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# INFECTIOUS DISEASE ALERT®

*A twice-monthly update of developments in infectious disease, hospital epidemiology, microbiology, infection control, emporiatrics, and HIV treatment*

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## Tenofovir in HIV/HBV-Coinfected Patients

ABSTRACTS & COMMENTARY

***Synopsis:*** *Tenofovir effectively reduces HBV replication over 24 weeks of therapy in HIV-coinfected patients.*

**Sources:** Ristig MB, et al. Tenofovir disoproxil fumarate therapy for chronic hepatitis B in human immunodeficiency virus/hepatitis B virus-coinfected individuals for whom interferon-α and lamivudine therapy have failed. *J Infect Dis*. 2002;186:1844-1847; Nelson M, et al. An open-label study of tenofovir in HIV-1 and hepatitis B virus co-infected individuals. *AIDS*. 2003;17:F7-F10; Benhamou Y, Tubiana R, Thibault V. Tenofovir disoproxil fumarate in patients with HIV and lamivudine-resistant hepatitis B virus. *N Engl J Med*. 2003;348:177-178; Núñez M, et al. Activity of tenofovir on hepatitis B virus replication in HIV-co-infected patients failing or partially responding to lamivudine. *AIDS*. 2002;16:2352-2354.

A SERIES OF SMALL, NONCOMPARATIVE STUDIES HAVE EXAMINED the effect of tenofovir on hepatitis B virus (HBV) infection in individuals with HBV/HIV coinfection. Benhamou and colleagues administered tenofovir disoproxil fumarate (TDF) 300 mg daily to 12 coinfected men, all of whom had detectable HBV DNA in plasma despite ongoing treatment with lamivudine (150 mg b.i.d.). Ten patients had documented HBV polymerase mutations associated with resistance to lamivudine. After 24 weeks of therapy, plasma HBV DNA decreased by a mean of $3.83 \pm 0.38$ $\log_{10}$. None had loss of HBeAg or development of anti-HBe. TDF was discontinued in 1 patient with polycystic kidney disease whose creatinine increased from 2.8 mg/dL to 4.5 mg/dL. No new mutations were detected at 24 weeks.

Núñez and colleagues in Madrid administered TDF (300 mg q.d.) to 11 men and 1 woman with HIV/HBV coinfection receiving lamivudine as part of an antiretroviral regimen; three were also anti-HCV-positive. Nine were HBeAg-positive and 7 of 11 examined had HBV mutations associated with lamivudine resistance. The median decrease in plasma HBV DNA at 24 weeks was 3.78 $\log_{10}$. One sub-

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## INSIDE

ject cleared both HBsAg and HBeAg, as well as HBV DNA.

Ristig and colleagues in St. Louis enrolled 6 HIV/HBV-coinfected patients with evidence of persis tent HBV replication despite ongoing receipt of lamivu dine or emtricitabine and prior IFN-a treatment. All were HBeAg positive. Four of 5 who underwent biopsy had evidence of cirrhosis. Treatment with TDF 300 mg q.d. was associated with a decrease in plasma HBV DNA at 24 weeks of 3.6 ± 0.4 $\log_{10}$. Two had HBV DNA levels below the level of detection (< 1.5 × 103), but none developed anti-HBe.

Nelson and colleagues treated 20 HIV/HBV-coinfected patients with tenofovir 245 mg q.d. together with their other antiretroviral therapy. Eleven of the 15 lamivudine-experienced patients had YMDD or YIDD mutations in HBV DNA. The median decrease in plasma HBV DNA was 4.0 $\log_{10}$ at 24 weeks.

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The HBV DNA viral load initially declined more rapidly in those who harbored 3TC-resistant mutations compared with those who did not ($P$ = 0.046). Seven of 20 had undetectable plasma HBV DNA at 24 weeks, and 13 had undetectable levels (< 104 copies/mL) at 52 weeks. Two converted to anti-HBe-positive at 24 weeks, while a total of 5 seroconverted at 52 weeks. Approximately one-half normalized their ALT.

