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Letter to the Editor

Sustained Decrease in the Rate of *Escherichia coli* O157:H7–Positive Raw Ground Beef Samples Tested by the Food Safety and Inspection Service

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We recently reported results obtained from the Food Safety and Inspection Service (FSIS) regulatory testing program for *Escherichia coli* O157:H7 in raw ground beef for the period October 1994 through September 2003 (FY1995 through FY2003) *(2).* In addition to providing a summary of microbiological test results, this report also identified a 50% reduction in the rate of *E. coli* O157:H7–positive results from FY2002 to FY2003 as estimated by a Poisson regression model *(2).* We attributed this decrease to both industry actions and regulatory actions by FSIS. However, we acknowledged that continual monitoring would be necessary to document that this observed decrease represented the beginning of a sustained trend, rather than simply reflecting annual variation. Here, we describe subsequent raw ground beef testing from October 2003 through September 2004 (FY2004) and report results obtained when including these data in the previously described model.

During FY2004, 7,294 raw ground beef samples were tested, and 15 (0.2%) tested positive for *E. coli* O157:H7. Of these samples, 6,710 (92.0%) were verification samples collected from federally inspected establishments, of which 14 (0.2%) tested positive. None of the samples obtained from retail outlets during FY2004 ($n = 497$ samples) tested positive for *E. coli* O157:H7. (In May 2004, a change in instructions to field personnel concerning sample collection from retail outlets occurred, reducing the number of samples tested from retail outlets relative to previous years *(3).*) The remaining 87 samples were collected from state-inspected establishments, from shipments of imported ground beef, or during intensified testing in establishments subsequent to the identification of an *E. coli* O157:H7–positive sample (i.e., follow-up testing). One positive sample was obtained during follow-up testing in a federally inspected establishment during FY2004.

Using the previously described Poisson regression model, we estimated that a 54% reduction in the rate of *E. coli* O157:H7–positive raw ground beef samples collected from all sources occurred from FY2003 to FY2004 (95% confidence interval [CI] = 79% decrease to 1% increase; $P = 0.05$). For the subset of verification samples collected from federally inspected establishments, a 49% decrease (95% CI = 77% decrease to 14% increase; $P = 0.10$) was estimated. We were unable to model changes for the subset of verification samples collected at retail outlets because of small sample numbers. As previously discussed, low statistical power remained a problem for this analysis *(2).*

In addition to year-to-year comparisons, the same model was used to compute ratios and 95% CI that compared the rates of *E. coli* O157:H7–positive raw ground beef samples observed in FY2003 and FY2004 to the rate observed during a defined reference period. Initially, FY2000 was defined as the reference period because it represented the first year in which laboratory detection methods incorporated a 325-g sample and immunomagnetic separation. Subsequently, the rates for FY2003 and FY2004 were compared with the average rate for each of two additional reference periods, the period from FY2000 through FY2001 and the period from FY2000 through FY2002. The decline observed in FY2003 was consistent regardless of the choice of reference period (Table 1). This decline was sustained in FY2004. Further, the choice of reference period did not appear to improve the precision of the estimates.

These supplemental analyses, together with ongoing

TABLE 1. *Estimated change in rate of* Escherichia coli *O157:H7–positive raw ground beef samples tested by the Food Safety and Inspection Service for FY2003 to FY2004 relative to each of three reference periods*

	% change (95% CI)[a]				
Reference period	FY2000	FY2001	FY2002	FY2003	FY2004
FY2000	—	−16 (−49 to 37%)	3 (−36 to 64%)	−49* (−8 to 72%)	−76* (−51 to −89%)
FY2000 and FY2001	—	—	13 (−25 to 68%)	−44* (−67 to −4%)	−74* (−87 to −49%)
FY2000, FY2002, and FY2002	—	—	—	−46* (−68 to −11%)	−75* (−87 to −52%)

[a] An asterisk indicates a significant change in rate relative to the reference period.

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surveillance for human illnesses resulting from *E. coli* O157:H7 infection, support our initial conclusion that the decrease in the rate of *E. coli* O157:H7–positive raw ground beef samples observed during FY2003 likely resulted from FSIS policy changes and industry actions rather than merely reflecting annual variation. Relative to FY2000, the significant decrease in the rate of *E. coli* O157:H7–positive raw ground beef samples tested by FSIS that was first observed in FY2003 has been sustained through FY2004. Further, the decline in human infections associated with Shiga toxin–producing *E. coli* O157 first identified by FoodNet in calendar year 2003 was sustained in calendar year 2004 *(1)*. For the first time, the incidence of these infections fell below the 2010 National Health Objective of 1.0 case per 100,000 persons *(4)*. As future data become available, changes in the rate of *E. coli* O157:H7 detection in raw ground beef samples tested by FSIS will be monitored, and the relationship between these changes and the incidence of human illnesses associated with Shiga toxin–producing *E. coli* O157 infections will continue to be explored.

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