

National Advisory Committee on Meat and Poultry Inspection

January 13-14, 2015

Washington, DC

Subcommittee: FSIS' and Economic Research Service (ERS) Cost Calculation Model Charge

REPORT AND RECOMMENDATIONS

ERS is starting to plan for the next 5-year update of their cost-of-illness estimates. It would be helpful to have NACMPI's input on a number of questions relevant to the next 5-year update.

Question 1: What additional hazards (pathogen and non-pathogen) should ERS consider?

The Committee believes the current list of 15 pathogens is adequate, especially since there may not be sufficient data for other hazards to include them in the model. The committee suggested a data review to determine if inclusion of *Staphylococcus aureus* is appropriate. The committee also said that it would be useful, long-term, to develop a way to quantify the impact of the unknown pathogens in order to develop a more complete picture of the cost of foodborne illness.

The Committee believes that ERS should focus its list on foodborne pathogens, although in the future ERS should consider incorporating other hazards such as heavy metals, drug residues, and chemical contaminants if sufficient data are available. ERS should talk with FSIS and other agencies about prioritizing research in these areas, as appropriate. ERS should take into consideration antibiotic resistant pathogens, especially since those may change the disease cost-modeling outcomes. See CDC report, "Antibiotic Resistance Threats in the United States", 2013.

The Committee emphasized the importance of more frequent updating of foodborne illness incidence and attribution data by CDC. This data is critical for accurate and timely cost-modeling by ERS, though the Committee acknowledges the resource challenges in collecting this data. The Committee recommends that FSIS continue to support and collaborate on this work. Additional support by the Federal government for more frequent updating would be beneficial.

Question 2: For hazards for which Center for Disease Control and Prevention (CDC) does not have disease incidence estimates, how would you recommend developing estimates of incidence?

The Committee recommends that ERS continues to work with CDC to identify all relevant data.

Question 3: For any of the pathogens included in the current cost estimates, is the NACMPI aware of supporting evidence within the scientific literature on which to base revisions of existing estimates of the percentage of patients that have specific chronic sequelae or that would justify inclusion of additional chronic sequelae?

The Committee noted that the literature shows that illnesses from non-O157:H7 STEC are generally less severe than *E. coli* O157:H7. See the following research papers:

- Coombes, BK et al. 2008. Molecular analysis as an aid to assess the public health risk of non-O157 Shiga toxin-producing *Escherichia coli*. Appl. Environ. Microbiol. 74(7): 2153
- Karmali, MA et al. 2003. Association of genomic O island 122 of *Escherichia coli* seropathotypes that are linked to epidemic and/or serious disease. J. of Clinical Microbiol. Nov 2003 (41) pp 4930-4940.

The Committee emphasized the importance of including long-term health outcomes as part of the chronic sequelae. See the following research papers:

- Center for Foodborne Illness Research and Prevention, “The Long Term Health Outcomes of Selected Foodborne Pathogens.”
- Roberts T 2013, “Lack of Information is the Root of US Foodborne Illness Risk,” *Choices*. http://www.choicesmagazine.org/magazine/pdf/cmsarticle_300.pdf
- Suri RS. 2009. Relationship between *Escherichia coli* O157 and diabetes mellitus. *Kidney International* 75 Supplement 112, S44-S46.

The Committee emphasized the importance of including additional short-term outcomes as part of the disease model. See the following research paper:

- Nordstrom L, et al. 2013. Foodborne urinary tract infections: a new paradigm for antimicrobial-resistant foodborne illness. *Frontiers in Microbiology* 4:29.

Question 4: For any additional hazards that NACMPI recommends ERS consider, is NACMPI aware of supporting evidence within the scientific literature that would justify inclusion of chronic outcomes?

The Committee suggested ERS explore whether the effect of improved practices related to antibiotic use may have an impact on cost estimates if antibiotic resistance decreases are noted.

Question 5: Is NACMPI aware of supporting evidence within the literature that would suggest a change in the type or likelihood of health outcomes associated with pathogens in the current model? For example, have you seen advances in treatments/diagnoses that have led to a change in the percentage of hospitalizations that involve care in Intensive Care Unit (ICU) or a change in the likelihood of hospitalizations resulting in death?

The Committee noted that whole genome sequencing is leading to new information that may lead to new treatments and diagnoses which may impact cost estimates. The effect of antibiotic resistant pathogens on health outcomes may impact cost estimates as well.

Question 6: How best can ERS communicate information to users of its data?

The Committee recommended that ERS present its data in different ways, depending on the audience. The scientific community may prefer to access the raw data while the general public may prefer the data be presented in context with appropriate explanation. Further, Extension specialists may need a mix of the data and explanatory information. In addition, the Committee suggests that ERS share its data resources and collaborate with other Federal agencies and government initiatives such as Healthy People 2020.

Once attribution data becomes more robust, ERS should consider incorporating animal class/product/pathogen/preparation location information into its cost estimates.

The Committee noted that breaking out the ERS data by other variables such as ethnicity, income, location where illness occurred, etc. may provide useful information and help target resources, but noted that funding such work would require additional resources.