



Outbreak of neurologic syndrome and sequelae in 17 states and 2 provinces

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In the aftermath of recent outbreaks of emerging infectious diseases such as SARS and West Nile Virus, health departments in many states and provinces throughout North America implemented a syndromic surveillance system in hospital emergency departments (EDs) to assist with the early identification of public health emergencies. Coding schemes were developed for 12 distinct syndromes, and, on the basis of their clinical judgement, health-care providers were asked to choose the syndrome that best represented the patient's primary diagnosis. To track aberrations and detect excessive noise, a daily Syndrome to None ratio (SNR) was calculated. Alarms were generated when the SNR was significantly higher for the day in question compared with the recent past.

In August 2002, several EDs in the states of Tennessee, Arkansas and Nevada reported geographically localized high SNRs for Neurologic Syndrome. The index cases and resulting epidemiological investigations are described.

Case 1

On Aug. 16, 2002, a 58-year-old previously healthy male was brought to the ED of St. Joseph's Hospital in Pine Bluff, Arkansas, by concerned relatives. They reported that the patient had recently developed movement tremors in the extremities, a gait disturbance and photophobia that prompted the patient to wear sunglasses indoors at all times. Physical exam also revealed a mild facial twitch affecting the left upper orbicularis oris, dysphonic speech and an exaggerated cremasteric reflex (grade 4), but no other abnormalities. The patient exhibited a remarkable lack of insight, reporting no symptoms other than insomnia and feeling, in his own words, "all shook up."

Electroencephalographic examination demonstrated nonspecific diffuse abnormalities, but no specific diagnosis was made. The CT scan and electromyogram investigations were essentially normal. The toxicology screen revealed that the patient had consumed a moderate dose of diazepam, to which he confessed frequent use, but no other substances.

This case of neurologic syndrome was promptly reported to the syndromic surveillance system, and the patient was admitted for observation. There was no deterioration in physical signs over the next 24 hours, other than increasing paranoia that compelled the patient to repeatedly and unpredictably belt out in a brash baritone "don't be cruel" to anyone who would listen or not.

Case 2

On the same day, Aug. 16, 2002, several hours after the index case, a 57-year-old male presented to the ED in Tupelo, Mississippi, with a similar triad of neurologic manifestations, including a new-onset intentional tremor, gait disturbance and photophobia. The physical exam also revealed drawled speech, orbital edema and a facial nerve palsy. During the course of the exam the patient became increasingly agitated and neologistic, repeatedly asking "Bless my soul, what's wrong with me?" and insisting that he was twitching like a man on what sounded like a "fuzzytree."

Imaging and serological investigation revealed no obvious pathology or etiology. This case of neurologic syndrome was also promptly reported to the syndromic surveillance system, and the patient was admitted for observation. He proceeded to deteriorate rapidly into a hypomanic state, wailing incessantly in a rising falsetto that he was "lonesome tonight" — disturbing ward mates, night staff and 3 of the guide dogs in the hospital kennel, who chimed in.

Epidemiology

Between Aug. 15 and 21, 2004, a total of 23 216 cases of neurologic syndrome were reported to the North American syndromic surveillance system, which prompted members of the Association of Public Health Epidemiologists (APHE) to question whether the surveillance system might not be a teensy weensy bit over-sensitive. More than two-thirds (17 312) of cases met the case definition for elvisitis Type I (impersonator) whereas the majority of the residual cases met the definition for the less common, yet more severe elvisitis Type T (tribute artist). The exceptionally high number of cases can likely be explained by the seasonal significance of the date, Aug. 16, 2002, which marked the 25th anniversary of the death of Elvis Presley.

There was significant spatial clustering in the southeastern section of the United States with an epicentre in Memphis, Tennessee, although sporadic cases were reported as far south as New Mexico, north to Alaska and as far west as the transfer lounge of the Honolulu airport in Hawaii, where a vending machine conveniently dispenses leis. The district health unit in Las Vegas, Nevada, which experiences alarmingly high endemic rates of elvisitis anyway, reported such an unusually high number of cases among youth that it produced an aberrant incidence rate nearly an octave above the typical baseline.

In addition to spatial clustering, the outbreak displayed many of the epidemiologic features characteristic of previous outbreaks of elvisitis, including a mean incubation period of 40 years, an overwhelming predilection for males, increased severity with older age, hip fracture sequelae and seasonal peaks on the anniversary of Elvis's birth and purported death.

Fortunately, episodes of florid elvisitis are short-lived and self-remitting. Signs and symptoms tend to resolve within 24 hours of onset. Treatment is primarily supportive. Anecdotal reports suggest the rate of recovery can be accelerated with the application of dim lights, a tepidly appreciative audience and a cup of chamomile tea (for the caregiver).

Table 1: Distinguishing features (males only)

Elvisitis	Austinitis
Phoney – "Oh baby"	Dysphonia – "Awo beehaive"
Brisk cremasteric reflex	Absent cremasteric reflex
Photophobia	Myopia
Facial palsy (lip curl)	Incisor protrusion (buck teeth)

Elvisitis is a member of the emerging class of pathogens, *Iconoclus celebriitis*, first recognized in 1962 when an outbreak of Bonditis left a significant proportion of the British viewing audience shaken, but not stirred up enough to take much action. Overall the spectrum of illness is mild and fairly harmless, with nationalistic features that mirror popular cultural preoccupations. Canadian physicians are reminded of the distinguishing features (Table 1) between Elvisitis and the much milder Canadian variant Austinitis, which first appeared in Canada in 1997. Notably, these distinctions are gender-specific and are found pretty much exclusively in males. Infections of the *I. celebriitis* class appear to afflict females identically and are restricted largely to ocular manifestations characterized by a congruent left lateral, superior and right lateral fluid gaze motion. (Basically, women just roll their eyes.)

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