associated with *E. faecium* swine strains, might mirror wide dissemination of a host-specific clone more prone than others to acquire and spread different antimicrobial resistance, as reported for human clinical *E. faecium* isolates (9). Since enterococci from swine are able to colonize in the human gut (5,7) and isolates harboring purK-9 can be recovered from hospitalized patients with severe infections (10), specific swine enterococcal strains might represent a risk for antimicrobial resistance spread in the clinical setting. Further analyses need to be performed to understand the role of international animal movements, animal feed, and colonized farmers in the spread of this particular strain and to assess whether this clone shows an increased fitness in the porcine intestine when compared to other *E. faecium* strains.

C. Novais was supported by a fellowship from Fundação para a Ciência e Tecnologia (SFRH/BD/3372/2000).

**Carla Novais,** Teresa M. Coque,†
Patrick Boerlin,‡
Inmaculada Herrero,§
Miguel A. Moreno,§
Lucas Dominguez,§
and Luisa Peixe*†

*REQUIMTE at Universidade do Porto, Porto, Portugal; †Hospital Universitario Ramón y Cajal, Madrid, Spain; ‡University of Guelph, Ontario, Canada; and §Universidad Complutense de Madrid, Madrid, Spain

**References**

1. Phillips I, Casewell M, Cox T, Groot B, Friis C, Jones R, et al. Does the use of antibiotics in food animals pose a risk to human health? A critical review of published data. J Antimicrob Chemother. 2004;53(Suppl 1):28–52.

2. Teuber M. Veterinary use and antibiotic resistance. Curr Opin Microbiol. 2001;4:493–9.

3. Johnsen PJ, Østerhus JI, Sletvold H, Sorum M, Kruse H, Nielsen K, et al. Persistence of animal and human glycopeptide-resistant enterococci on two Norwegian poultry farms formerly exposed to avoparcin is associated with a widespread plasmid-mediated vanA element within a polyclonal *Enterococcus faecium* population. J Antimicrob Chemother. 2000;45:565–73.

4. Boerlin P, Wissing A, Aarestrup F, Frey J, Nicolet J. Antimicrobial growth promoter ban and resistance to macrolides and vancomycin in enterococci from pigs. J Clin Microbiol. 2001;39:4193–5.

5. Hammerum A, Lester C, Neumann J, Porso L, Olsen K, Jensen L, et al. A vancomycin-resistant *Enterococcus faecium* isolate from a Danish healthy volunteer, detected 7 years after the ban of avoparcin, is possibly related to pig isolates. J Antimicrob Chemother. 2004;53(Suppl 3):547–9.

6. Novais C, Coque TM, Sousa JC, Baquero F, Peixe L. Genetic patterns within a vancomycin-resistant *Enterococcus faecalis* clone isolated in three hospitals in Portugal. Antimicrob Agents Chemother. 2004;48:3613–7.

7. Homan WL, Tribe D, Poznanski S, Li M, Hogg G, Spalburg E, et al. Multilocus sequence typing scheme for *Enterococcus faecium*. J Clin Microbiol. 2002;40:1963–71.

8. Woodford N, Adelby AMA, Palepou MFI, Cookson B. Diversity of VanA glycopeptide resistance elements in enterococci from humans and animals. Antimicrob Agents Chemother. 1998;42:502–8.

9. Willems RJL, Top J, van Santen M, Robinson A, Coque TM, Baquero F, et al. Global spread of vancomycin-resistant *Enterococcus faecium* from distinct nosocomial genetic complex. Emerg Infect Dis. 2005;11:821–8.

10. Coque TM, Willems RJ, Fortun J, Top J, Diz S, Canton R, et al. Population structure of *Enterococcus faecium* causing bacteremia in a Spanish university hospital: setting the scene for a future increase in vancomycin resistance? Antimicrob Agents Chemother. 2005;49:2693–700.

Address for correspondence: Luisa Peixe, REQUIMTE, Laboratório de Microbiologia, Faculdade de Farmácia, Universidade do Porto, Rua Anil Cunha, 4050-030 Porto, Portugal; fax: 351-2-200-3977; email: lpeixe@if.up.pt

---

**Rabies Vaccine Baits, Pennsylvania**

To the Editor: Oral rabies vaccine (ORV) programs control rabies in terrestrial reservoir species by distributing vaccine in baits (1). The current US-licensed ORV consists of a rabies virus glycoprotein gene inserted into the thymidine kinase gene of an attenuated strain of the Copenhagen vaccinia virus (V-RG) (2). Safety experience includes extensive animal studies (2,3) in which significant adverse effects were seen only with parenteral (but not mucosal) exposure of nude mice to V-RG (4). Usage monitoring (4,5) found only 1 human adverse complication to date (6).

We report our experience monitoring pet and human exposure to V-RG as part of a multiagency federal-state cooperative program that distributed 1,710,399 V-RG-laden baits from August 11, 2003, to September 17, 2003, over 25,189 km² of western Pennsylvania (human population =3 million). The baits consisted of a vaccine-filled plastic sachet surrounded by a fishmeal polymer. Workers distributed these baits on the ground from vehicles or by air from fixed-wing aircraft using conveyor belts. Aircraft did not release baits when over homes or other areas where humans or pets were likely to be present. Given the limitations of dispersing 1,421,517 baits at a frequency of 75 to 150 baits/km² from 200 m in the air, human habitat could not be totally avoided.

