

## **Wind Turbine Syndrome – Draft Article**

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### **ABSTRACT**

Wind Turbine Syndrome is a consistent, often debilitating, complex of symptoms which occur during residential exposure to large industrial wind turbines. Symptoms include sleep disturbance, headache, tinnitus, ear pressure, dizziness, vertigo, nausea, irritability, and problems with concentration and memory. Panic episodes associated with sensations of internal pulsation or quivering arise in the daytime or during sleep. Symptom intensity varies in concert with the direction turbine blades are turned, the rate of spin, or the presence of certain sounds. Panic episodes show no statistical association with previous history of anxiety or other mental health disorders, and a highly significant association with pre-existing motion sensitivity. Headache shows a significant association with preexisting migraine disorder. Secondary clusters of symptoms involve the chest and eyes. Methods: Case series of 10 affected families with 38 members age 0 to 75 exposed to turbines erected since 2004. All adults were interviewed and information obtained on all family members in a pre-exposure, during exposure, post-exposure format. Five families moved away from their exposed homes within 6 weeks before the interviews or between the first and second interviews, one family significantly reduced its time in the home 3 months before the interviews, and other families spent periods of time away from the home during exposure. Conclusions: Core symptoms of Wind Turbine Syndrome are best explained as a vibratory disturbance of thoracic organs creating a disturbance to position and motion sense via visceral graviceptors. Anxiety and panic arise in previously unaffected but motion-sensitive people due to direct neurologic linkages between balance and position sense and brain centers mediating fear, anxiety, autonomic effects, and aversive learning. There are also direct effects on ears. Secondary symptom clusters suggest other effects on tissues inside body resonant spaces, but require further research. Syndrome recognition is important for control of turbine placement and compensation of affected persons.

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## **EDUCATION**

1991 M.D. The Johns Hopkins University School of Medicine  
1985 Ph.D. Princeton University (Behavioral Ecology)  
1981 M.A. Princeton University (Behavioral Ecology)  
1977 B.A. Yale University (Biology), National Merit Scholar (cum laude)

## **POST-DOCTORAL TRAINING**

1992 to 94 Pediatrics Dartmouth-Hitchcock Medical Center, Lebanon, NH  
1991 to 92 Pediatrics Children's National Medical Center, Washington, DC  
1985 to 86 Ornithology American Museum of Natural History, New York, NY

## **LICENSURE AND CERTIFICATION**

1997 Licensed Physician, New York  
1997 Licensed Physician, New Hampshire (expired)  
1995 Pediatric Advanced Life Support Instructor and Affiliate Faculty  
1994 Diplomate, American Board of Pediatrics (recertified 2000, expires 2008)  
1994 Licensed Physician, Alaska (expired)

## **HOSPITAL OR AFFILIATED INSTITUTION APPOINTMENTS**

10/00 to 12/03 Senior Attending in Pediatrics Bassett Healthcare, Cooperstown, NY  
1997 to 00 Attending Pediatrician Alice Hyde Hospital, Malone, NY  
1995 to 96 Chief of Pediatrics Yukon-Kuskokwim (Yup'ik Eskimo) Delta Regional Hospital, Bethel, AK  
1994 to 95 Staff Pediatrician Yukon-Kuskokwim (Yup'ik Eskimo) Delta Regional Hospital, Bethel, AK

## **OTHER PROFESSIONAL POSITIONS**

2004 to ... Private Practice (Solo) Pediatrics (emphasizing Behavioral Peds) Malone, NY  
1998 to 00 Private Practice (Solo) Pediatrics Malone, NY  
1997 to 00 Staff Pediatrician St. Regis Mohawk (Iroquois) Health Services, Hogansburg, NY  
1997 to 98 Staff Pediatrician North Country Children's Clinic (clinic for needy children), Malone, NY

## **ACADEMIC APPOINTMENTS**

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