possibility of transmission of this pathogen and the need for precautions against airborne pathogen transmission that are associated with the use of high-risk respiratory procedures in patient care.

An outbreak of Ad14 infection among military trainees at Lackland Air Force Base, Texas, that started in February 2007 has been described elsewhere [2]. In April and May 2007, 4 trainees required admission to the intensive care unit, including 1 who presented in severe respiratory distress and required immediate intubation, prolonged bag-mask ventilation, and subsequent transition to HFOV. Many HCWs were involved in the patient’s resuscitation and initial care in the intensive care unit; within a week, 7 HCWs reported respiratory illness and/or conjunctivitis. As part of our facility’s outbreak investigation, active surveillance for respiratory symptoms among this patient’s HCWs was undertaken, and 23 reported symptoms. Eight were tested for adenovirus by respiratory viral culture or PCR, and 6 had positive results. Although these specimens were not serotyped, given the exposure to this patient with Ad14 and the high proportion of Ad14 respiratory illnesses among trainees at the time (60 [92.3%] of 65 serotyped isolates [3]), it is most likely that the 8 adenoviruses were Ad14 as well.

This cluster of respiratory illness among HCWs involved in the initial resuscitation of this patient was thought to be related to the high-risk respiratory procedures involved, including endotracheal intubation, prolonged bag-mask ventilation, and the use of HFOV. High-risk respiratory procedures were linked to severe acute respiratory syndrome (SARS) transmission among HCWs, and HCW use of N95 masks may have conferred additional protection to those involved with such procedures [3–5]. Given the ability of HFOV to generate aerosols, there is the potential for transmission of adenoviral and other communicable infections.

Although we have not observed transmission of Ad14 from one hospitalized patient to another, we recently cared for one of our own fellows who was admitted to the hospital with lobar pneumonia, delirium, sepsis, and acute renal failure and who received a diagnosis of Ad14 infection. He had not had duties at Lackland Air Force Base for several months and had no contact with patients at this hospital or with children or trainees on the base. His only epidemiologic link to the Ad14 outbreak was through his girlfriend, a nurse on our facility’s internal medicine ward, who reported a febrile respiratory illness during the preceding week.

In summary, we describe an outbreak of apparently occupational adenovirus infection among HCWs that was associated with high-risk respiratory procedures, including HFOV, and we describe a severe secondary case in a household contact of an HCW. We encourage aggressive implementation of appropriate isolation precautions, including precautions against airborne transmission, during high-risk respiratory procedures in patients infected with Ad14.

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**References**


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**Unequal Detection of HIV Type 1 Group O Infection by Simple Rapid Tests**

To the Editor—Given our particular involvement in human immunodeficiency virus (HIV) screening with simple rapid tests (SRTs) in developing countries, we read with great interest the articles by Novitsky et al. [1] and Corcoran et al. [2] in Clinical Infectious Diseases. Each of them reported a case of antibody-negative HIV type 1 (HIV-1) subtype C infection (in Botswana and South Africa, respectively). Cameroon is another African country where HIV-1 is characterized by extensive genetic variability, with the existence of the most-divergent HIV-1 strains, HIV-1 group O and group N [3, 4]. Recently, Determine HIV-1/2 (Inverness Medical Innovations) and Immunocomb II HIV-1/2 bispot (Organics) tests used in Cameroon for the 2-SRT HIV screening strategy were replaced by Retrocheck HIV-WB (Qualpro Diagnostics) and SD Bioline HIV-1/2 3.0 (Standard Diagnostics). These new tests had been evaluated by 2 studies, in the Central African Republic and South India, and demonstrated high sensitivity and specificity (100% and 98.0%, respectively, for Retrocheck HIV-WB and 100% and 99.4%, respectively, for SD Bioline HIV-1/2 3.0) [5, 6]. Nevertheless, we noted that no serum
sample had been serotyped as indicating HIV-1 group O infection in these studies. Therefore, we studied the reactivity of 12 HIV-1 group O serum samples using Retrocheck HIV-WB and SD-Biodeine HIV-1/2 3.0 tests, in comparison with Determine HIV-1/2, Immunocomb II HIV-1/2, and Immunoflow HIV1-HIV2 (Core Diagnostics) tests. These 12 banked serum samples, remaining from routine testing, had been characterized as HIV-1 group O by an indirect ELISA on the basis of synthetic V3-loop peptides [7]. The reading of each test was improved by recording the intensity of a positive band or spot and comparing with the control. As presented in table 1, detection with reactivity “equal to or stronger than the control” or “weaker than the control but clearly reactive” varied depending on the test. Eleven samples were correctly determined to be HIV positive by Determine HIV-1/2 or Immunocomb II HIV-1/2 tests, but only 8 samples were determined to be HIV positive by the Retrocheck HIV-WB test. If borderline (trace) results were considered to be positive, the accurate HIV detection range could vary from 12 to 9 samples between the various tests. The strongest reactivity was observed using the Determine HIV-1/2 test, with 11 of 12 samples exhibiting a band equal to or stronger than the control band. One serum sample was not determined to be HIV positive by either Immunoflow HIV1-HIV2 or Retrocheck HIV-WB tests; 2 other samples were read as borderline or nonreactive using the Retrocheck HIV-WB test.

The limited number of samples tested does not allow us to make a conclusion regarding the ideal combination of SRTs for the 2-SRT HIV screening strategy in Cameroon. Specificity is another issue that needs to be addressed. In this regard, the high number of borderline results that we observed with all of the SRTs, primarily with Retrocheck HIV-WB and SD Bioline HIV-1/2 3.0 tests, presents a problem of interpretation. Excluding borderline results, as suggested by Graig et al. [8] in Uganda, would have led us to erroneous conclusions. Indeed, HIV-1 group O infections are infrequent even in Cameroon (prevalence is stable at ~1% of all cases of HIV-1 infection) [9]. Nevertheless, that means that ~10,000 Cameroonian are infected with HIV-1 group O.

In conclusion, these data highlight the impact of HIV diversity, in terms of group or subtype, on HIV screening. They underscore the need to evaluate HIV tests in the field with a large number of samples before implementing a new double-SRT strategy or a new SRT as a first-line test.

Table 1. Reactivity of 12 HIV type 1 group O serum samples to 5 simple rapid tests.

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<td>SD Bioline HIV-1/2 3.0b</td>
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NOTE. 0, nonreactive test; +, test result weaker than the control but clearly reactive; ++, test result equal to or stronger than the control; tr, trace/borderline test result.

a HIV type 1–HIV type 2 discriminating test. Only HIV type 1 reactivity was observed by these tests, without HIV type 1–HIV type 2 cross-reactivity.

b Two measurements represent discordant results from 2 independent readers.

References


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