In addition to these noncomparative studies, some information is available from a randomized trial of treatment of HIV infection in which either tenofovir or stavudine was added to efavirenz and lamivudine. Although conclusions are necessarily limited by the small sample number of HBV/HIV coinfected patients (11), those who received both tenofovir and lamivudine had greater decreases in HBV DNA, as well as in ALT, and were less likely to develop 3TC resistance than those receiving lamivudine without tenofovir.[1]

## COMMENT BY STAN DERESINSKI, MD, FACP

Tenofovir is a nucleotide analog reverse transcriptase inhibitor that is used in the treatment of HIV infection.[2] Like its progenitor, adefovir,[3-5] tenofovir is also active against HBV.

The World Health Organization estimates that 350 million people worldwide are chronically infected with HBV and that three-fourths of the world's population live in areas with high levels (> 8%) of infection.[4] Many of the areas of high HBV prevalence, such as parts of Africa and Asia, also have a high prevalence of HIV infection and, thus, many individuals with HIV/HBV coinfection. In the United States, coinfection is most common among injection drug users.

Lamivudine is also active against both viruses and is frequently used in coinfected patients. Its activity against HBV appears to be comparable to that of tenofovir, resulting in an approximately 4 $\log_{10}$ decrease in circulating HBV DNA concentration after 24 weeks of therapy.[6] Unfortunately, HBV, like HIV, commonly becomes resistant to this nucleoside analog during treatment as a result of mutations in the YMDD motifs of their reverse transcriptase genes.

The studies reviewed here demonstrate that tenofovir is effective in reducing HBV replication in coinfected patients, with a mean or median decrease in HBV load of approximately 4 $\log_{10}$ after 24 weeks of therapy (*see Table*). Although the data set is small, these virological responses appeared to be indepen-

dent of the degree of immunodeficiency, as well as the presence of YMDD mutations. HBeAg clearance at 24 weeks is infrequent, a finding not different from that seen with lamivudine. HBV virological rebound indicative of the emergence of resistance to tenofovir was not described in these relatively short-term studies. This is consistent with the adefovir experience.

There is, however, a potential downside to the dual activity of these drugs. Abrupt discontinuation of anti-HBV therapy may lead to viral resurgence and flares of liver disease that clinically resemble acute HBV infection. These flares may also occur with continued lamivudine therapy in association with the increased HBV replication seen with the emergence of resistance. Such flares of hepatitis result in worsening of liver histology and, occasionally, liver failure.[7]

All HIV-infected patients should be screened for HBV infection; the converse is also true. In dually infected patients, some clinicians may deliberately elect to use lamivudine or tenofovir as part of their anti-HIV regimen in order to reduce HBV replication as well. Whether HBV resistance to tenofovir will commonly emerge with administration of this nucleotide analog remains to be seen. At any rate, such patients must be carefully observed if tenofovir therapy is discontinued. ■

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**Table.**

**Results of Tenofovir Therapy on HBV in HIV Coinfected Patients**

| Reference | # Patients | HBV $\log_{10}$ decrease | HBe Clearance |
|---|---|---|---|
| Núñez | 12 | 3.78 (median) | 1 |
| Ristig | 6 | 3.6 (mean) | 0 |
| Benhamou | 12 | 3.83 (mean) | 0 |
| Nelson | 20 | 4.0 (mean) | 2* |
| Cooper** | 5 | 4.7 (mean) | 1 |

*5 at 52 weeks

**tenofovir and lamivudine

# Getting the Bugs Out of Bronchoscopes

ABSTRACTS & COMMENTARY

***Synopsis:*** *Bacterial contamination of bronchoscopes, resulting in both unnecessary antibiotic use and clinical infection, resulted from a change in design of the instruments.*

**Sources:** Kirschke DL, et al. *Pseudomonas aeruginosa* and *Serratia marcescens* contamination associated with a manufacturing defect in bronchoscopes. *N Engl J Med*. 2003;348:214-220; Srinivasan A, et al. An outbreak of *Pseudomonas aeruginosa* infections associated with flexible bronchoscopes. *N Engl J Med*. 2003;348: 221-227.

