

## **Environmental exposures to Florida red tides: Effects on emergency room respiratory diagnoses admissions**

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Human exposure to Florida red tides formed by *Karenia brevis*, occurs from eating contaminated shellfish and inhaling aerosolized brevetoxins. Recent studies have documented acute symptom changes and pulmonary function responses after inhalation of the toxic aerosols, particularly among asthmatics. These findings suggest that there are increases in medical care facility visits for respiratory complaints and for exacerbations of underlying respiratory diseases associated with the occurrence of Florida red tides.

This study examined whether the presence of a Florida red tide affected the rates of admission with a respiratory diagnosis to a hospital emergency room in Sarasota, FL. The rate of respiratory diagnoses admissions were compared for a 3-month time period when there was an onshore red tide in 2001 (red tide period) and during the same 3-month period in 2002 when no red tide bloom occurred (non-red tide period). There was no significant increase in the total number of respiratory admissions between the two time periods. However, there was a 19% increase in the rate of pneumonia cases diagnosed during the red tide period compared with the non-red tide period. We categorized home residence zip codes as coastal (within 1.6 km from the shore) or inland ( $>1.6$  km from shore). Compared with the non-red tide period, the coastal residents had a significantly higher (54%) rate of respiratory diagnoses admissions than during the red tide period. We then divided the diagnoses into subcategories (i.e. pneumonia, bronchitis, asthma, and upper airway disease). When compared with the non-red tide period, the coastal zip codes had increases in the rates of admission of each of the subcategories during the red tide period (i.e. 31, 56, 44, and 64%, respectively). This increase was not observed seen in the inland zip codes.

These results suggest that the healthcare community has a significant burden from patients, particularly those who live along the coast, needing emergency medical care for both acute and potentially chronic respiratory illnesses during red tide blooms.

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