

2404MLAFR-1 Closeout Summary
Closeout Date: August 22, 2024
CDC Primary Contact: Angelo Lodato
Classification: Outbreak
Vehicle: Regular Cucumbers
Vehicle Status: Confirmed
Exposure Type: Multistate

Hello Colleagues,

On April 24, 2024, PulseNet coded an outbreak of *Salmonella* Bochum 2404MLBOC-1. When opened, this investigation consisted of 10 cases across 7 cases. On May 5, 2024, the serotype was updated to *Salmonella* Africana after it was discovered isolates with the allele code I 4:r:i:l,w were incorrectly classified as *S. Bochum*. On May 9, 2024, PulseNet coded the first of four *S. Braenderup* outbreaks, 2404MLJBP-1. Ultimately, all 4 subclades were combined on May 20, 2024, based on similarities in demographics, temporal, and geographic distributions. All four subclades populated the same genetic tree. On June 27, 2024, the *S. Africana* and *Braenderup* investigations were combined into a multistrain, common source, multistate outbreak following traceback convergence and environmental sampling results.

At the time of closing, this investigation included 557 isolates (551 clinical, 6 environmental) from 34 states and the District of Columbia: AL (6), AR (1), CA (1), CT (8), DC (1), DE (3), FL (66), GA (48), IA (5), IL (9), IN (4), KY (20), MA (11), MD (17), ME (4), MI (12), MN (10), MO (4), MS (2), NC (27), NJ (22), NV (1), NY (69), OH (20), OK (2), PA (68), RI (8), SC (22), TN (22), TX (2), VA (48), VT (2), WA (1), WI (4), WV (7). Of the clinical isolates, there were 282 *S. Africana* cases and 269 *S. Braenderup* cases. *S. Africana* isolates are related within 0-5 alleles. *S. Braenderup* cases in each clade are related within the following ranges: Clade 1: 0-5 alleles, Clade 2: 0-6 alleles, Clade 3: 0-6 alleles, Clade 4: 0-9 alleles. One environmental isolate is related to *S. Braenderup* clade 3 within 0-6 alleles and five environmental isolates are related to *S. Braenderup* clade 4 within 8-9 alleles. Isolation dates range from March 31 to August 3, 2024, and reported onset dates (n=428) range from March 11 to July 26, 2024. Ages range from <1 to 94 years with a median age of 48. 370 of 548 cases (68%) are female. Outcome information is available for 456 cases, of which 155 cases (34%) have been hospitalized and there are no reported deaths associated with this outbreak. Additionally, there was one Canadian *S. Africana* case that matched this outbreak.

A case in this investigation was defined as infection with *S. Africana* or *S. Braenderup* with an isolate related within 0-5 alleles to *S. Africana* or 0-5 alleles to Clade 1 *S. Braenderup*, 0-6 to Clade 2 *S. Braenderup*, 0-6 alleles to Clade 3 *S. Braenderup*, or 0-9 alleles to Clade 4 *S. Braenderup*, and illness onset ranging from March 11 to July 26, 2024.

The NHGQ was deployed on April 30, and 86 completed forms were returned. Five open-ended interviews were conducted. A focused questionnaire was deployed on May 20, and 149 questionnaires were returned. Of 226 cases reinterviewed, 155 cases (69%) report consuming any cucumber. 110 cases report cucumbers purchased from a variety of grocery store locations – 65 regular, 33 large/English, and 19 mini/Persian. 72 cases report consuming cucumbers from a variety of restaurants. The reports of cucumbers in this investigation were statistically significantly higher than the background rate of 50%

from the FoodNet Population Survey. Additionally, four subclusters were identified: a university dining center, a Mediterranean-style restaurant, and at two American-style steakhouses. CDC released a [food safety alert](#) on June 5, 2024, with subsequent updates on June 12, July 2, August 14 and August 22. A recall of whole cucumbers was initiated on May 31, 2024.

Based on case exposure information, FDA and state partners performed a traceback investigation for cucumbers. The traceback investigation included 19 cases from nine states that reported purchasing or consuming cucumbers from 17 different points of service (POS) prior to their illness onset. Based on exposures related to these 17 POS, two farms of interest were identified in Southeast Florida. These farms collectively supplied cucumbers to eleven POS during the timeframe of interest.

Seven environmental samples from the first farm of interest were collected during an FDA farm inspection. Three of the seven samples were positive for *Salmonella* spp., belonging to ten different *Salmonella* serovars, including one that matched one of the *S. Braenderup* outbreak strains (Clade 3). Fourteen environmental samples were also collected during an additional inspection at the second farm of interest. Nine of the 14 samples were positive for *Salmonella* spp., belonging to 24 different *Salmonella* serovars, including one that matched one of the *S. Braenderup* outbreak strains (Clade 4).

Epidemiologic, traceback and laboratory data supported the conclusion that regular cucumbers sourced from the two farms of interest are confirmed source of illness; however, these growers do not account for all the illnesses in this outbreak. Following the recall of whole cucumbers on May 31, new uploads began to slow and the surveillance reporting lag elapsed. CDC closed this investigation on August 22, 2024, as an outbreak with a confirmed vehicle of regular cucumbers. This outbreak will be reported to NORS with NORS ID 510154.

Thank you all for your help with this investigation.