In the first of these 2 reports, an infection control practitioner reported an increase in bronchoscopy specimens yielding *Pseudomonas aeruginosa* and *Serratia marcescens*, prompting an investigation by the state health department and the CDC. Investigators reviewed microbiology and clinical records of patients undergoing bronchoscopy during the outbreak period (July 1, 2001, to October 31, 2001).

Of 66 procedures performed in 60 patients, 43 specimens were submitted for bacterial cultures. Of these, 20

(47%) yielded *P aeruginosa*; six of these also yielded *S marcescens*. The first positive culture occurred 8 days after acquisition of several new model bronchoscopes. All the positive cultures occurred following procedures using the new model, and none occurred following procedures using the older model instrument ($P < .001$). Examination of the instruments showed that the biopsy port caps were loose; culture from the ports in 3 of the 4 new bronchoscopes was positive for *P aeruginosa*. The bronchoscope isolates were identical on PFGE testing to the 10 patient isolates that were available for testing. They were also identical from 2 isolates recovered from the sink in which the bronchoscopes were washed prior to being placed in the automated reprocessor. The automated reprocessor was functioning properly, and cultures from the device were negative. One patient developed *P aeruginosa* pneumonia after a bronchoscopy, and 5 others received antimicrobial therapy based on what, in retrospect, were most likely to have been false-positive cultures.

In the second report, microbiologic surveillance in a large university hospital revealed a 3-fold increase in the proportion of bronchoalveolar lavage (BAL) specimens yielding *P aeruginosa*. During the outbreak period, June 2001 to January 2002, 414 patients underwent 665 procedures; ninety-seven (23.4%) had a BAL culture positive for *P aeruginosa*. Three bronchoscopes yielded 3 strains of *P aeruginosa* distinguishable by PFGE. Thirty-two infections due to *P aeruginosa* occurred within 14 days of bronchoscopy, with 3 deaths. Twenty of 48 available BAL isolates were genetically related to one of the strains, as was one of 4 bloodstream isolates. The contaminated instruments were removed from service in February 2002, and the isolation rates of *P aeruginosa* returned to baseline. The investigators subsequently learned that the implicated bronchoscope model had been recalled by the manufacturer in November 2001 due to complaints of loose biopsy port caps and bacterial contamination.

### COMMENT BY ROBERT MUDER, MD

These 2 reports illustrate several important points regarding patient safety. Minor modifications of FDA-approved devices do not usually require that the device undergo the complete approval process again. A major means of monitoring the safety of devices relies on reporting of device-associated injury. Such reporting is mandatory on the part of manufacturers and voluntary on the part of health care providers and consumers. In this instance, a loose biopsy port on a new model bronchoscope appeared to permit bacterial contamination of the port during washing. While disinfection procedures appeared appropriate in both of the hospitals, the instruments were not adequately sterilized. Although the problem was appropriately reported by the manufacturer and the affected models recalled, it is troubling that a major university hospital was not aware of the recall and that the affected devices were still in use 3 months after the recall. The reasons for this aren't given, but it's clear that the procedures for recalling defective devices need to be improved substantially.

It's also important to note that in both facilities, the problem was first identified by a standard infection control procedure, laboratory-based surveillance. A marked increase in the frequency of isolation of a common pathogen, the occurrence of unusual resistance patterns, or the isolation of an uncommon pathogen may be the first indication of a major threat to patient safety. It remains an essential component of an effective infection control program—you won't see what you're not looking for. ■

# Outpatient Antibiotic Use—France vs Germany: A Cultural Lesson

ABSTRACT & COMMENTARY

***Synopsis:*** *The French use antibiotics quite differently from the Germans, for a variety of reasons, including cultural factors and regulations, in addition to physician habits and patient expectations.*

**Source:** Harbarth S, Albrich W, Brun-Buisson C. Outpatient antibiotic use and prevalence of antibiotic-resistant pneumococci in France and Germany: A sociocultural perspective. *Emerg Infect Dis*. 2002;8(12):1460-1467.

