

Use of Raw Milk Persists Despite Rabies Scare

BY JOHN R. BELL
Associate Editor

SAN ANTONIO — People who drank raw milk purchased at an Oklahoma dairy where a cow tested positive for rabies last year were screened for susceptibility—and in some cases given postexposure prophylaxis—yet this did not deter most from continuing to buy raw milk, according to Kristy Bradley, D.V.M., of the Oklahoma State Department of Health.

The situation was of special concern, not only because of the large number of persons at risk for rabies exposure from the dairy, which sold an average of 300 gallons of raw milk per day, but also because some of the raw-milk purchasers were cancer patients.

"There was a physician in the area who told them that [raw milk] would help them counteract the effects of their chemotherapy and radiation therapy," Dr. Bradley reported at a meeting of the Southwest Conference on Diseases in Nature Transmissible to Man.

The state health department decided to administer rabies postexposure prophylaxis (PEP) to selected persons who had consumed milk from the Swan Bros. dairy in Claremore during the time the infected cow was present, she said. However, the high cost of PEP meant that screening was necessary to identify those in whom the milk likely had contact with the oral mucosa or in whom there was passage of the milk into the sinuses.

Also deemed at high risk were those with an anatomical defect of the sinus, pharynx, or hard/soft palate; open sores in the mouth, pharynx, or esophagus; recent oral surgery; very severe pharyngitis or tonsillitis; or immunosuppression.

An estimated 850 persons were screened via a phone bank, and PEP was given to 125 people (15%). Some persons not deemed at risk insisted on receiving PEP, while others who were advised to receive it chose not to—in some cases upon the advice of their physician, Dr. Bradley said.

The Department of Health later administered a telephone questionnaire to those who received PEP to determine if their milk-buying habits had changed; some refused to respond, believing the questionnaire to be part of a government conspiracy, Dr. Bradley reported. Some even "thought their phones were being

tapped" during the phone call.

Of 93 households contacted, 72 responded to the questions. They consumed a mean of 3 gallons per week of raw milk, and 51% of respondents cited a belief that raw milk offers greater health benefits as their primary reason for buying unpasteurized milk. Such benefits cited by the respondents were an absence of the chemicals contained in homogenized milk, improved amino acid content, better intestinal absorption, and greater vitamin and mineral content.

Surprisingly, nearly 75% knew that raw milk can contain disease-causing bacteria or viruses, and 64% said they continued to buy raw milk after the rabies incident.

Oklahoma, unlike Texas, does not normally administer biologics to persons exposed to rabies, Dr. Bradley noted. However, the high-profile nature of the case and the fact that many physicians' offices would be closed for the holidays motivated the commissioner of public health to administer PEP to at-risk persons in this case.

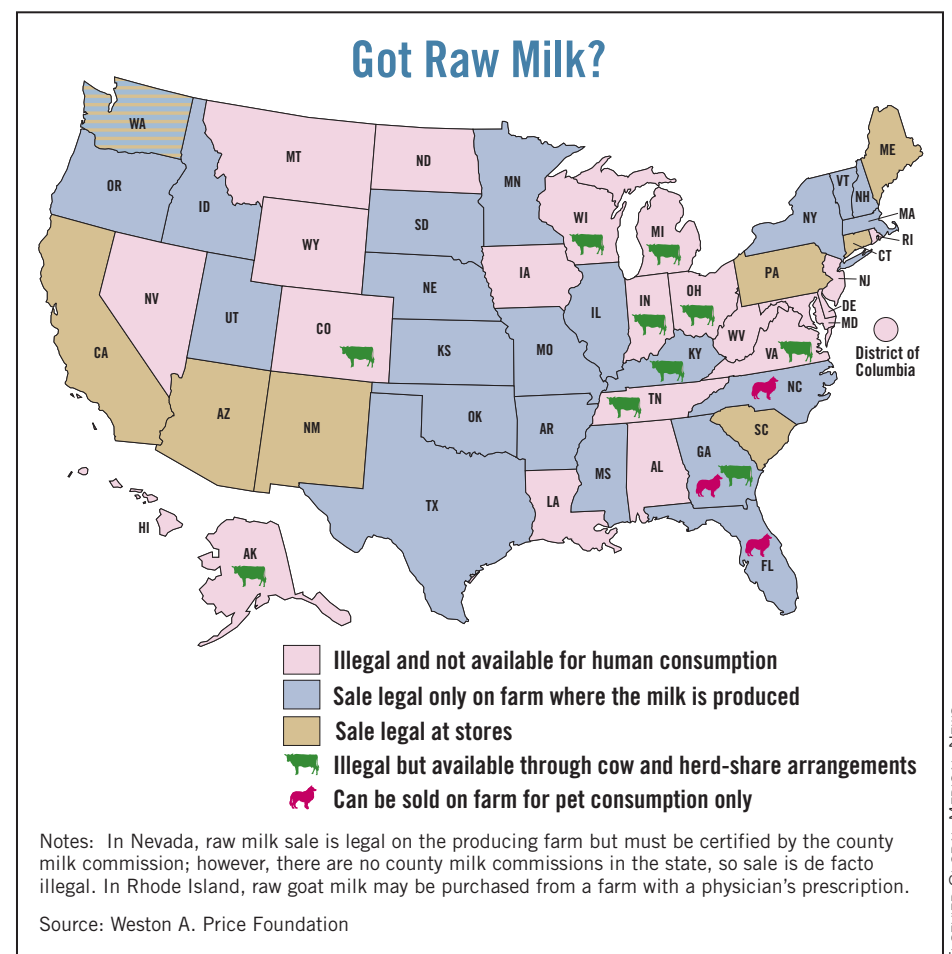
She added that her office also was motivated by a belief that primary care physicians were "not very well informed about rabies PEP."

