

Measles Outbreak — Continued

coverage levels among preschool-aged children should include establishing walk-in service to provide vaccinations on a routine basis, extending clinic hours, offering door-to-door vaccination in areas with hard-to-reach populations (e.g., immigrants), educating providers and parents about contraindications to vaccinations, and taking advantage of all opportunities to vaccinate children during health-care visits, as is recommended in the United States. Optimal levels of immunity may be achieved in school children through the establishment and enforcement of requirements for receipt of two doses of vaccine.

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Agricultural Auger-Related Injuries and Fatalities — Minnesota, 1992–1994

Agriculture remains one of the most hazardous industries in the United States: in 1992, approximately 37 fatalities occurred per 100,000 agricultural workers and an estimated 140,000 disabling injuries to farm workers (1). Recent surveillance for agricultural injuries and fatalities in Minnesota has helped characterize problems associated with the use of one type of implement—agricultural augers (large, corkscrew-like devices used to move dry materials [e.g., grains, animal feeds, and granular fertilizers]). This report presents surveillance findings for auger-related injuries during 1992–1994, summarizes the investigations of four selected auger-related injuries that occurred in the state, and provides recommendations to prevent injuries to farmers who use these devices.

Since 1992, the Minnesota Department of Health has collected surveillance data about agricultural injuries and fatalities through three programs sponsored by CDC's National Institute for Occupational Safety and Health (NIOSH): the Fatality Assessment and Control Evaluation Program (FACE), which conducts on-site investigations of selected categories of occupational fatalities (e.g., falls and machinery-related and logging-related deaths); the Sentinel Event Notification System for Occupational Risks (SENSOR), which conducts surveillance for occupational amputation injuries; and the Occupational Health Nurses in Agricultural Communities Program (OHNAC), which identifies and investigates farm-related injuries and illnesses.* Case ascertainment employs a combination of surveillance methods, including reviews of medical re-

*FACE, SENSOR, and OHNAC are cooperative agreements between NIOSH and various state health departments and are intended to develop models for state-based occupational health surveillance and intervention. FACE was developed to more accurately identify and evaluate work-related fatalities; 14 states currently have FACE programs. Fourteen states have been awarded SENSOR cooperative agreements to develop systems for surveillance of 12 occupational conditions. OHNAC is a national surveillance system that has placed public health nurses in 10 states. Surveillance data compiled by these programs ultimately are used to reduce work-related injury and illness.

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cords, articles from newspaper clipping services, death certificates, hospital records, and Minnesota Occupational Safety and Health Administration (M-OSHA) program records. In addition, the Minnesota Extension Service independently records agricultural injuries and deaths reported by extension agents and newspaper clipping services.

Surveillance for Auger-Related Injuries

During 1992–1994, augers were associated with two fatal and 25 nonfatal injuries in Minnesota. From 1993[†] through 1994, FACE received reports of two auger-related deaths, and SENSOR was notified of seven auger-related amputations. During 1992–1994, OHNAC was notified of 18 auger-related injuries, of which six (33%) were among children aged <18 years; three of these resulted in amputations.

During 1984–1994, the Minnesota Extension Service received reports of 14 auger-related deaths, which were attributed to entanglement or crushing (eight) and electrocution (six). Although cases reported to OHNAC and SENSOR were not duplicated, duplication of fatalities reported to the Extension Service and to FACE could not be excluded.

Case Reports

Incident 1. On April 14, 1992, a 13-year-old boy was cleaning inside an oxygen-limiting silo while a sweep auger was in operation. The unguarded auger swept slowly around the silo floor, pivoting about a central axis. As the boy stepped over the moving equipment, the hem of his pants caught in the auger, and his leg was traumatically amputated below the knee as it became entangled. He required multiple surgical procedures and had been hospitalized for 2½ months at the time of the OHNAC interview.

Incident 2. On January 16, 1993, a 70-year-old farm laborer was cleaning a grain auger that had been shut off, but the machine's electric power supply had not been disconnected (the controls for switching the auger on and off were located in a different building). The auger was inadvertently activated by a co-worker, and the laborer's left hand was traumatically amputated above the wrist. He was subsequently hospitalized and had not resumed work at the time of the SENSOR interview 2 months later.

