

Tamela Smith

Anthropology

Year in School: Senior

Hometown: Hayti, Mo.

Faculty Mentor: Dr. Lisa Sattenspiel, Anthropology

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Impact of prior/concurrent exposure to infectious diseases on variability in the 1918-19 flu epidemic on Newfoundland

Tamela Smith & Lisa Sattenspiel

Between 1918 and 1920 nearly 2000 people on the island of Newfoundland died from influenza, pneumonia, and related illnesses. Deaths were recorded from all parts of the island, but there is substantial regional variability in both timing and impact. One factor that may influence regional patterns of spread of an epidemic, but that is underappreciated, is the importance of prior and concurrent exposure to other infectious diseases. This paper discusses the possible impact on flu patterns of both exposure to a 1916 measles epidemic and its complications. Initial analysis of 1918-20 mortality suggested that widespread exposure to the 1916 measles epidemic may have reduced mortality during the flu epidemic, but further analyses failed to support the hypothesis. These analyses did indicate additional factors that may have obscured the ability to detect such an interaction, the most important of which were a significant difference in the size of the two epidemics and population size differences among communities. We describe here new studies focusing on these issues. This study highlights the importance of considering the co-circulation of multiple pathogens and potential interactions between acute and chronic conditions when trying to understand the impact of human infectious diseases. Support: Government of Canada–Canada Studies Faculty Research Grant Program, University of Missouri McNair Scholars Program, MU Research Council, UM Research Board.