Supplement to: '*Listeria monocytogenes* infection from foods prepared in a commercial establishment: a case-control study of potential sources of sporadic illness in the United States'

Sensitivity Analysis

We performed a sensitivity analysis to assess the impact of missing data on our findings. We selected a broad list of dichotomous variables eligible for imputation, including those that were statistically significant in univariate analysis, those that were known to be associated with Lm infection based on prior studies, and those that were representative of broad food categories. We created two imputed data sets: a "majority-rule" and a "minority-rule."[1] For the majority-rule data set, we imputed the same value as the value recorded for the majority of respondents (i.e., if 50% or more of subjects who answered a question had a "yes" value for the variable, the missing value was replaced with "yes.") For the minority-rule data set, we imputed a value opposite to the value recorded for the majority of respondents. We performed the same univariate and multivariate analysis on the imputed datasets that we did on the data that was not imputed. Results of this analysis are presented in **Table 1**.

Table 1. Multivariate analysis of risk factors for *Listeria monocytogenes* illness among patients enrolled in the study.

	Primary Analysis†		Sensitivity Analysis‡	
			Majority Rule	Minority Rule
Characteristic	**Odds Ratio (95% CI) p-value**	**Population Attributable Fraction (%)**	**Odds Ratio (95% CI) p-value**	**Odds Ratio (95% CI) p-value**
Having pre-existing liver disease	2.89 (1.14-7.33) 0.07	8.2	3.08 (1.26-7.5) 0.02	2.91 (1.24-6.86) 0.01
Eating hummus prepared in a commercial establishment	5.74 (1.72-19.13) <0.01	5.5	5.5 (1.64-18.45) <.01	5.54 (1.65-18.61) <.01
Eating Mexican-style cheese, purchased from a delicatessen counter	5.03 (0.83-30.56) 0.06	1.9	2.32 (1.12-4.81) 0.04	N/A*
Eating melons at a commercial establishment	2.63 (1.39-4.96) <0.01	10.6	2.45 (1.31-4.55) <.01	2.48 (1.33-4.62) <.01
Living on a cattle farm	13.75 (1.2-157.74) 0.02	1.6	13.88 (1.23-156.57) 0.02	14.32 (1.26-162.99) 0.02
Serotype 1/2a				
Having pre-existing liver disease	3.01 (0.81-11.16) 0.06	10.2	3.52 (0.95-13.03) 0.04	3.53 (1.01-12.3) 0.05
Eating hummus prepared in a commercial establishment	9.23 (1.79-47.68) <.01	6.0	12.88 (2.47-67.03) <.01	4.02 (0.74-22) 0.1
Eating melons at a commercial establishment	2.59 (0.97-6.93) 0.02	11.3	2.53 (0.94-6.84) 0.02	N/A*
Eating ice milk	7.04 (0.97-51.36) <.01	4.3	5.08 (0.6-42.68) 0.14	8.72 (1.39-54.66) <.01
Eating sorbet	1.99 (0.85-4.66) 0.11	13.5	N/A*	N/A*
Serotype 4b				
Eating hummus	3.19 (0.98-10.33) 0.02	8.0	N/A*	N/A*
Eating mussels	2.98		3.04	N/A*

	Primary Analysis†		Sensitivity Analysis‡	
			Majority Rule	Minority Rule
Characteristic	**Odds Ratio (95% CI) p-value**	**Population Attributable Fraction (%)**	**Odds Ratio (95% CI) p-value**	**Odds Ratio (95% CI) p-value**
	(0.81-11) 0.01	6.5	(0.8-11.58) 0.05	
Eating smoked salmon	2.27 (0.87-5.92) 0.09	9.2	2.11 (0.8-5.6) 0.13	2.45 (0.95-6.28) 0.06

†The primary analysis shows the multivariate analysis results performed without imputation for missing exposure data.

‡The sensitivity analysis shows the multivariate analysis results after data was imputed for missing food exposure data. In the majority rule, missing responses were imputed with the same value found in the majority of cases. In the minority rule, the value imputed was that found in the minority of cases. P-values do not account for uncertainty associated with imputation of data.

*N/A/ = not applicable. Variable was not selected for the sensitivity analysis so measures of association were not calculated.

1 Roderick JA, Little DB. Statistical Analysis with Missing Data, 2nd ed. New York, NY: Wiley 2002.