



LOMA LINDA UNIVERSITY
Department of Plastic Surgery



Seasonal Variation and Epidemiology of Upper Extremity Infections in a Community Based Hospital over a Six-Year Period

Jeremy R. Chidester, MD¹, Ram K. Alluri, MD², Milan Stevanovic, MD², Frances E. Sharpe, MD³

1. Department of Plastic Surgery, Loma Linda University Health, Loma Linda, CA 2. Department of Orthopaedics, University of Southern California, Los Angeles, CA
3. Department of Orthopedic Surgery, Kaiser Permanente, Fontana, CA

Introduction:

The empiric treatment of hand infections requires knowledge of common infecting organisms for different types of infections. Several recent studies indicate an increasing trend of methicillin resistant organisms in upper extremity infections.^{1,2} There have been few recent epidemiologic studies identifying common organisms for different types of hand infections.³ Knowing the expected organism allows the clinician to better select empiric antibiotic therapy while awaiting final culture results.⁴ There have been no studies regarding the seasonal variation in upper extremity infections. We looked at the seasonal variation and epidemiology of upper extremity infections in a community based hospital setting to identify possible correctable factors.

Methods:

A retrospective chart review was performed at a community-based hospital in Southern California over a six-year period, from March 2008 to December 2013. We searched the electronic health record for International Statistical Classification of Diseases (ICD-9) diagnosis codes specific to hand infections (681.0, 682.9, 711.4, 727.89, 730.0, 8881.0, 882.0, E906.0), and procedural codes related to the surgical treatment of upper extremity infections (86.04, 78.26, 86.2). We identified the following: type of hand infection; geographic location; month of treatment; season of the year. Student t-test was used to compare month-to-month, seasonal and annual differences. Significance was defined as $p < 0.05$.

Results:

There was a significant upward trend in the total incidence of upper extremity infections in the summer (June, July, August) season annually when compared to the winter season (December, January, February). There were on average 16.35 documented cases per month (SD 2.31+/- 0.67) of upper extremity infection. When looking at the six-year period, there were 55.4 cases reported on average during the summer months. In the spring, fall, and winter, there were 50.4, 45.4, and 45.0 cases reported on average over that same time period, respectively. Additionally, there was a significant spike in infections in July ($p = 0.0196$), with an average of 22.6 (SD 6.82 +/- 3.05) cases annually when compared to the winter month of February with 13.6 (SD 6.46 +/- 2.89) cases on average (Figure 1). There was trending significance when comparing the number of annual infections in July to May ($p = 0.0813$) and July to October ($p = 0.0855$).

Total infections by month (2008 - 2013)

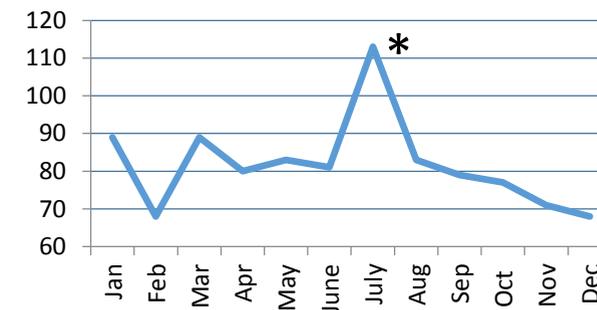


Figure 1.

Total number of infections for each month between 2008 and 2013 shown here. There was a significant spike in July ($p = 0.0196$, asterisk *), when compared to February, the lowest number of infections reported in a month.

Conclusions:

There appears to be a significant seasonal trend in incidence of upper extremity infections, peaking in the month of July annually. There are also trends toward significant seasonal differences when comparing the summer months to the other seasons of the year. Further studies and data are needed to potentially find a correctable factor attributable to the seasonal variation in the incidence of upper extremity infection.

References:

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4. Tosti R, Ilyas AM. Empiric Antibiotics for Acute Infections of the Hand. *J Hand Surg* 2010; 35: 125 – 128.