Incident 3. On January 8, 1994, a 21-year-old farm laborer was using an auger to unload a silo. While attempting to step over the machine, he stepped on a metal shield that covered the bottom of the auger. The shield broke, and he fell into the auger, sustaining a traumatic below-the-knee amputation. He subsequently was hospitalized and had not resumed work at the time of the SENSOR interview 3 months later.

Incident 4. On June 22, 1994, a 46-year-old farmer died after becoming entangled in an unshielded auger system that was being used to move feed down the length of a feed bunk in a cattle feed lot. While the system was in operation, the farmer entered the feed bunk, and his leg became entangled when he either slipped or attempted to step over the auger. The electric motor driving the system stopped after the fuse blew. Although he freed himself from the auger and climbed out of the feed bunk, he died a short distance from the feed lot as a result of massive hemorrhage. This incident was unwitnessed, and data were compiled by FACE investigators based on a review of sheriff's reports and photographs of the incident site.

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[†]Both FACE and SENSOR in Minnesota were initiated in 1993.

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Editorial Note: An agricultural auger consists of a continuous corkscrew blade attached to a long metal shaft and a round metal tube into which the blade is inserted. The metal tube contains the material as it is moved from the intake at one end of the auger to the discharge at the other end and protects the operator from contact with the rotating blade.[§] Augers vary in size, generally ranging from 4 to 15 inches in diameter and from several feet to 100 feet or more in length (2). An auger can be independent and movable or it can be integrated with another piece of machinery or a grain storage system (e.g., as a fixed component of a combine, grain dryer, grain wagon, storage bin system, or silo unloader). In addition, augers can be self-powered (by an electric motor or a gasoline- or diesel-fueled engine) or driven by power transferred from a second piece of equipment through a power take-off shaft (PTO) or a series of gears, chains, belts, and/or pulleys. Auger-related injuries result from 1) contact with the exposed auger blade; 2) entanglement in a belt drive or PTO conveying power to the blade; 3) electrocution when an auger contacts overhead power lines (e.g., while it is being moved or positioned in an upright configuration); or 4) contact with a spinning crank, which is used to position the auger (3).

Although auger-related injuries are preventable, they remain a public health concern among farmers. On a per-hour-of-use basis, augers are one of the most dangerous types of farming equipment (4); severe injuries have resulted from entanglement and electrocution (2). The occupational injury surveillance and investigation data from Minnesota underscore the risks augers pose for both disabling and fatal injuries among farmers. In particular, the Minnesota data emphasize the risk for traumatic amputation resulting from entanglement of extremities.

NIOSH recommends the following precautions to substantially reduce the risks for hazards related to auger use:

1. Barriers (e.g., fences) should be used to prevent persons not involved in the operation of an auger from entering the area adjacent to the auger.
2. Children aged <18 years should not operate augers and should not enter the area near an auger.[¶]
3. Before starting an auger, the operator should ensure that all protective shields, as supplied by the manufacturer, are in place and in good condition. The federal OSHA standard for safety of farm equipment requires placement of guards on augers consistent with their designed use (5).
4. Before service or repair, power should be shut off and the auger power source "locked-out" and "tagged." (Locking out prevents power from being restored while maintenance is in progress, and tagging the switch indicates that power is disabled and the reason).

[§]An auger also may consist of only an exposed spiral corkscrew. A "sweep" auger, referred to in incident 1, is typically an exposed auger used to move material such as grain to a central discharge point inside a large storage structure. A sweep auger usually extends from the center of a round structure to its outside wall, is powered by a drive system that contacts the bin or silo wall, and slowly rotates (i.e., sweeps) around a pivot point at the center of the structure. The auger rests directly in the grain (or similar material), and the excess grain alongside the auger acts to confine the grain that is in contact with the auger.

[¶]Federal child labor laws prohibit employees aged <16 years from operating hazardous equipment (including agricultural augers). However, family members working on family farms are exempt from these provisions.

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5. To prevent entanglement, persons wearing loose clothing or jewelry or persons with long, untied hair should not operate augers.
6. Workers should not step or jump on or over an auger while it is in operation.
7. Grain augers always should be lowered to a horizontal position before being moved from one location to another. Workers always should observe the presence and location of power lines before raising an auger into position.
8. Whenever possible, operators should ensure good footing while working around augers. Portable augers should be placed on dry, level ground or a gravel pad. Spilled grain should be removed between loads, after the equipment has been turned off.
9. Operators should never use their hands or feet to redirect the flow of grain or other materials into the auger.
10. All farm workers and auger operators should be educated about safe operating procedures and hazards associated with augers.
11. Augers should be clearly labeled as posing a hazard for entanglement and subsequent serious injury.

