

## Geographic Variation in Malignant Hyperthermia

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### Commentary

Malignant Hyperthermia is an uncommon disorder that is usually manifest during anesthesia. The vast majority of those at risk for developing MH have no outward clinical signs that distinguish them from the normal population. The estimates of the prevalence and incidence of MH varies greatly. One of the most recent studies demonstrated that in New York State, the prevalence of MH based on ICD-9 coded reports was approximately one in 100,000 surgical discharges and slightly higher for discharges in which there was indication of exposure to anesthetics.

Based on limited epidemiologic data and anecdotal information, in the 1970s-1980s the prevalence of MH was said to be highest in the State of Wisconsin. This was thought to be related to a higher prevalence of the gene that is causal for MH. Therefore we were interested in examining the prevalence of MH across hospitals in four states representing different regions of the US, Florida, California, New York and Wisconsin. Using Healthcare Cost and Utilization State Inpatient Database for 2011 for California, Florida and 2012 for New York and Wisconsin we identified patients with the diagnosis of MH by ICD-9 code. In addition, we examined other characteristics related to those diagnosed with MH. There was a total of 164 cases of MH identified out of 9,745,539 hospital discharges.

The prevalence of MH for hospital discharges did not differ between the states. The overall prevalence was 1.68 per 100,000 discharges. However, higher prevalence was observed in surgical discharges across the States. The state with the highest prevalence was Florida (2.86 per 100,000 surgical discharges) while New York had the lowest prevalence (1.47 per 100,000 discharges) The prevalence for Wisconsin was 2.37 per 100,000 surgical discharges. We also found that the prevalence was higher in males than females, for younger patients (median age was 46.5 years). Similar to other studies, the prevalence rate did not differ by race, admission type and Charlson-Deyo Comorbidity index. Of interest, the mortality related to MH was 11% underlining the fact that MH may still lead to fatalities despite the availability of an antidote drug.

Limitations of the study include the inability to differentiate incident MH events from those with family history or previously documented MH susceptibility. Nor was it possible to identify type of surgical procedures associated with MH. In addition, we examined data for only one year for each of the States and the year of ascertainment was different for two of the states from the other two. Finally, the accuracy and completeness of MH diagnosis and coding may vary across hospitals and states. However, the large sample size enabled a reliable epidemiologic analysis of an uncommon medical condition. Since the epidemiology of MH was not studied in all States, it may be still be possible, that a higher proportion of MH cases might be found in some states.

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