

Background

Foodborne botulism is a rapidly-progressive and potentially fatal paralyzing illness caused by the consumption of botulinum neurotoxin, most commonly produced by *Clostridium botulinum*. Refrigeration serves as the primary barrier to botulinum neurotoxin production in many minimally-processed foods meant to be refrigerated. However, when foods are not properly refrigerated, *C. botulinum* toxin production has occurred and caused foodborne botulism in the United States.

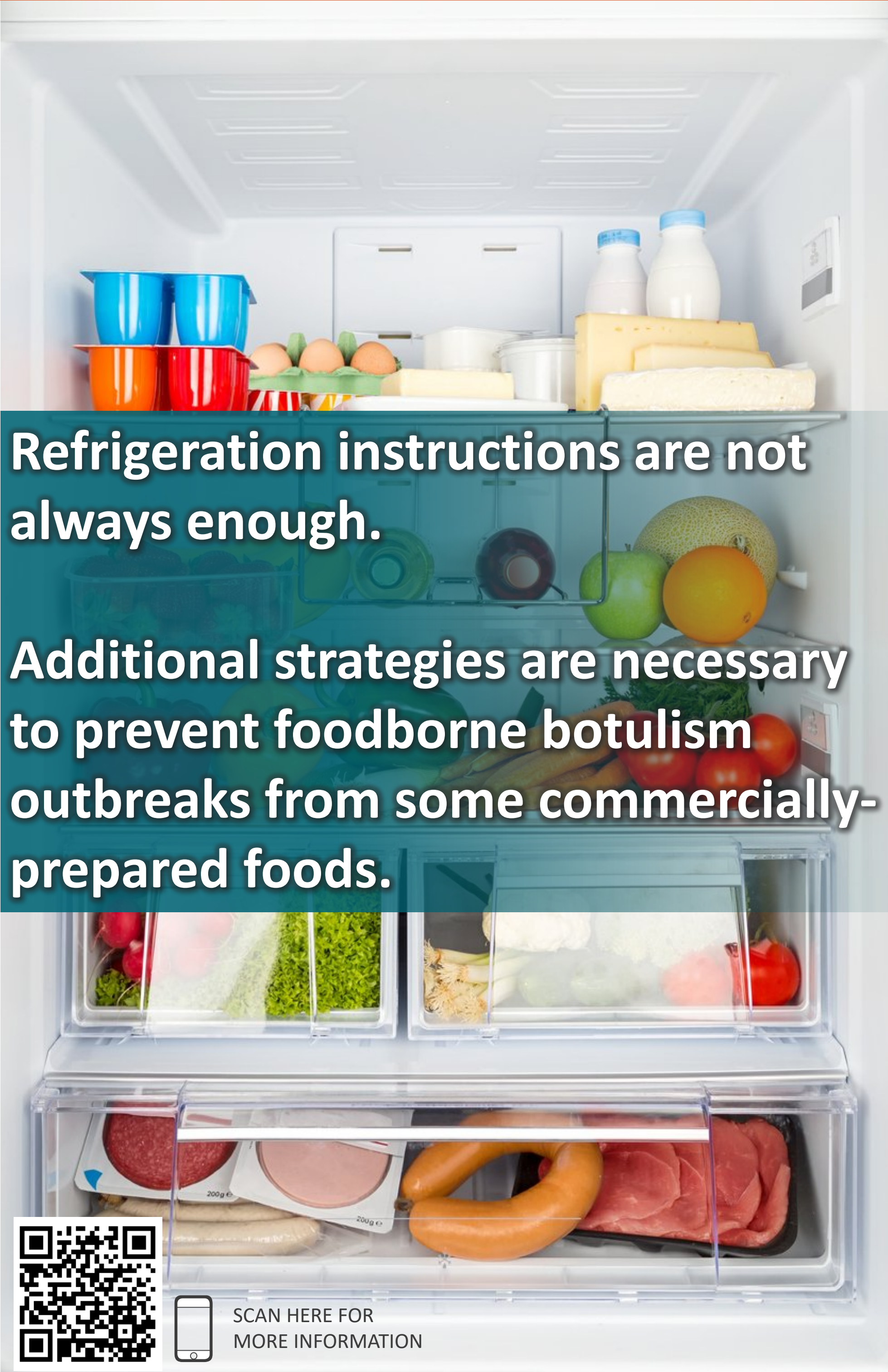
Findings

During 1994–2017, we identified 34 cases, including 3 deaths, from 11 botulism events associated with the inadequate refrigeration of commercially-prepared products. In 9 events, the patient stored the product unrefrigerated at home; in 2 events, a product was kept unrefrigerated at the store before the consumer purchased it. In 3 events, there were issues with the refrigeration instructions: 1 label printed on outer but not inner packaging, 1 label not clearly visible, and 1 label in Korean only. The number of people affected per event ranged from 1–16. Using enhanced cost estimates for foodborne botulism cases from a published economic model, these events were estimated to cost over \$64M.<sup>1</sup>

