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## Results of a Health Survey of Travelers to the Russian Far East

In June 1991, the Section of Epidemiology investigated two apparently unrelated cases of salmonellosis in United States citizens who recently returned from the Russian Far East city of Khabarovsk. Although no specific source for these infections was identified, the recent relaxation of travel restrictions to Russia has resulted in increasing numbers of visits by Alaskans and raised concern that persons traveling to the Russian Far East might be at increased risk of contracting infectious diseases. In order to better describe the health experiences of Americans who traveled to the Russian Far East, during June-July 1992 we conducted a survey of travelers arriving in Alaska from Russia.

**Methods:** Airline passengers and crew members on Alaska Airlines flights from Khabarovsk and Magadan to Anchorage were asked to complete a health questionnaire before arriving in Alaska. The anonymous, self-administered questionnaire asked the person's age, sex, usual place of residence, length of stay, and types of food and beverage consumed in the Russian Far East. Each traveler was asked which, if any, of the following symptoms developed in the Russian Far East:

- Nausea or vomiting (lasting  $\geq 12$  hours)
- Diarrhea ( $\geq 3$  loose or watery stools in 24 hours)
- Abdominal pain or discomfort (lasting  $\geq 24$  hours)
- Fever or feverishness (lasting  $\geq 24$  hours)
- "Flu" symptoms (fever, headache, sore throat, body ache - lasting  $\geq 24$  hours)

Persons having at least one symptom were asked how long after arrival in the Russian Far East the first symptom developed, whether the symptom(s) lasted 3 days or  $>3$  days, and whether or not they were still sick. Completed questionnaires were collected at the Anchorage International Airport after travelers were cleared through U.S. Customs and Immigration.

**Results:** There were 588 passengers and 74 crew members on board the 10 flights surveyed. Completed questionnaires were received from 353 people, an overall response rate of 53%. Respondents were older than the general population (mean age = 52 years) and more likely to be male (male to female ratio = 1.4:1). All but 9 respondents (3%) resided in the United States, 53 (15%) were from Alaska, and none were from the former Soviet Union.

Overall, symptoms were reported by 37 (10%) of the travelers who responded. The most frequently reported symptoms were diarrhea ( $n=18$ ), "flu" ( $n=15$ ), and nausea ( $n=8$ ). There was no association between age or sex and illness. Among those with symptoms, 24 (65%) indicated that symptoms lasted 3 days and 10 (27%) indicated that they were still ill at the time that they completed the questionnaire. Twenty persons (54% of those who became ill) had onset from 2-6 days after arrival in the Russian Far East. Of 352 people who indicated the length of time spent in the Russian Far East, 305 (87%) were there for 14 days.

Persons who reported drinking untreated tap water had a nearly three-fold higher risk of gastrointestinal symptoms than those who did not (relative risk [RR] = 2.7; 95% confidence interval [CI] = 1.2-5.9) while those drinking bottled or canned fruit juice had a risk of symptoms 2.5 times lower than that of persons who did not (RR = 0.4; 95% CI = 0.2-0.8). No foods or beverages were associated with "flu" symptoms.

**Discussion:** We compared the incidence of gastrointestinal or respiratory symptoms among travelers to the Russian Far East to the expected rates in the United States<sup>1-3</sup> as well as those from a recent review of travelers' diarrhea.<sup>4</sup> The rate of flu-like illness experienced by travelers to the Russian Far East was about the same as the rate of people of similar age in the United States. However, the rate of gastrointestinal symptoms was higher than that in the United States and approximated the incidence among travelers to developing countries. Our findings suggest that it may be prudent for future travelers to the Russian Far East to increase their consumption of bottled or canned fruit juice and limit consumption of untreated tap water. Further work is needed to confirm our findings, clarify the potential causes, and evaluate preventive measures.

## References:

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