YOU MIGHT EXPECT FRANCE AND GERMANY TO BE very similar in their antibiotic prescribing and antimicrobial resistance patterns in that they are contiguous, have comparable socio-economic status, and a national health service. But such is not the case. More than 45% of the pneumococci identified in France in 1998 were nonsusceptible to penicillin, whereas only 7% were so in Germany. The same differences were noted with erythromycin resistance (47% vs 4%, respectively). These disparities correlate with contrasts in antibiotic prescribing with France the highest in Europe with defined daily doses almost 3 times as high as in Germany (36/1000 vs 13.6/1000), which is among the

lowest.[1] The differences in antibiotic resistance were thought to be more likely the result, rather than the cause, of the differing use of antimicrobials.

Harbarth and associates made an extensive effort to review every possible facet of the literature to find information that may be relevant to the differing use of antimicrobials, and they found a number of factors that likely relate. Although the dates and definitions of the information varied considerably, a number of interesting factors emerged.

Physician habits were clearly different in French compared with German physicians, with the French much more likely to prescribe antibiotics. A 1991 survey in France found approximately a quarter of the population was taking antibiotic therapy. They were also more likely to use newer and broad-spectrum ones such as cephalosporins and quinolones, whereas the Germans relied much more on penicillins, tetracycline, and co-trimoxazole. German physicians were also more likely to use a higher dose of antibiotics than the French. The Germans were also less likely to prescribe antibiotics on the first office visit for acute bronchitis (7% vs 31%) and more likely to order diagnostic tests such as blood tests and chest x-rays (43% vs 21%) instead.

Patient expectations were also different. Office visits in France were considerably more frequent per capita in Germany, and more than half of the patients expected an antibiotic for the "flu." The Germans were more likely to try nonprescription medicines and homeopathy than the French and had a stronger belief in allowing infections to run their course to stimulate the immune system—as well as a fear that antibiotics would undermine it.

There were also interesting social and cultural differences that may well relate to the frequency of infections and antimicrobial resistance, especially in children, for whom most antibiotics are prescribed. Infections may be more likely because breast feeding is not as common with the French and usually practiced for a shorter period of time. Day care is almost universal for French compared with German children and often starts at a younger age.

Economic incentives and regulations of the pharmaceutical industry also appear to play a role. Retail prices for antimicrobials are considerably less in France than in Germany. In France, pharmacies profit more from selling expensive antibiotics, whereas the volume of medications is more important in Germany. Generic antibiotics are used far more frequently in Germany than France (38% vs < 5%).

## COMMENT BY ALAN D. TICE, MD, FACP

This is a nice review and comparison of oral antimicrobial prescribing with considerable insight into the complex factors that affect them. There are aspects of culture and regulations, which affect use, as well as simple physician prescribing beliefs and patient expectations. It takes understanding of antibiotic use to a new level and points out how any improvements must consider multiple factors. It is not simply a matter of training doctors to change, especially with the "grudging" responses noted of the French.

While the high antibiotic resistance figures for France may not simply be a reflection of higher antibiotic use, it is likely so.

This article also brings up the question of what the correct rate of antimicrobial use is. Are the Germans right? Or are the French? Or is appropriate use somewhere in the middle? While the present consensus is to try to reduce use, there are some concerns that it is possible to go too far. Otitis media is one of the most frequent reasons for prescribing antibiotics. In countries where antibiotic use for ear infections is low, the incidence of mastoiditis seems to be higher. Although the numbers are not significant statistically, the question is an important one. With reduced use of antimicrobials, will we see more rheumatic fever, meningitis, or other infections, which may otherwise be suppressed by the present widespread use of antibiotics throughout the world?

