What is already known on this topic?

Cryptosporidium is an extremely chlorine-tolerant parasite that causes cryptosporidiosis, a common cause of diarrhea in the United States. Fecal-oral transmission of *Cryptosporidium* can occur via ingestion of contaminated recreational water, drinking water, food, or via contact with infected persons or animals, most notably preweaned calves.

What is added by this report?

Traditional epidemiologic methods indicated food and person-to-person contact were significantly associated with illness. However, *Cryptosporidium* subtyping results indicated the source of the outbreak was likely to be preweaned calves, a source that was not implicated by traditional epidemiologic methods.

What are the implications for public health practice?

Camps where animals are kept need to enforce effective hygiene and sanitation practices to prevent *Cryptosporidium* transmission. A national program that systematically subtypes *Cryptosporidium* isolates could elucidate the epidemiology of cryptosporidiosis in the United States.

study, limiting statistical power. Third, persons with preexisting *Cryptosporidium* antibodies might be less likely to develop illness upon reinfection,[5] introducing possible misclassification of illness status and biasing estimates of association between exposure and illness toward the null. Finally, this investigation might have failed to identify all ill food handlers, a source of previously reported foodborne cryptosporidiosis outbreaks.[6] Two food handlers (onset of illness June 27 and 28) were removed from kitchen duties when they reported their illness to camp owners. Neither reported any camp-specific risk factors for illness other than communal meals.

This investigation demonstrates the need for extensive use of effective measures to prevent *Cryptosporidium* transmission at camps where animals are kept.[7] Hand-washing facilities with running water, soap, and disposable towels or air dryers should be accessible in animal areas. Hands should be washed after touching animals or their waste; before, during, and after food preparation; and after using the toilet, caring for ill persons, or cleaning soiled bedding. *Cryptosporidium* is chlorine-tolerant, and alcohol-based hand sanitizers are not effective against it.

C. parvum subtype IIaA17G2R1 previously was identified as the etiologic agent of an Ohio outbreak associated with ozonated apple cider.[8] *C. parvum* infection is common in preweaned calves. Although *C. parvum* subtype IIaA17G2R1 infection in calves has been documented,[2,9] the significance of isolating this *C. parvum* subtype is unknown. *Cryptosporidium* isolates are not systematically subtyped in the United States. Subtyping has generally been limited to use as an outbreak investigation tool at the national level, despite its epidemiologic utility. In this outbreak investigation, subtyping verified an epidemiologic link that was not implicated by traditional epidemiologic methods; in other investigations, subtyping differentiated individual clusters.[8,10] Systematically subtyping *Cryptosporidium* isolates via a national molecular surveillance program could elucidate transmission patterns and help direct prevention efforts needed to address increasing incidence of cryptosporidiosis.[3]

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10 Available.

*Commercial laboratories detected *Cryptosporidium* spp. in stool specimens of five patients. These five stool specimens had been discarded, and isolates were not available for confirmatory testing and *Cryptosporidium* subtyping unlike the remaining seven.

†Stool specimens from only four of the seven patients with laboratory-confirmed *C. parvum* infection were tested for bacterial pathogens.

‡Although dilute bleach solution might effectively disinfect chlorine-susceptible pathogens such as *E. coli*, it would not be an effective disinfectant for *Cryptosporidium*, which is extremely chlorine-tolerant.

Occupational Aviation Fatalities—Alaska, 2000-2010

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1 figure, 2 tables omitted

AIRCRAFT CRASHES ARE THE SECOND LEADing cause of occupational deaths in Alaska; during the 1990s, a total of 108 fatal aviation crashes resulted in 155 occupational fatalities.[1] To update data and identify risk factors for occupational death from aircraft crashes, CDC reviewed data from the National Transportation Safety Board (NTSB) and the Alaska Occupational Injury Surveillance System. During 2000-2010, a total of 90 occupational fatalities occurred as a result of 54 crashes, an average of five fatal aircraft crashes and eight fatalities per year. Among those crashes, 21 (39%) were associated with intended takeoffs or landings at landing sites not registered with the Federal Aviation Administration (FAA). Fifteen crashes (28%) were associated with weather, including poor visibility, wind, and turbulence. In addition, 11 crashes (20%) resulted from pilots' loss of aircraft control; nine (17%) from pilots' failure to maintain clearance from terrain, water, or objects; and seven (13%) from engine, structure, or component failure. To reduce occupational fatalities resulting from aircraft crashes in the state, safety interventions should focus on providing weather and other flight information to increase pilots' situational awareness, maintaining pilot proficiency and decision-making abilities, and expanding the infrastructure used by pilots to fly by instruments.

