

## **Human Rabies Death:** Lessons Learned and the Importance of Continued Awareness and Education

**Human rabies death** is more common than people realize. According to the **Centers for Disease Control and Prevention (CDC)**, **2 to 3 people in the US die of rabies each year.**<sup>1</sup> While that number reflects a significant decline compared with approximately 100 deaths a century ago,<sup>1</sup> there is still cause for concern among healthcare providers and public health agencies who manage human rabies exposures.

### **Fatal Human Rabies Cases in 2013 and 2014**

**More than a third of US human rabies cases are diagnosed only after the patient has died,**<sup>2</sup> and **approximately 1000 cases of unexplained encephalitis are seen in the US each year on average.**<sup>3</sup>

In 2011, a Maryland man received a kidney transplant from a deceased donor who had lived in Florida and North Carolina.<sup>4</sup> In 2013, the Maryland man began experiencing symptoms consistent with rabies, eventually dying from the disease a full year and a half after the kidney transplant. After a detailed medical investigation by the CDC, the source of the Maryland man's disease was determined to be the organ donor, a young man who died of unexplained encephalitis that had been attributed to complications from severe gastroenteritis. **The CDC's investigation revealed that both the organ donor and the recipient in Maryland had died of a variant of the rabies virus carried by raccoons.**



More recently, a 52-year-old Missouri man died in September 2014.<sup>5</sup> It was reported that the victim had been infected with a rabies virus variant associated with the tricolored bat.<sup>5</sup> The victim was said to have found bats in his home and at his workplace a month before his symptoms began, and he may have unknowingly sustained a bite.<sup>6</sup>

### **Lessons Learned**

In the case of the Maryland death in 2013 associated with the **organ donor**, better communication between the healthcare provider and the originally exposed patient and his family might have yielded a different outcome. In compliance with current organ donation policy, family members of the donor completed a questionnaire at the time of death including the decedent's exposure to potentially rabid animals or receipt of rabies postexposure prophylaxis (PEP).<sup>4</sup> But when asked if the donor



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had been exposed to potentially rabid animals, the family answered “no,” presumably unaware that the raccoons kept penned on the family property fell into the category of potentially rabid animals. The fact that the donor had sustained bites from these raccoons was never revealed in the patient’s history until the CDC investigation of the Maryland organ recipient’s death.<sup>4</sup> If the donor’s family had a better understanding of which animals could be potentially rabid and the risks associated with raccoon bites, the donor’s organs would not have been accepted for donation and the Maryland organ recipient might be alive today.

In the case of the Missouri man who died in 2014, he was presumably not aware of the rabies threat associated with bats, whether a bite is apparent or not. Had he known this threat and contacted his local health department or visited the emergency department, he might have been treated with rabies PEP and survived.

### **Education and Awareness Among Providers and Consumers Is Key**

**Providers in emergency departments, primary care offices, and pediatric offices need better education about rabies and PEP, as do consumers.**

**As an example, the University of Maryland Upper Chesapeake Health (UMUCH) treated more than 260 rabies virus exposures in 2012 and 2013. This increase in exposures versus previous years along with the death of the Maryland patient in 2013 encouraged UMUCH to take a more directed approach to education and management of rabies virus exposures.**

**Gary Hicks, Director of Education at UMUCH, notes that proactive and consistent information, action, and training are the keys to better outcomes. “To deal appropriately with rabies virus exposures, UMUCH has now standardized our postexposure prophylaxis procedures according to guidelines issued by the Advisory Committee on Immunization Practices (ACIP),” Hicks notes, “and we consistently train emergency department staff on these protocols.”**

**Hicks also points to another effective tactic—the development of a standardized discharge kit for patients receiving PEP. “This ensures that patients comply with the vaccine schedule and are counseled on the importance of getting their follow-up rabies vaccines.”**

**The prevention of human rabies deaths begins with increased awareness and better education among healthcare professionals, public health professionals, and the general public. That was the conclusion of researchers investigating the 2013 Maryland death, along with improved screening of organ donors to recognize infectious encephalitis and closer monitoring of transplant recipients.<sup>4</sup>**

While human rabies deaths have been significantly reduced over the last 100 years, the most desirable outcome is not a decline but the elimination of human rabies deaths.



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For more information, go to [www.rabieswatch.com](http://www.rabieswatch.com)

## References

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**GRIFOLS**

SUMMER/FALL 2015, Issue #2