MRSA infection shown to be seasonal

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A new study from Rhode Island Hospital has found a significant increase in the occurrence of methicillin-resistant *Staphylococcus aureus* (MRSA) infections in the summer and autumn months. The increase was more pronounced in the pediatric population than in adults. The study is now published online in advance of print in *PloS ONE.*

Lead author Leonard Mermel, D.O., Sc.M., medical director of the department of epidemiology and infection control at Rhode Island Hospital, and his colleagues conducted a retrospective 10-year study by examining MRSA isolates submitted to the hospital's microbiology laboratory.

Their findings indicate that for pediatric patients there were approximately 1.85 times as many community-associated (CA) MRSA infections and 2.94 as many hospital-associated (HA) MRSA infections in the third and fourth quarters of the year than in the first two quarters. For adults, there were 1.14 times as many CA-MRSA infections in the second two quarters as in the first two quarters, but no seasonal variation was observed in adult HA-MRSA infections.

The researchers also reviewed published articles over the last 70 years that had any mention of seasonality and Staph aureus infections. They summarized the literature search in two comprehensive tables that reveal an increased incidence of such infections during summer and autumn in many temperate regions of the world and during the warmest months of the year in tropical regions.

The researchers believe that it is the sequence of the third and fourth quarters that is important in demonstrating the peak in MRSA infections rather than just the warmest quarter of the year. Mermel says, "We reviewed meteorological data for Rhode Island during the decade of our study period and found that the second quarter was warmer, on average, than the fourth quarter. We believe that an increased incidence of infection in autumn, the fourth quarter, may reflect a lag between Staphylococcal colonization and subsequent infection."

The researchers note that hydration of the skin is important for microbial growth, and maximum hydration is achieved when high temperatures combine with high relative humidity, which also promotes increased sweat production. Mermel says, "The presence of both factors, heat and humidity, may be critically important in providing the environmental conditions that facilitate heavy grown of S. aureus on the skin."

Mermel, who is also a professor of medicine at The Warren Alpert Medical School of Brown University, says, "We've demonstrated that Staph infections, particularly skin infections in children, follow a seasonal pattern. Until now, this basic observation of one of the most common human infections has been generally unnoticed, minimized or doubted in the medical literature." He concludes, "It is hoped that this study will promote further investigation into the seasonality of S. aureus infections to better understand the biologic basis for this observation."

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