



Food Safety

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PROGRESS REVIEW



In the 21st in a series of assessments of *Healthy People 2010*, Senior Executive Advisor to the Assistant Secretary for Health Larry Fields chaired a focus area Progress Review on Food Safety. Dr. Fields noted that food supplies in the United States are generally maintained at such high levels of safety that citizens seldom give much thought to the subject. Food safety rarely becomes a public issue, except on occasions when outbreaks of foodborne illness make headline news. However, the problem is ongoing and has serious dimensions. Foodborne infections are estimated to cause approximately 76 million illnesses each year in the United States, resulting in approximately 325,000 hospitalizations and 5,000 deaths annually. In conducting the review, Dr. Fields was assisted by staff of the co-lead agencies for this *Healthy People 2010* focus area, the Food and Drug Administration (FDA) and the Food Safety and Inspection Service (FSIS) of the Department of Agriculture (USDA). Also participating were representatives of other Department of Health and Human Services (HHS) offices and agencies.

The complete text for the Food Safety focus area of *Healthy People 2010* is available at www.healthypeople.gov/document/html/volume1/10food.htm. The Progress Review materials on challenges and strategies for reaching the objectives of the focus area can be found at the FDA Web sites www.cfsan.fda.gov/~dms/hp2010.html and www.cfsan.fda.gov/~dms/hp2010ed.html. The meeting agenda, tabulated data for all focus area objectives, charts, and other materials used in the Progress Review are at www.cdc.gov/nchs/about/otheract/hpdata2010/focusareas/fa10-food.htm.

Data Trends

Richard Klein of the National Center for Health Statistics/Centers for Disease Control and Prevention (CDC) provided a summation of progress achieved in meeting the targets of selected objectives in the Food Safety focus area. Mr. Klein characterized the consequences of most foodborne infections as high morbidity and lower mortality, with an estimated annual burden in costs of \$23 billion. Of all infections caused by the key foodborne pathogens tracked by *Healthy People 2010*, *Campylobacter* and *Salmonella* species combined account for the majority of all cases. From 1997 to 2002, the crude incidence of laboratory-confirmed *Campylobacter* spp. infections decreased from 24.6 to 13.3 cases per 100,000 population. The 2010 target is 12.3 cases per 100,000 (Obj. 10-1a). Over the same period, the

crude incidence of laboratory-confirmed *Salmonella* spp. infections increased from 13.6 to 16.2 cases per 100,000. The target is 6.8 cases per 100,000 (Obj. 10-1d). The crude incidence of laboratory-confirmed *Listeria monocytogenes* declined over the 5-year period from 0.47 to 0.26 cases per 100,000, almost achieving the target of 0.25 cases per 100,000 (Obj. 10-1c). The crude incidence of laboratory-confirmed *Escherichia coli* O157:H7 (Obj. 10-1b) showed no clear trend during this period, reaching 1.7 cases per 100,000 in 2002 (target, 1.0 cases per 100,000). Cases of postdiarrheal hemolytic uremic syndrome (HUS) per 100,000 population younger than 5 years increased from 1.36 per 100,000 in 1997 to 1.91 per 100,000 in 2002. A target has not been officially established (Obj. 10-1f).

Increases in the number of outbreaks (i.e., two or more cases of the same illness resulting from ingestion of the same food) could reflect enhanced reporting of smaller outbreaks, not a true increase in outbreak frequency. The number of outbreaks of *E. coli* O157:H7 increased from 22 in 1997 to 69 in 2000, then decreased to 38 in 2002. The 2010 target is 11 outbreaks (Obj. 10-2a). During that 6-year period, outbreaks of *Salmonella* serotype Enteritidis increased from 44 in 1997 to 50 in 2000, then decreased to 29 in 2002. The target is 22 outbreaks (Obj. 10-2b).

Year 2010 targets for the proportion of human isolates of non-typhi *Salmonella* spp. that are resistant to antimicrobial drugs were set at no increase from the 1997 baselines. Two antibiotics surpassed their 2010 targets in 2002: (1) 1 percent of isolates were found resistant to gentamicin, which was targeted at no increase over 3 percent (Obj. 10-3c), and (2) 13 percent of isolates were found resistant to ampicillin, which was targeted at no increase over 18 percent (Obj. 10-3d). In 2002, the proportion of non-typhi *Salmonella* spp. isolates from humans that were fluoroquinolone-resistant was 0.1

percent (Obj. 10-3a). The proportion of such isolates that were third-generation cephalosporin-resistant was 0.2 percent in 2002 (Obj. 10-3b). The targets for both are 0.0 percent.

The proportion of adult consumers who follow key food safety practices moved toward the 79-percent target, increasing from 73 percent in 1998 to 75 percent in 2001 (Obj. 10-5). Slight improvements in food safety practices were recorded for every population group for which data were available, including blacks, whites, females, males, and people grouped according to three levels of educational attainment. In 1998, FDA conducted a study that focused on direct observations of 42 data items concerning food safety practices and employee behaviors as factors in the control of foodborne illness within selected institutional foodservice, restaurant, and retail food store facility types. When the results for the 42 data items were combined, the overall in-compliance percentage of observations ranged from 60 to 83 percent among the 9 facility types selected, based on the 1997 FDA Food Code provisions (Obj. 10-6).

