

Adventitious Viruses and Smallpox Vaccine

To the Editor: Recently, Murphy and Osburn (1) strongly argued for testing old smallpox vaccine stocks made in animal skin for adventitious infectious agents such as viruses, mycoplasmas, and eventually, prions. Their argument appears clearly justified after unexpected cases of myopericarditis occurred during recent campaigns of smallpox vaccinations in the United States (2).

To the long list of bovine viruses cited in this paper, it seems necessary to add another, the pseudocowpox virus, a widespread parapoxvirus that may infect humans. During the 1960s, this virus was identified in vaccine lymph from a heifer at the Institut Pasteur, Paris (3).

In humans, this virus is responsible for limited skin lesions, more frequently in immunocompromised patients. Mainly farmers and butchers are affected. Pseudocowpox virus is easily differentiated from orthopoxviruses such as vaccinia virus by the virus's peculiar form on transmission electron microscopy scan, but polymerase chain reaction is probably the best detection method (4). In fact, many other more hazardous viruses may be found in the oldest stocks of smallpox vaccine and deserve more attention than previously considered.

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References

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Fluoroquinolone Use in Food Animals

To the Editor: Two recent articles (1,2) show that fluoroquinolone use in food animals is associated with infections by antimicrobial drug-resistant strains of *Campylobacter* in humans. These infections cause problems in treating illnesses as well as increased rates of illness and death (3). Despite a large body of scientific evidence and a judicial review (1-3) that show harmful results in many persons, some members of the poultry and pharmaceutical industries argue that fluoroquinolone use in food animals has no adverse effects in humans (4) and continue to supply these drugs for use in poultry (2,5). The use of these drugs has caused rapidly increasing resistance rates in most countries. In the United States, 19% of *Campylobacter* isolates from humans are now ciprofloxacin resistant (2), and resistance rates >80% are seen in Spain (5). By contrast, in Australia, where fluoroquinolones were never approved for use in food animals, domestically acquired infections with fluoroquinolone-resistant *Campylobacter* spp. are rarely found in humans (6). Drug-resistant *Escherichia coli* is also of concern. In Spain, humans frequently acquire fluoroquinolone-

resistant *E. coli* associated with fluoroquinolone use in poultry (7).

In the United States, better controls in meat and poultry slaughter and processing, as well as improved food-safety education campaigns, have resulted in 28% fewer *Campylobacter* infections annually since 1996 (8). However, ≈1.8 million persons (600 per 100,000) are likely to contract symptomatic *Campylobacter* infections per year (3,8), and fluoroquinolone resistance is now 19% (2). Thus, the risk of a person's contracting fluoroquinolone-resistant *Campylobacter* infection is 114 per 100,000 per year. If 80% of *Campylobacter* infections are foodborne (3), and 90% of these infections are acquired from poultry (9), then ≈82 of 100,000 persons per year will contract ciprofloxacin-resistant *Campylobacter* infections from poultry each year. Most persons with *Campylobacter* infections would not benefit from antimicrobial drug therapy. However, if only 10% of infected persons would benefit from antimicrobial drug therapy, fluoroquinolone use in poultry could cause ≈82 persons per million to have a compromised response to therapy. In the United States (population 300 million), this number translates to >24,000 persons annually.

Data on the number of animals that receive fluoroquinolones are difficult to find. Bayer (manufacturer of the only fluoroquinolone used in poultry in the United States) states that Baytril (enrofloxacin) is used in <1% of US broiler flocks (4). This statistic allows us to estimate how many persons will potentially have an adverse outcome compared to the number of animals receiving fluoroquinolones. If 24,000 persons in the United States have an adverse outcome annually after <84 million chickens (1% of 8.4 billion) are treated with enrofloxacin, then ≈285 persons are at risk of having an adverse outcome for every 1 million chickens treated.