Each bait was printed with a toll-free phone number. Phone calls were routed to a local or district health department where an ORV-specific form adapted from the Ohio State Health Department was used to collect uniform information about bait contact.

During the 2003 campaign, Pennsylvania health departments and districts received 105 reports from persons who found 190 baits. This rate of reporting, 6.1 per 100,000
baits, is in the midrange of other published reports (0.12–50 per 100,000 baits) (5,6).

Of the 105 reports, 69 involved persons who picked up or had other skin contact with baits, and 8 reported likely contact with vaccine. Four involved persons who were hit by baits from the air. Seventy reports involved a pet or pets. In 66 reports, the pet was a dog. In 56 reports, a dog picked up the bait in its mouth. Eight of these dogs ate the bait, and another 6 ruptured the plastic sachet.

The only definite human exposure to vaccine occurred when a dog ruptured a bait and contaminated its owner’s hands. Seven reports of possible human contact with vaccine involved 10 persons. No documented adverse reactions were associated with any definite or potential human exposures.

Of the 7 reports of possible human vaccine exposures, 3 incidents (4 persons) involved owners who put hands or fingers in a dog’s mouth to retrieve a bait, 1 incident involved a dog that licked 2 children right after rupturing the bait, and 2 incidents (3 persons of whom 2 were children) involved picking up a potentially ruptured bait.

The final possible exposure to vaccine involved 1 of 4 persons hit by a bait. This person reported that after being struck, pink liquid spilled out of the bait. The bait was examined by program personnel and appeared to be intact. The other 3 persons (including 1 child) hit by baits did not report vaccine contact or injury.

One uninsured person, who was sent to a hospital emergency room because of potential vaccine exposure to the eye, signed out against medical advice to avoid receiving a bill. This person was seen by a family nurse practitioner 2 weeks later. Results of an examination were normal, and the person refused to have blood drawn for rabies or vaccinia titers.

Eleven children were involved in 9 credible incidents. In addition to the previously described children, 6 children picked up intact baits. We received 2 noncredible reports: a child with a dog ate a bait and a child licked a bait. In the first case, the child was in a different city at the time the alleged incident occurred, and in the second case, the caller refused to supply any information that could be used to validate the episode.

Posters, brochures, a press conference, and press releases have been used to educate the public to take precautions (for example, wash exposed skin and never remove bait from an animal’s mouth) necessary to protect the most vulnerable. Callers were asked questions to determine their ORV awareness. Seventy-nine callers (75%) did not know about ORV activities, and 75 (71%) did not know what the bait was before speaking with us. Those who did know about the program had most often learned about ORV programs through paid radio announcements in neighboring Ohio.

Modifications for 2004 included an increase in media outreach in smaller markets and increased hand baiting. We received fewer reports (51, or 2.9 per 100,000 baits) of persons finding baits in 2004.

Acknowledgments

We thank the many dedicated employees of the Allegheny County Health Department, Erie County Department of Health, Pennsylvania Department of Agriculture, Pennsylvania Department of Health, US Centers for Disease Control and Prevention, and the US Department of Agriculture (Animal and Plant Health Inspection Service–Wildlife Services), as well as Renee Groner, Anita Lukacs, Joan McMahon, Karen Martin, David Myers, Joan O’Dair, Doug Range, Bruce Schmucker, Jason Suckow, Craig Swepe, and Carol Teacher for their work with the rabies ORV program.

Virginia M. Dato* and Charles Rupprecht†

References

1. Rupprecht CE, Hanlon CA, Slate D. Oral vaccination of wildlife against rabies: opportunities and challenges in prevention and control. Dev Biol (Basel). 2004;119:173–84.
2. Hanlon CA, Niezgoda M, Shankar V, Niu HS, Koprowski H, Rupprecht CE. A recombinant vaccinia-rabies virus in the immunocompromised host: oral innocuity, progressive parenetal infection, and therapeutics. Vaccine. 1997;15:140–8.
3. Rupprecht CE, Hanlon CA, Cummins LB, Koprowski H. Primate responses to a vaccinia-rabies glycoprotein recombinant virus vaccine. Vaccine. 1992;10:368–74.
4. United States Department of Agriculture, Animal and Plant Health Inspection Service. Monitoring report. Calendar year 2003 for environmental assessment. Oral vaccination to control specific rabies virus variants in raccoons, gray foxes, and coyotes in the United States. Riverdale (MD): The Department; 2003.
5. McGuill MW, Kreindel SM, DeMaria A Jr, Robbins AH, Rowell S, Hanlon CA, et al. Human contact with bait containing vaccine for control of rabies in wildlife. J Am Vet Med Assoc. 1998;213:1413–7.
6. Rupprecht CE, Blass L, Smith K, Orciari LA, Niezgoda M, Whitfield SG, et al. Human infection due to recombinant vacciniarabies glycoprotein virus. N Engl J Med. 2001;345:582–6.

*Pennsylvania Department of Health, Pittsburgh, Pennsylvania, USA; and †Centers for Disease Control and Prevention, Atlanta, Georgia, USA