Another consideration is cost, which varies with the perspective taken. Use of new and broad-spectrum antibiotics increases the cost of medications and benefits the pharmaceutical industry. However, the expense of diagnostic testing before prescribing an antibiotic may well outstrip the cost of the drug. Frequent office visits for a perceived need for an antibiotic prescription may increase health care costs. Antimicrobial resistance also takes its toll in terms of secondary costs of medical care and likely loss of life. The cost to society depends on the outcome being valued.

Other questions about antibiotic use revolve around whether the goal should be lives saved or money spent. Should it be for the individual, whose life may be at stake, or society, which benefits little from antibiotic therapy?

The future of antimicrobial resistance and appropriate use is a challenging one with a need for more insight into social, cultural, and regulatory factors such as this. Only through data gathering and a broad perspective on inquiry can we learn the best approaches. ■

## Reference

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# More on MRSA: Long-Term Risk of Infection Following Acquisition

ABSTRACT & COMMENTARY

***Synopsis:*** *Twenty-nine percent of patients newly identified as carrying MRSA will have subsequent MRSA infection over the following 18 months.*

**Source:** Huang SS, Platt R. Risk of methicillin-resistant *Staphylococcus aureus* infection after previous infection or colonization. *Clin Infect Dis*. 2003;36:281-285.

HUANG AND COLLEAGUES REVIEWED THE COURSE OF patients newly identified as having MRSA colonization or infection in a large university teaching hospital. They identified 209 patients who were newly recognized as being infected or colonized; fifty-four percent were infected according to CDC definitions, and 46% were colonized. The median time from admission to the first MRSA-positive culture was 9 days. Huang et al followed the patients for 18 months for evidence of subsequent MRSA infection. Of these 209 patients, 60 (29%) developed 90 subsequent MRSA infections (average 1.5 per patient). Of the 60, 48 patients had 67 infections at sites different from the site of initial MRSA isolation. Twenty-two patients had infections at the site from which MRSA was initially isolated. The most common infections were bacteremia (28%), pneumonia (20%), soft tissue (16%), and bone and joint (16%).

The risk of subsequent MRSA did not differ significantly based on whether the initial isolation represented infection or colonization. Subsequent MRSA infection first became manifest after discharge from the index hospitalization in 52%.

## COMMENT BY ROBERT MUDER, MD

It is well known that MRSA infection is often preceded by MRSA colonization. The rate of subsequent MRSA infection among inpatients colonized with MRSA has varied between 10% and 40%, with the highest rates found, not surprisingly, in ICU patients.[1-3] The study of Huang et al adds a new dimension to assessment of the subsequent risk of MRSA infection by following patients newly recognized as infected or colonized with MRSA over an 18-month period. They found that 29% of patients had an average of 1.5 subsequent MRSA infections. Nearly half of these infections were either bacteremia or pneumonia, which are clearly life threatening. Half of the patients had their first MRSA infection following discharge from the index hospitalization. These infections would have been missed had follow-up ceased at discharge.

There are several potential biases inherent in this study. The first is that all admitted patients did not undergo surveillance for MRSA colonization during hospitalization. This may have biased the study toward identifying higher-risk patients. On the other hand, a number of patients died or were lost to follow-up after the index hospitalization, and follow-up was limited to 18 months. Thus, it is quite likely that additional, unidentified MRSA infections occurred in the study cohort.