The incident began on Dec. 20, 2005, when the state health department received a positive laboratory rabies result for one cow at the dairy, which is near Tulsa. (Oklahoma requires all dairies to test milk for various microbes four times every 6 months.) The cow had started to have symptoms of a neurologic disorder on Dec. 14 but was not culled from the herd; nor had any preventive action been taken by the dairy regarding milk produced by this cow or milk that had been commingled with the milk from the symptomatic animal. The cow died 4 days after showing symptoms, and the state department of health sent the cow's brain to the Centers for Disease Control and Prevention, where it was confirmed that the cow had rabies.

The risk of contracting rabies from cow's milk is poorly defined, Dr. Bradley said.

She explained that transmission of the rabies virus via oral ingestion requires a much higher dose than does transmission via a bite. Moreover, oral transmission requires extended contact with the oral or nasal mucosa, the latter being the more effective transmission medium.

Dr. Robert Baltimore, professor of pe-



diatrics and epidemiology at Yale University, New Haven, and a member of the American Academy of Pediatrics Infectious Diseases Committee, noted in an interview that the risks of raw milk consumption are well established.

"Pasteurization of milk is, of course, one of the public health measures most of us take for granted, and it protects us against a variety of infections," he said. "While pasteurization does change the chemistry of the milk slightly, there are no health benefits of raw cow's milk. I would be especially cautious about cancer patients receiving raw milk."

"Milk has been demonstrated to be the transmission agent for brucellosis, tuberculosis, diphtheria, streptococci, *Salmonella*, *Shigella*, *Campylobacter*, *Yersinia*, *Listeria*, and staphylococcal enterotoxin," he added.

"The degree of risk for any of these infections is related to the care and screening of the cows from whom the milk is taken and the care in holding of the milk until it is sold.

"I would not drink raw milk or recommend it to my patients," he emphasized.

However, fear of rabies transmission generally is not among the reasons physicians advise against drinking raw milk, Dr. Baltimore said.

Nonetheless, he noted that a 1999 report from the CDC found that "because of the nearly 100% case-fatality ratio of human rabies and the virtually complete effectiveness of PEP, many mass exposure incidents prompt administration of rabies immune globulin and vaccine, even if the circumstances do not meet the criteria for exposure. However, because rabies virus is inactivated by temperatures below those used for cooking and pasteurization, eating cooked meat or drinking pasteurized milk from a rabid animal is not an indication for PEP. ... Transmission of rabies virus in unpasteurized milk is theoretically possible" (MMWR 1999;48:228-9).

Although the federal government regulates interstate sales of all milk, intrastate sales are regulated by the states only, which vary in their restrictions. (See chart.) ■

Tympanograms Are Useful to Estimate Middle Ear Effusion

Two methods for estimating the odds of middle ear effusion were confirmed in a review of tympanometric and otoscopic data from children younger than 3 years conducted by Clyde G. Smith, M.S., an audiologist at Children's Hospital of Pittsburgh, and his colleagues.

A total of 6,350 children were enrolled as healthy infants when they were 2-6 days old, between June 1991 and December 1995. They had monthly otoscopic

evaluations until 3 years of age, at which point 3,427 children had at least one tympanogram suitable for evaluation.

The overall likelihood of middle ear effusion (MEE) increased with tympanometric measures of lower height, greater width, and negative pressure among children aged 6-35 months. Middle ear effusion in cases with flat tympanograms was diagnosed in 174 of 217 (80%) ears in children aged 6-35 months, compared with 20 of

35 (57%) ears in children younger than 6 months.

The tympanograms from most healthy children older than 6 months are at least 0.3 mL high and 200 decaPascals, or daPa, wide, and they are rarely associated with MEE, but a flat tympanogram may raise the index of suspicion, the researchers explained (Pediatrics 2006;118:1-13).

As an alternative to comparing the tympanometric findings with age-based values, the researchers

created a mathematical algorithm that combined the tympanometric variables of height, pressure, and width, and applied it to the 4,761 ears for which all three of these values were available.

For example, in children aged 6-35 months, MEE was present in 1.9% of ears with a tympanometric height of 0.6 mL or higher and 0-200 daPa width and 6.3% of ears with a tympanometric height of 0.6 mL or higher and a 201-300 width. No effusion was found in

ears with a tympanometric height of 0.6 mL and a width of at least 301 daPa. Based on the algorithm, the area under the curve was 0.84; values from 0.80-0.90 tend to be accurate predictors.

There were no clinically significant differences between the empirical and algorithmic methods in terms of ability to predict MEE. The study was supported in part by donations from GlaxoSmithKline and Pfizer, Inc.

—Heidi Splete