CDC assesses potential human exposure to prion diseases

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Researchers from the Centers for Disease Control and Prevention (CDC) have examined the potential for human exposure to prion diseases, looking at hunting, venison consumption, and travel to areas in which prion diseases have been reported in animals. Three prion diseases in particular – bovine spongiform encephalopathy (BSE or "Mad Cow Disease"), variant Creutzfeldt-Jakob disease (vCJD), and chronic wasting disease (CWD) – were specified in the investigation. The results of this investigation are published in the June issue of the *Journal of the American Dietetic Association*.

"While prion diseases are rare, they are generally fatal for anyone who becomes infected. More than anything else, the results of this study support the need for continued surveillance of prion diseases," commented lead investigator Joseph Y. Abrams, MPH, National Center for Emerging and Zoonotic Infectious Diseases, CDC, Atlanta."But it's also important that people know the facts about these diseases, especially since this study shows that a good number of people have participated in activities that may expose them to infection-causing agents."

Although rare, human prion diseases such as CJD may be related to BSE. Prion (proteinaceous infectious particles) diseases are a group of rare brain diseases that affect humans and animals. When a person gets a prion disease, brain function is impaired. This causes memory and personality changes, dementia, and problems with movement. All of these worsen over time. These diseases are invariably fatal. Since these diseases may take years to manifest, knowing the extent of human

exposure to possible prion diseases could become important in the event of an outbreak.

CDC investigators evaluated the results of the 2006-2007 population survey conducted by the Foodborne Diseases Active Surveillance Network (FoodNet). This survey collects information on food consumption practices, health outcomes, and demographic characteristics of residents of the participating Emerging Infections Program sites. The survey was conducted in Connecticut, Georgia, Maryland, Minnesota, New Mexico, Oregon, and Tennessee, as well as five counties in the San Francisco Bay area, seven counties in the Greater Denver area, and 34 counties in western and northeastern New York.

Survey participants were asked about behaviors that could be associated with exposure to the agents causing BSE and CWD, including travel to the nine countries considered to be BSE-endemic (United Kingdom, Republic of Ireland, France, Portugal, Switzerland, Italy, the Netherlands, Germany, Spain) and the cumulative length of stay in each of those countries. Respondents were asked if they ever had hunted for deer or elk, and if that hunting had taken place in areas considered to be CWD-endemic (northeastern Colorado, southeastern Wyoming or southwestern Nebraska). They were also asked if they had ever consumed venison, the frequency of consumption, and whether the meat came from the wild.

The proportion of survey respondents who reported travel to at least one of the nine BSE endemic countries since 1980 was 29.5%. Travel to the United Kingdom was reported by 19.4% of respondents, higher than to any other BSE-endemic country. Among those who traveled, the median duration of travel to the United Kingdom (14 days) was longer than that of any other BSE-endemic country. Travelers to the UK were more likely to have spent at least 30 days in the country (24.9%) compared to

travelers to any other BSE endemic country. The prevalence and extent of travel to the UK indicate that health concerns in the UK may also become issues for US residents.

The proportion of survey respondents reporting having hunted for deer or elk was 18.5% and 1.2% reported having hunted for deer or elk in CWD-endemic areas. Venison consumption was reported by 67.4% of FoodNet respondents, and 88.6% of those reporting venison consumption had obtained all of their meat from the wild. These findings reinforce the importance of CWD surveillance and control programs for wild deer and elk to reduce human exposure to the CWD agent. Hunters in CWD-endemic areas are advised to take simple precautions such as: avoiding consuming meat from sickly deer or elk, avoiding consuming brain or spinal cord tissues, minimizing the handling of brain and spinal cord tissues, and wearing gloves when field-dressing carcasses.

According to Abrams, "The 2006-2007 FoodNet population survey provides useful information should foodborne prion infection become an increasing public health concern in the future. The data presented describe the prevalence of important behaviors and their associations with demographic characteristics. Surveillance of BSE, CWD, and human prion diseases are critical aspects of addressing the burden of these diseases in animal populations and how that may relate to human health."

More information: The article is "Travel history, hunting, and venison consumption related to prion disease exposure, 2006-2007 FoodNet population survey" by Joseph Y. Abrams, MPH; Ryan A. Maddox, MPH; Alexis R Harvey, MPH; Lawrence B. Schonberger, MD; and Ermias D. Belay, MD. It appears in the *Journal of the American Dietetic Association*, Volume 111, Issue 6 (June 2011)

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