ABSTRACT SUBMISSION RSV VACCINES FOR THE WORLD MEETING 2017

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**Molecular epidemiology of severe RSV disease in hospitalized adults in Seattle, Washington, USA**

Background: Respiratory syncytial virus (RSV) is increasingly recognized as a significant pathogen in adult populations, with a disease burden comparable to influenza. Correlates of protection are lacking, particularly in adult populations, and may provide key insights into vaccine development.

Methods: We initiated a prospective study on adults hospitalized with acute RSV infection at Harborview Medical Center in Seattle, Washington in 2017. We collected clinical data through a questionnaire and review of the electronic medical record, serum to measure RSV neutralizing antibody titers, and nasal swabs for subtyping, quantitative RT-PCR, and next generation meta-genomic sequencing.

Results: Of the 20 patients enrolled in this study during the 2016-2017 RSV season, 13 (65%) had underlying cardiopulmonary disease, 17 (85%) smoked, 11 (55%) had intravenous drug use, and 14 (70%) were homeless. Six (30%) were admitted to the intensive care unit (ICU) despite high serum neutralizing antibody titers (mean log2 titer 13.4). No significant relationship was observed between serum neutralizing antibody titers or viral loads and ICU admission. Of the 14 nasal swabs successfully subtyped, 12 (86%) were subtype B. Sequenced strains from 2 homeless patients showed close linkage.

Conclusions: A large proportion of hospitalized adults with RSV were admitted to the ICU in the 2016-2017 season. Further meta-genomic sequencing will be performed to track spread and determine if severe disease in this population was related to viral evolution.

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