Key Challenges and Current Strategies

In the presentations that followed the data overview, the principal themes were introduced by representatives of the two co-lead agencies: Robert Brackett, Director of FDA's Center for Food Safety and Applied Nutrition, and Karen Hulebak, FSIS Deputy Administrator. With the aid of briefing materials provided to Dr. Fields, these agency representatives and other participants in the review identified a number of obstacles to achieving the objectives and discussed activities under way to meet these challenges, including the following:

- In the United States, about 81 percent of cases of foodborne illness and 64 percent of deaths from

such illness cannot be ascribed to an identified pathogen. To some extent, the inability to ascribe such illnesses to specific pathogens is caused by inadequate detection methods. In addition, some pathogens currently recognized as causes of foodborne illness were unknown 20 years ago, and the likelihood is that others will be identified in the future.

- Research indicates the expected number of deaths from anaphylaxis caused by food allergies to be around 125 annually, but death certificates currently show only about 20 such deaths a year, a likely underreporting.

- New challenges to the safety of the nation's food supply include microbiological contaminants, such as *Enterobacter sakazakii*, and hazardous chemicals, including methyl mercury, polychlorinated biphenyls (PCBs), dioxins, acrylamide, and furans.
- Small-scale producers in the United States account for only 10 percent of the food supply but 90 percent of the outbreaks of foodborne illness.
- Produce has become an increasing source of foodborne illnesses, with more than 1,000 such cases reported in 2003. Included were *Salmonella* and *Shigella* from different types of melons, *E. coli* O157:H7 from pre-cut lettuce and pre-cut spinach, and hepatitis A virus from green onions. FDA has developed the Produce Initiative to address the problem.
- Established in 1996, the Foodborne Diseases Active Surveillance Network (FoodNet) conducts laboratory-based surveillance of sporadic cases of foodborne disease to identify their sources, burden, and severity. FoodNet is a collaborative activity of FDA, FSIS, CDC, and 10 states.
- The Electronic Foodborne Outbreak Reporting System (EFORS) is CDC's new Internet-based system through which state health departments can report outbreaks of foodborne disease.
- Since 1997, the Hazard Analysis and Critical Control Points (HACCP) system of inspection has been implemented by FDA and FSIS regulations covering the production of seafood, meat, poultry, and juice products. HACCP is an internationally recognized scientific approach to producing safer food by anticipating how biological, chemical, or physical hazards are most likely to occur and by installing appropriate measures to prevent their occurrence.
- FDA will publish proposed rules to introduce measures for reducing *Salmonella* Enteritidis in shell eggs, which continue to be a source of infections. A standard protocol, soon to be released, can be used by field personnel when investigating *Salmonella* Enteritidis outbreaks attributed to egg consumption. FDA also is encouraging states to adopt the safe egg handling and preparation provisions in the agency's 2001 Food Code.
- FSIS introduced an educational campaign designed to reach millions of consumers with food safety messages. The campaign's centerpiece is the Food Safety Mobile, which travels the country disseminating food safety information and developing partnerships at the local level. In 2003, the Food Safety Mobile visited 28 states and participated in almost 90 events.
- In April 2004, FDA, CDC, FSIS, the American Medical Association, and the American Nurses Association-American Nurses Foundation collaboratively produced and released *Diagnosis and Management of Foodborne Illnesses, A Primer for Physicians and Other Healthcare Professionals* as an educational resource to assist primary care physicians and others in recognizing, diagnosing, and treating foodborne illness.
- The National Antimicrobial Resistance Monitoring System (NARMS) was established in 1996 in response to concerns about increased antimicrobial resistance in humans and food animals. NARMS is a collaborative program between FDA, CDC, and USDA to monitor trends over time in antimicrobial susceptibilities of foodborne enteric organisms. An initiative proposed by USDA will follow antimicrobial resistance from farm to table, providing more complete data.

Approaches for Consideration

Participants in the review made the following suggestions for steps to enable further progress toward achievement of the objectives for the Food Safety focus area:

- Urge states to make training in food safety a part of the curricula of school science classes.
- Inasmuch as there has been a fivefold or sixfold increase in imported food products in recent years, increase efforts to include foreign producers as targets for educational messages and training courses on maintaining the safety of food supplies.
- Seek to reduce reluctance on the part of many healthcare professionals to providing food safety advice to their patients.
- Intensify efforts to assess the illness burden of specific viruses and parasites that are suspected to be sources of foodborne disease but are not currently identified and tracked as such.
- Integrate the protection of food supplies more thoroughly into planning for measures to ensure homeland security.
- When appropriate, incorporate advice about good nutrition into public messages about food safety practices.
- Take additional steps to protect the health of groups at greatest risk of morbidity and mortality from *Listeria monocytogenes*, including pregnant women and their fetuses, newborns, the elderly, diabetics, and those with compromised immune systems.
- Counter underreporting of deaths from anaphylaxis caused by food allergies by outreach to increase the familiarity of medical examiners with the ICD-10 classification system and its use of new codes.
- Explore innovative approaches to effecting desirable behavior changes in employees of retail food and food service establishments.



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