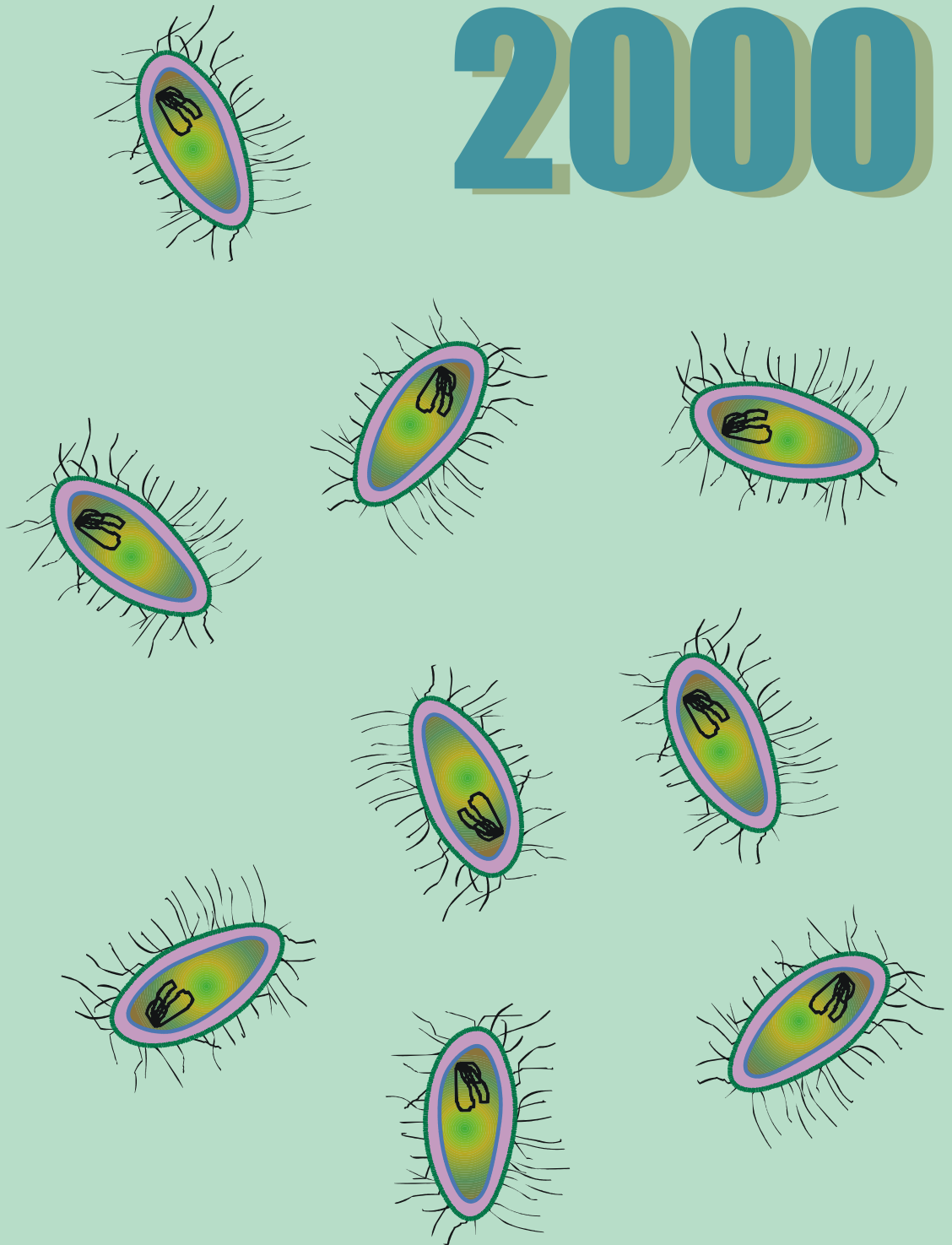


Salmonella

Annual Summary

2000



Department of Health and Human Services
Centers for Disease Control and Prevention
National Center for Infectious Diseases
Division of Bacterial and Mycotic Diseases
Foodborne and Diarrheal Diseases Branch
Atlanta, GA 30333



National *Salmonella* Surveillance System

Annual Summary, 2000

This issue of the Annual Summary of the National *Salmonella* Surveillance System contains surveillance data on reported laboratory-confirmed *Salmonella* isolates in the United States for the year 2000. The National *Salmonella* Surveillance System collects reports of isolates of *Salmonella* from human sources from every state in the United States. This information is reported through the Public Health Laboratory Information System (PHLIS), an electronic reporting system, by the State Public Health Laboratory Directors and State and Territorial Epidemiologists to the Foodborne and Diarrheal Diseases Branch (FDDB) and the Biostatistics and Information Management Branch (BIMB) of the Division of Bacterial and Mycotic Diseases in the National Center for Infectious Diseases.

The National *Salmonella* Surveillance System is based on data collected by state and territorial public health laboratories. *Salmonella* isolates are submitted to the state public health laboratory by clinical diagnostic laboratories. The state and territorial laboratories confirm the isolates as *Salmonella*, perform serotyping according to the modified Kauffmann-White scheme, and submit the data for reporting through PHLIS. Unusual or difficult isolates are forwarded to the National *Salmonella* Reference Laboratory at the Centers for Disease Control and Prevention for further characterization or confirmation. These results are reported back to the state laboratory, where they are reported through PHLIS.