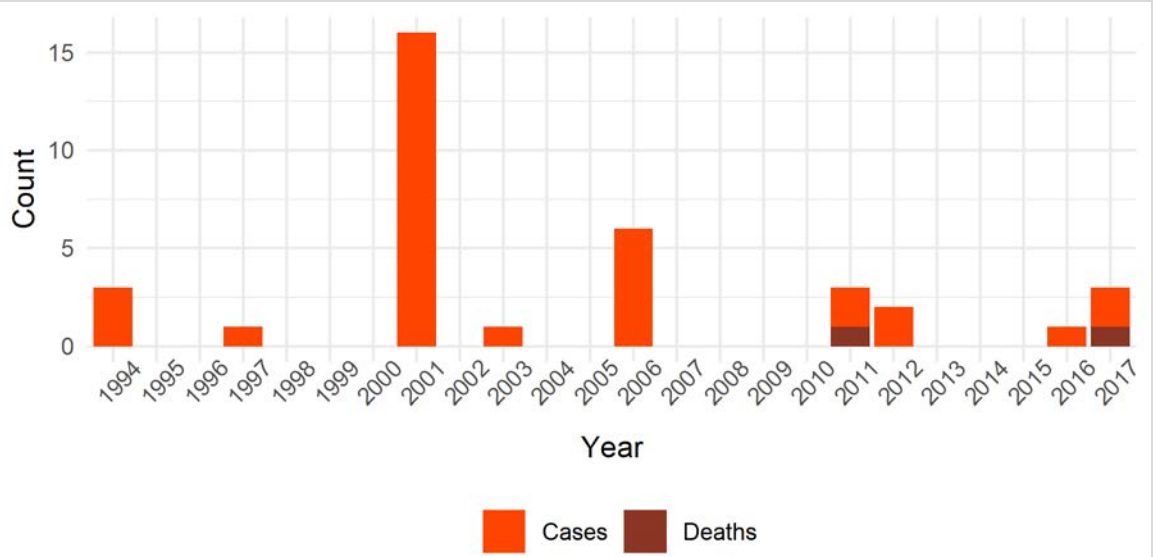
Recommendations

- 1) Add a secondary barrier, such as an acidifier, to prevent botulinum toxin production
- 2) Improve labeling to convey risks of minimally-processed, refrigerated foods to help prevent improper storage and handling.

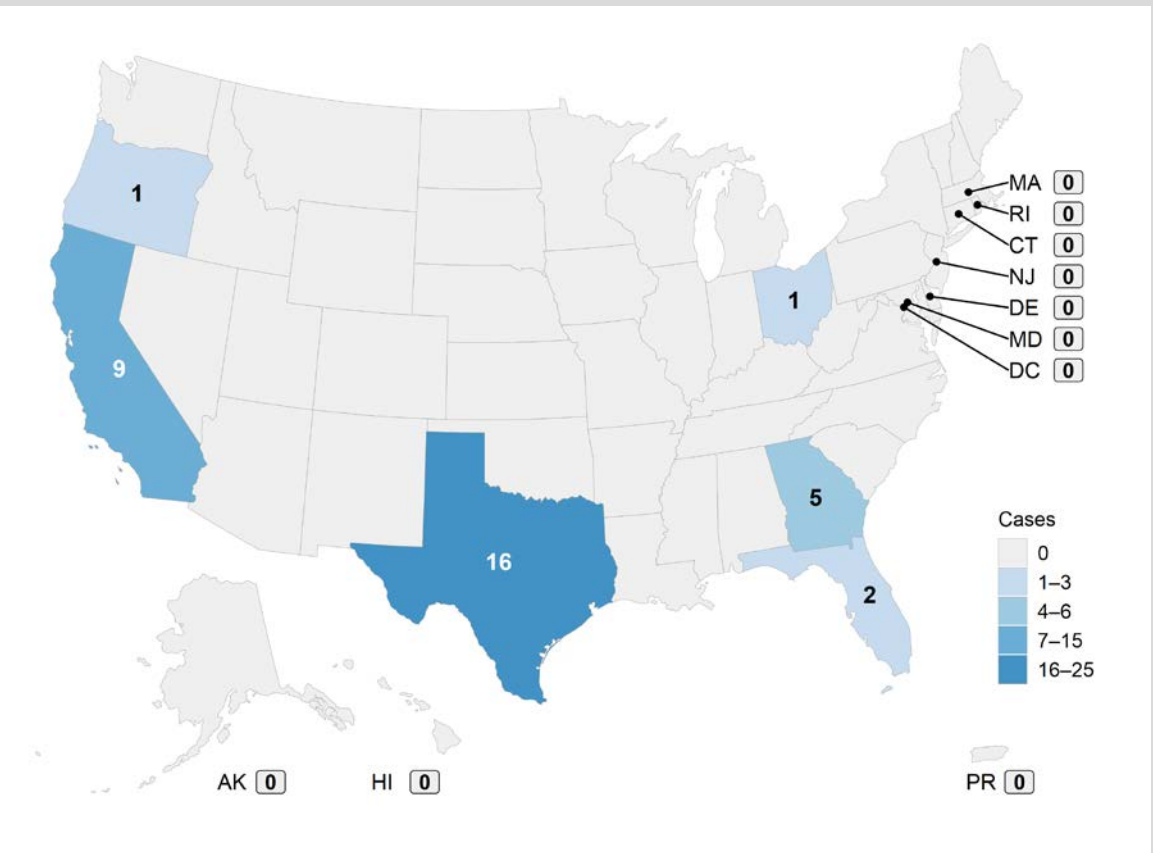
References  
1. Scharff, R. L. 2015. State estimates for the annual cost of foodborne illness. *J Food Prot.* 78:1064-71.



Foodborne Botulism Cases Due to Inadequate Refrigeration of Commercial Foods and Resulting Deaths, United States, 1994–2017



Geographic Distribution of Foodborne Botulism Cases Due to Inadequate Refrigeration of Commercial Foods, United States, 1994–2017



Implicated Commercial Foods causing Foodborne Botulism Due to Inadequate Refrigeration, United States, 1994–2017

- Bean dip
- Clam chowder
- Burrito
- Frozen chili
- Carrot juice
- Potato soup
- Broccoli soup
- Grain and vegetable product
- Herbal tea

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