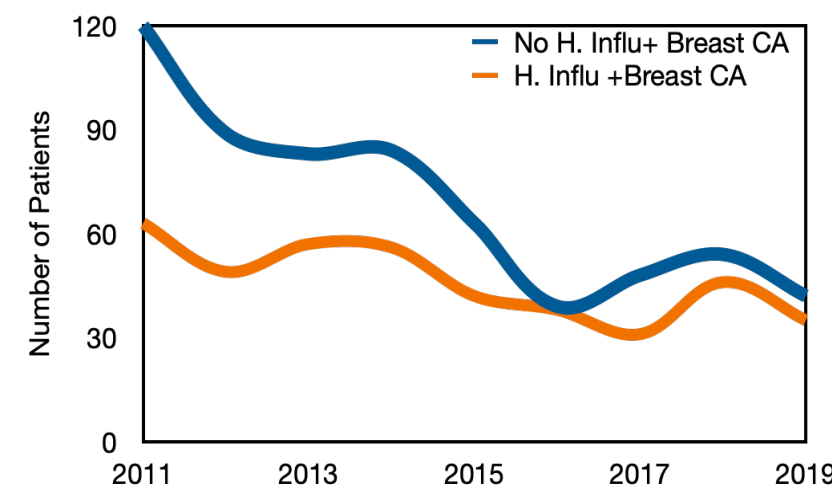


Figure 4: Yearly Incidence of Breast Cancer in *H. Influenzae* vs. No *H. Influenzae* groups.

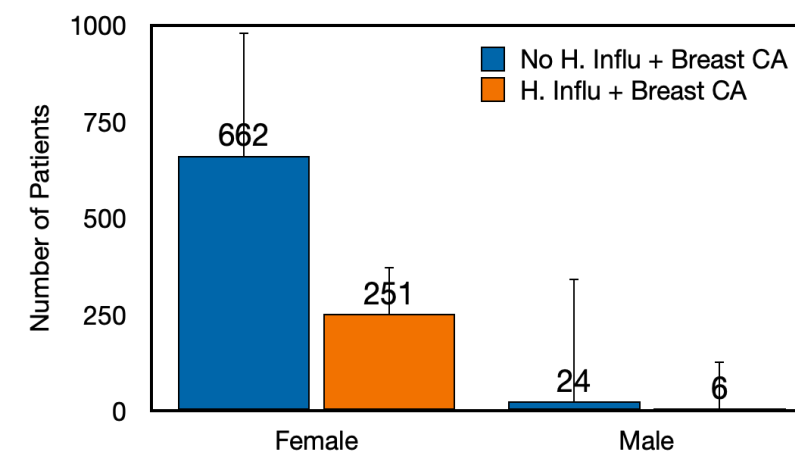


Figure 5: Stratification by Gender of Breast Cancer in *H. Influenzae* infected versus Non infected patients.

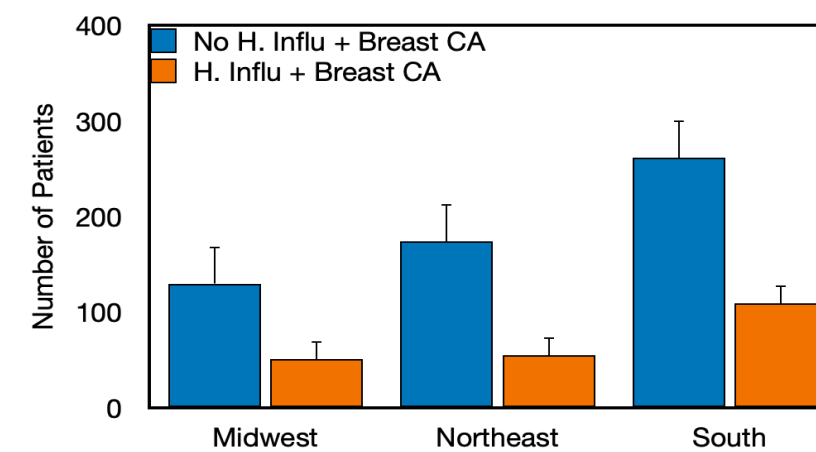


Figure 5: Regional Distribution of Breast Cancer in patients previously exposed versus non exposed to *H. Influenzae* infection.

## Conclusion

The study shows a statistically significant correlation between previous exposure to *H. influenzae* and a reduced incidence of breast cancer in affected populations. These results warrant further investigation of *H. influenzae*'s role in modifying inflammasome/IL-1 signaling pathways that possibly curtail breast cancer risk.

## References

## Acknowledgements