The capture of isolates in the National *Salmonella* Surveillance System is considered to be fairly complete. However, some *Salmonella* isolates may not be forwarded to public health laboratories, and therefore are not reported. In addition, irrespective of the surveillance system, many cases of *Salmonella* illness are not reported because the ill person does not seek medical care, the health-care provider does not obtain a specimen for diagnosis, or the laboratory does not perform the necessary diagnostics tests. The results of surveillance reported herein should be considered underestimates.

The number of isolates reported by geographic area (e.g., state) represents the state where laboratory confirmation and serotyping were performed. In some instances, the reporting state is not the state of residence of the person from whom the isolate was obtained. For *Salmonella* serotype Typhi, only the first isolation in a year for each person is counted. For the Annual Tabulation Summaries, duplicate records are deleted.

The data presented for *Salmonella* isolates from animals and related sources (e.g., environment and feeds) are gathered from isolates submitted to the U.S. Department of Agriculture, Animal and Plant Health Inspection Services, National Veterinary Services Laboratories (USDA/APHIS/NVSL) for serotyping. These isolates are submitted by animal disease diagnostic laboratories and the USDA, Food Safety and Inspection Service (FSIS) laboratories throughout the United States. Data from U. S.

laboratories that serotype *Salmonella* from animals and related sources and submit isolates to the NVSL are also included in this report. *Salmonella* serotyping results from clinical cases of animal disease are designated in Table 6 as "clinical." Serotyping results from herd and flock monitoring and surveillance, feed sample testing, environmental testing, research projects, and isolates from USDA, FSIS food testing programs are designated as "nonclinical" (Table 7). Samples from nonhuman sources are tested for *Salmonella* for a variety of purposes and are obtained in a variety of ways. The sampling is therefore neither complete nor random and probably has sampling biases. The interpretation of data should consider this limitation.

The PDF version of this document can be viewed online at www.cdc.gov/ncidod/dbmd/phlisdata. Further information concerning the data described in this report can be obtained by contacting the Foodborne and Diarrheal Diseases Branch (404) 639-2206. For further information concerning PHLIS please contact the Biostatistics and Information Management Branch (404) 639-1364.

The Surveillance Outbreak Detection Algorithm (SODA), developed by BIMB and FDDB, is a statistical algorithm based on the PHLIS. It is designed to detect unusual clusters of *Salmonella* isolations. SODA compares current *Salmonella* isolates reported through PHLIS by serotype with a 5-year historical baseline for that serotype and week to detect unusual increases from the baseline. Analyses can be conducted at state, regional, or national levels. Since 1996, SODA has been implemented at CDC and selected state health departments. For more information on SODA, please call the PHLIS Helpdesk (404) 639-3365.

Annual Summary Highlights for 2000

Human Sources

A total of 32,022 *Salmonella* isolates were reported from public health laboratories in 50 states in 2000. This represents a 24% decrease compared with 1990 and a 2% decrease from 1999. The national rate of reported *Salmonella* isolates in 2000 was 11.4 per 100,000 population based on 2000 census population figures for the United States.

Similar to other years, *Salmonella* was isolated most frequently from children under 5 years of age, accounting for 25% of isolates. About 10% of isolates came from persons in each of the second through fifth decades of life, with declining numbers thereafter. The distribution of isolates between the sexes was similar.

The 20 most common serotypes of *Salmonella* in 2000 are listed in Table 1. These represent 81% of all *Salmonella* isolates. Of the top 20 serotypes, those with the largest percent decrease in numbers compared with 1990 were *S. Hadar* and *S. Agona*. *S. Java* and *S. Poona* had the largest percent increase in number. The two most common serotypes, *S. Typhimurium* and *S. Enteritidis*, had substantial

decreases in number compared with 1990 (20% and 29%, respectively), while the third most common serotype, *S. Newport*, had a 65% increase in number over the decade (Table 8). In 2000, serotypes *S. Java*, *S. Poona*, *S. Mississippi* and *S. Stanley* increased in rank to be included in the top 20 serotypes, whereas *S. Reading*, *S. Chester*, *S. Panama* and *S. Anatum* dropped from the top 20 serotypes compared with 1990.

The three most common serotypes of *Salmonella* in 2000 (*Typhimurium*, *Enteritidis*, and *Newport*, respectively) accounted for 51% of isolates. Compared with 1990, the frequency rank of *S. Typhimurium* and *S. Enteritidis* in 2000 remained first and second, respectively, though in 1994-1996 their rank was temporarily reversed (1). A large proportion of *S. Typhimurium* isolates were resistant to multiple drugs; in a 1999 national survey 49% were resistant to one or more drugs and 28% had a 5-drug resistance pattern characteristic of a single phage type, DT104 (2).

Similar to other years, there were marked regional differences in the frequency of *Salmonella* isolates among serotypes. The rate of isolations by region has been followed closely for *S. Enteritidis* as a means of assessing the impact of egg safety regulations and industry improvements. As indicated in Figure 1, *S. Enteritidis* rates of isolation had been relatively high in the New England, Mid-Atlantic and Pacific regions, but have shown significant decreases since 1995.

Nonhuman Sources

Data on *Salmonella* isolates obtained from nonhuman sources can help identify possible sources of human illness (1). In 2000, *S. Heidelberg* was the most common serotype found among clinical and nonclinical samples from both chicken and turkey sources, whereas *S. Typhimurium* was most common among porcine and bovine sources. Chickens are also the predominant source of both *S. Kentucky* and *S. Enteritidis* nonclinical isolates. These food animals may be the source of these common *Salmonella* infections in humans, but more information is required to determine the link.

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2. CDC. The National Antimicrobial Resistance Monitoring System: Enteric Bacteria. Available at www.cdc.gov/ncidod/dbmd/narms.

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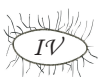


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