CDC reviewed reports from its Alaska Occupational Injury Surveillance System (AOISS) and information from the NTSB accident database* to identify risk factors for occupational deaths. A case was defined as a fatal occupational traumatic injury in an aircraft crash during 2000-2010 that was reported in Alaska and investigated by NTSB. AOISS contains information on all fatal occupational traumatic injuries that occur in Alaska. Only cases that meet the criteria for an occupational fatality using established guidelines for injury at work are included.[2] NTSB is mandated by Congress to investigate civilian transportation incidents and crashes, determine probable causes, and issue safety recommendations. NTSB reports include information on aircraft, crash circumstances, pilots and crew, and a narrative outlining contributing factors. Crashes are "accidents," defined by the NTSB as "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage."† Military crashes and crashes of aircraft that are not registered in a civil aviation registry (such as ultralights) routinely are not investigated.

Rates for the number of departures were calculated using data from the FAA Terminal Area Forecast summary report for the Alaska region for 2000-2010.‡ FAA air traffic control towers and radar approach control facilities record aircraft operations (takeoffs and landings). Aircraft operations at contracted air traffic control towers and nontowered airports are estimated. For this report, the number of departures was calculated as operations (takeoffs + landings) divided by two. FAA reports aviation operations by fiscal year (i.e., October through September). Fatalities are reported by calendar year. Data on fatalities from each calendar year were paired with operations data from corresponding fiscal years.

During 2000-2010, 54 aircraft crashes involving fatalities occurred in Alaska, resulting in 90 occupational deaths. The mean age of victims was 44 years (range: 20-73 years), and 79 (88%) of the victims were male. Of those persons who died, 53 (59%) were occupational pilots. Mean total flight hours (when available) for pilots in command (n=43) was 7,798 hours. The most common occupations of the nonpilot victims were management (11); installation, service, and repair (seven); personal care/service occupations, including tour guides (six); and protective service occupations (four). Fixed wing aircraft were involved in 48 (89%) of the crashes and six (11%) involved helicopters. Most (65%) crashes occurred during May—September; 48% of crashes occurred during the hours of 12:01 p.m. and 6:00 p.m.

The numbers and rates of occupational fatal crashes and deaths that occurred during 2005-2009 were lower than those during 2000-2004. The crash rate declined 32%, from 6.5 to 4.4 crashes per 1 million departures. The fatality rate decreased 36%, from 10.8 to 6.9 per 1 million departures. However, in 2010, numbers were higher than the previous yearly average, with six occupational fatal crashes resulting in 12 deaths. A review of the departure locations and destinations revealed that 21 (39%) fatal crashes were associated with intended takeoffs or landings at non-FAA—registered landing sites, such as gravel bars, snow fields, lakes, and temporary airstrips. The other 33 (61%) crashes were associated with intended takeoffs and landings at FAA-registered airports. The leading causes of fatal crashes, by numbers of crashes, were 15 (28%) encounters with adverse weather; 11 (20%) pilots' loss of control; nine (17%) pilots' failure to maintain clearance from terrain, water or objects; and seven (13%) from engine, structure, or component failure. Causes are undetermined for three crashes with missing aircraft, and not yet determined for all 2010 crashes.

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CDC Editorial Note: To reduce the state's high number and rate of aircraft crashes in the 1990s CDC's National Institute for Occupational Safety and Health (NIOSH), NTSB, FAA, the National Weather Service (NWS), and the Alaska aviation industry started the Alaska Interagency Aviation Safety Initiative (AIASI). Several interventions were implemented, including the FAA Capstone program,[3] which funded the purchase and installation of avionics equipment in commercial aircraft based in southwestern and southeastern Alaska and provided training in its use. This equipment provides terrain, air traffic, and weather information to pilots. FAA also has funded the installation of 150 weather cameras in mountain passes and remote locations throughout Alaska. These images are transmitted sequentially via the Internet.§ The NWS and FAA mike-in-hand program provides current weather information to pilots in the air,[4] and the FAA Circle of Safety program helps educate passengers on their responsibilities for safe flight.[5] The Medallion Foundation is a nonprofit organization created to raise safety standards and foster a culture of safety among operators and pilots.||

In the 1990s, NIOSH determined that crashes into terrain and flying from good weather into conditions of poor visibility were strongly associated.[6] Interventions developed as part of AIASI focused on improving the industry's safety culture and provided tools to avoid flight into poor visibility conditions. These various interventions have been effective in reducing fatalities[3]; however, adverse weather continues to be a risk factor for fatal crashes. Loss of control, failure to maintain clearance, and aircraft structure or component failure also are risk factors. Crashes resulting from loss of aircraft control, failure to maintain clearance from terrain and objects, failure of aircraft structure and components, failure to follow published procedures, and improper use of landing gear might be associated with pilot proficiency and decision making. Crashes since 2000 commonly were associated with flights to or from non-FAA—registered landing sites. These locations often are in remote areas of Alaska having limited weather information and minimal or no emergency equipment. Alaska's vast area, lack of roads, mountainous terrain, adverse weather conditions, and limited coverage by air traffic control, plus the use of airstrips and non-established landing fields, increase flight safety risks. Continued safety interventions that increase access to weather information, pilot proficiency, and instrument flight capabilities are needed to contend with the unique flying hazards found in Alaska.

