During January 24–April 4, 2003, smallpox vaccine was administered to 31,297 civilian health-care and public health workers in 54 jurisdictions as part of an effort to prepare the United States for a possible terrorist attack using smallpox virus. This report updates information on all vaccine-associated adverse events among civilians vaccinated since the beginning of the smallpox vaccination program and among contacts of vaccinees, received by CDC from the Vaccine Adverse Event Reporting System (VAERS) as of April 4.

In this vaccination program, CDC, the Food and Drug Administration, and state health departments are conducting surveillance for vaccine-associated adverse events among civilian vaccinees.1 As part of the vaccination program, civilian vaccinees receive follow-up care, and reported adverse events after vaccination receive necessary medical attention. The U.S. Department of Defense is conducting surveillance for vaccine-associated adverse events among military vaccinees.

Adverse events that have been associated with smallpox vaccination are classified based upon evidence supporting the reported diagnoses. Cases verified by virologic testing are classified as confirmed. Cases are classified as probable if possible alternative etiologies are investigated and supportive information is found. Cases are classified as suspected if they have clinical features compatible with the diagnosis, but either further investigation is required or the case did not provide supporting evidence for the diagnosis and did not identify an alternative diagnosis. All reports of events that follow vaccination are accepted (i.e., events temporally associated); however, reported adverse events are not necessarily associated causally with vaccination, and some or all of these events might be coincidental.

As of April 4, seven cases of myopericarditis have been reported (Table). Three are new reports and were received during March 31–April 4.

### Case Reports

**Case 1.** A man aged 52 years with no history of cardiac disease or risk factors for cardiac disease was re-vaccinated on March 21. On March 29, he had left-side chest pain that was exacerbated by reclining and relieved by sitting. He also reported fever, fatigue, myalgias, and axillary lymphadenopathy. On April 1, a white blood cell count indicated 5.4% eosinophils, cardiac enzyme tests and electrocardiogram (ECG) were normal, and an echocardiogram indicated no effusion or de-
creased contractility. Suspected pericarditis was diagnosed. Investigation of this case is ongoing.

Case 2. A woman aged 49 years was revaccinated on March 24 and had sharp intermittent left-side chest pain 2 days later. On March 30, she reported chest pain radiating to the left side of her neck and left ear. She was admitted to the hospital for 1 day. Cardiac enzyme tests and an ECG were negative. On discharge she still had mild chest pain, which worsened on April 4 and was accompanied by shortness of breath. On the same day, she was readmitted to the hospital for 2 days. Repeat ECG showed T-wave abnormalities suggestive of pericarditis, and echocardiogram was normal. Results of a thallium stress test and cardiology follow-up visit are pending.

Case 3. A man aged 46 years with a history of acute myocardial infarction (MI) in 1997 reported chest pain during the 3 days before vaccination; he was revaccinated on March 19. Later that evening, he had diaphoresis and his chest pain worsened; he reported to an emergency department. A non-Q wave MI was diagnosed. The patient underwent heart catheterization and angioplasty and received three stents. He was discharged and is well.

No new cases of generalized vaccinia were reported, but five new cases of inadvertent inoculation (nodular) were reported. No new ocular vaccinia cases were reported. During the vaccination program, no cases of eczema vaccinatum, erythema multiforme major, fetal vaccinia, post-vaccinal encephalitis or encephalomyelitis, progressive vaccinia, or pyogenic infection of the vaccination site have been reported (Table).

During March 31–April 4, a total of ten other serious adverse events were reported: one case of acute appendicitis, one case of pneumonia, five cases of atypical chest pain, one case of atypical chest pain with mild asthma, one case of new onset atrial fibrillation, and one case of MI (Case 3). Four cases of acute MI were reported previously.2,3

During March 31–April 4, a total of 58 other nonserious events were reported. Among the 250 vaccinees with reported other nonserious adverse events during January 24–April 4, the most common signs and symptoms were rash (n = 53), fever (n = 52), headache (n = 41), pruritus (n = 39), and pain (n = 36). All of these commonly reported events are consistent with mild expected reactions following receipt of smallpox vaccine. Some vaccinees reported multiple signs and symptoms.

During this reporting period, no vaccinia immune globulin was released for civilian vaccinees. No cases of transmission from civilian vaccinees have been reported. In addition, no cases of transmission from 19,508 health-care workers, 8,999 of whom have been followed for >1 month, have been reported. Seven cases of transmission from military personnel to civilian contacts have been reported.

Surveillance for adverse events during the civilian and military smallpox vaccination programs is ongoing; regular surveillance reports will be published in MMWR.

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Editorial Note: The first two case descriptions illustrate the variability in presentation of possible myopericarditis reports. Case 1 demonstrates the difficulty of diagnosing myopericarditis when symptoms are present but cardiac enzyme tests, ECG, and echocardiogram are negative. CDC, in consultation with clinical cardiologists, is developing standardized case definitions and guidelines for evaluation and follow-up of patients with possible myopericarditis.

The patient in Case 3, who had chest pain before vaccination and on the day of vaccination, demonstrates the difficulty of assessing causality; ischemic heart events are common and might coincide with vaccination. Both viral replication and immunologic response to the vaccine are unlikely to occur on the day of vaccination. In this case, MI is unlikely to be a direct result of vaccination; however, investigation is ongoing.

2 tables omitted.

REFERENCES
3. CDC. Supplemental recommendations of adverse events following smallpox vaccine in the pre-event vaccination program: recommendations of the Advisory Committee on Immunization Practices. MMWR 2003;52:262-4.