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State-Specific Changes in Physical Inactivity Among Persons Aged ≥ 65 Years — United States, 1987–1992

Regular physical activity can provide important health benefits, even when such activities are initiated later in life (1,2). Despite these benefits, most older persons in the United States have sedentary lifestyles (3). One of the national health objectives for the year 2000 is to reduce to 22% the proportion of adults aged ≥ 65 years who engage in no leisure-time physical activity (objective 1.5a) (4). This report uses data from CDC's Behavioral Risk Factor Surveillance System (BRFSS) to summarize state-specific trends during 1987–1992 in the prevalence of physical inactivity during leisure time among persons aged ≥ 65 years and projects state-specific prevalences for 1997.

The BRFSS is a population-based, random-digit-dialed telephone survey of the noninstitutionalized U.S. population. Data were available for 83,858 persons aged ≥ 65 years residing in 49 states and the District of Columbia who participated in the BRFSS during 1987–1992. Of the 50 reporting areas, 32 states and the District of Columbia collected information about physical activity for the entire study period. Respondents were asked specific questions about physical activity, including the type, frequency, and duration of the two leisure-time physical activities in which they participated most frequently during the preceding month. Persons who reported

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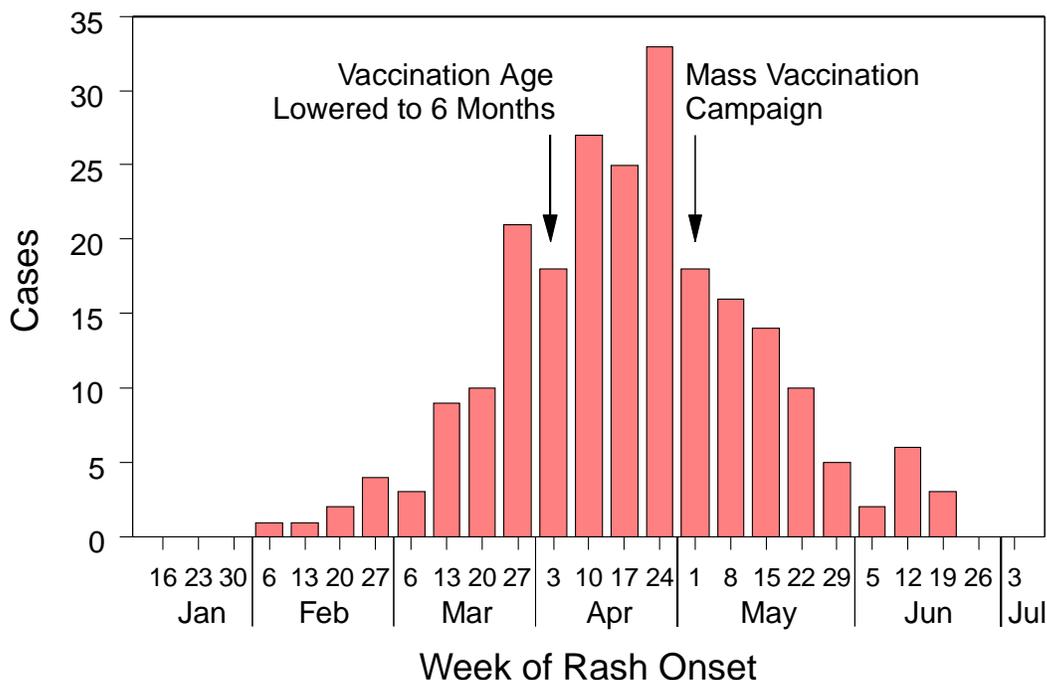
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Measles Outbreak — Guam, 1994

One of the largest outbreaks of measles in the United States and its territories since 1992 occurred in Guam during 1994. From February 8 through June 25, 1994, a total of 280 suspected, probable, or confirmed cases of measles were reported to the Guam Department of Public Health and Social Services (GDPH). Of these cases, 228 were considered confirmed, including 47 serologically confirmed cases (Figure 1). This report summarizes findings from the investigation of these 228 cases.

FIGURE 1. Number of measles cases,* by week of rash onset — Guam, 1994



*n=228.