The findings in this report are subject to at least two limitations. First, departure data were used as a denominator to measure flight activity, but these data are not

What is already known on this topic?

Aircraft crashes are the second leading cause of occupational fatalities in Alaska.

What is added by this report?

Occupational aviation safety in Alaska has improved, with the fatal crash rate decreasing 32% from the first to the second half of 2000-2009. The higher than average number of crashes in 2010 call for continued efforts to identify risk factors, develop interventions, and promote safety. The most frequent causes of fatal occupational aircraft crashes include encounters with weather, pilots' loss of aircraft control, failure to maintain clearance from terrain, and aircraft structure or component failure.

What are the implications for public health practice?

Safety interventions should continue to focus on providing weather information and improving pilots' situational awareness, and on enhancing airport infrastructure to allow pilots with appropriate equipment and experience to fly by instruments; proficiency in piloting skills and aeronautical decision making should be emphasized for pilots regardless of experience, ratings, and flight hours.

a precise representation of worker exposure. The number of flight hours logged by workers traveling as part of their job or to their jobsites would give more precise measure of worker exposure. Second, departure data are obtained through reports to air traffic control towers and radar approach control facilities and estimated for nontowered airports included in FAA's National Plan of Integrated Airport Systems (NPIAS). Operations at non-FAA—registered landing sites and airports not listed in NPIAS are not included in the estimates.

In October 2010, approximately 200 members of the Alaska aviation community met to acknowledge the seriousness of the increased number of crashes in 2010, to explore solutions, and to identify resources to advance aviation safety in Alaska. Six vital items were identified by workgroups and persons at the meeting: pilot proficiency, access to weather information, Capstone avionics equipment, runway maintenance, fuel availability, and increased infrastructure support for instrument flight navigation.[7] Further safety interventions should continue to focus on providing weather and other information to increase pilots' situational awareness, maintaining pilot proficiency and decision-making ability regardless of experience, ratings and flight hours, and providing infrastructure to allow pilots to fly by instruments.

Acknowledgments

National Transportation Safety Board. Federal Aviation Admin. National Weather Svc. Medallion Foundation. Alaska Air Carriers Assoc, Alaska Airmen's Assoc, Univ of Alaska Anchorage Aviation Technology Div, State of Alaska.

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Place of Influenza Vaccination Among Adults—United States, 2010-11 Influenza Season

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2 tables omitted

THE 2010-11 INFLUENZA SEASON WAS THE first season after the 2009 influenza A (H1N1) pandemic and the first season that the Advisory Committee on Immunization Practices (ACIP) recommended influenza vaccination for all persons aged ≥6 months.[1] During the pandemic, many new partnerships between public health agencies and medical and nonmedical vaccination providers were formed, increasing the number of vaccination providers.[2] To provide a baseline for places where adults received influenza vaccination since the new ACIP recommendation and to help vaccination providers plan for the 2011-12 influenza season, CDC analyzed information from 46 states and the District of Columbia (DC) on influenza vaccination of adults aged ≥18 years for the 2010-11 season, collected during January—March 2011 by the Behavioral Risk Factor Surveillance System (BRFSS). This report summarizes the results of that analysis, which found that, for adults overall, a doctor's office was the most common place (39.8%) for receipt of the 2010-11 influenza vaccine, with stores (e.g., supermarkets or drug stores) (18.4%) and workplaces (17.4%) the next most common. For those aged 18-49 years and 50-64 years, a workplace was the second most common place of vaccination (25.7% and 21.1%, respectively). Persons aged ≥65 years who were not vaccinated at a doctor's office were most likely (24.3%) to have been vaccinated at a store. The results indicate that both medical and nonmedical settings are common places for adults to receive influenza vaccinations, that a doctor's office is the most important medical setting, and that workplaces and stores are important nonmedical settings.

BRFSS is a state-based, random-digit—dialed landline telephone survey collecting information from randomly selected persons aged ≥18 years among the noninstitutionalized, civilian population in 50 states and DC. BRFSS data are weighted for the probability of selection of a telephone number, the number of adults in a household, and the number of telephones in a household; a final poststratification adjustment is made for nonresponse and noncoverage of households without telephones.[3] A total of 36,581 responses collected by BRFSS during January—March 2011 from adults in 46 states and DC who received an influenza vaccination during the 2010-11 influenza season were analyzed to estimate the percentage receiving the vaccine in various medical and nonmedical settings. The median state Council of American Survey and Research Organizations (CASRO) BRFSS response rate was 54.3%.