This study emphasizes that acquisition of MRSA can have adverse consequences that extend over a prolonged period of time. The long-term risk of MRSA infection after acquisition can be addressed in several ways. The first is to prevent MRSA transmission within health care settings; obviously, patients who never acquire MRSA in the first place will not become infected. The measures by which MRSA transmission can be interrupted are well known; the implementation of these measures is often lacking. The second is to identify patients colonized with MRSA and eradicate colonization. A number of topical, systemic, and combination antimicrobial regimens have been studied for the eradication of MRSA carriage.[4] All of these regimens have distinct drawbacks, the most problematic of which are poor efficacy in patients with colonization at multiple body sites and emergence of MRSA strains resistant to the agent or agents used. An effective regimen for MRSA de-colonization could potentially prevent a considerable amount of morbidity and mortality. Development of effective agents is clearly worth pursuing. ■

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# Antibiotic Susceptibility of *Bacteroides fragilis* Group Organisms

ABSTRACT & COMMENTARY

***Synopsis**: Metronidazole, piperacillin/tazobactam, and the carbapenems remain the most reliably active against* B fragilis *group organisms.*

**Source:** Aldridge KE, et al. Bacteremia due to *Bacteroides fragilis* group: Distribution of species, beta-lactamase production, and antimicrobial susceptibility patterns. *Antimicrob Agents Chemother*. 2003;47:148-153.

Aldridge and colleagues examined susceptibility test results of 542 bloodstream *Bacteroides fragilis* group isolates recovered from 1987 to 1999 at 12 US medical centers. *B fragilis* comprised 63% of the isolates, followed by *B thetaiotamicron* (18%), *B ovatus* (10%), *B vulgatus* (6%), and *B diastonis* (3%), with a few additional isolates of *B uniformis* and *B cacae*. Not all isolates were tested against all antibiotics.

One hundred percent of the isolates were resistant to penicillin, while 100% were susceptible to metronidazole. Imipenem and piperacillin/tazobactam were each active against > 99%. Ninety-three percent were susceptible to ampicillin/sulbactam, 98% to meropenem, and 94% to ertapenem. Cefoxitin was active against 84%, while cefotetan inhibited only 64%. Twenty-three percent of species other than *B fragilis* were susceptible to cefotetan. Twenty-two percent of isolates were resistant to clindamycin. Resistance to clindamycin was seen among all species tested, and only approximately one-half of both *B diastonis* and *B ovatus* isolates were susceptible to this drug. *B fragilis* demonstrated the greatest overall susceptibility among the species tested.

### COMMENT BY STAN DERESINSKI, MD, FACP

These results confirm those of other surveys published in recent years. While greater than 99% of *B fragilis* group isolates remain susceptible to metronidazole, imipenem, and piperacillin/tazobactam, increasing in vitro resistance to a number of other antibiotics used in mixed aerobic/anaerobic infections is occurring. Perhaps the most dramatic finding over the last decade or so has been the increased resistance to clindamycin reported to be 32% in this study. To the extent that these in vitro results predict clinical therapeutic outcome, clindamycin can no longer be relied upon for anaerobic coverage in infections in which *B fragilis* group isolates play a role.

Cefotetan, often used in the prophylaxis and therapy of mixed aerobic anaerobic infections, also performed poorly, with 36% of isolates resistant. Cefoxitin performed significantly better than cefotetan, with 16% resistant.

The bottom line: Metronidazole, piperacillin/tazobactam, and the carbapenems remain the most reliably active against *B fragilis* group organisms. ■

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**13. Which of the following is correct?**

a. Tenofovir is a nucleoside analog.
b. Tenofovir administration for 24 weeks to HIV/HBV-coinfected patients results in an approximately 4 $\log_{10}$ mean decrease in HBV viral load.
c. Tenofovir is ineffective against HBV in immunocompromised patients.
d. Tenofovir administration for 24 weeks to HIV/HBV-coinfected patients results in HBeAg clearance and anti-HBe seroconversion in 100% of patients.

**14. Antibiotics are prescribed almost twice as often in France as Germany**

a. True
b. False

**Answers:** 13(b); 14(b)

## In Future Issues:

**Laboratory Diagnosis of HCV Infection**

# UPDATES

By Carol A. Kemper, MD, FACP

## KS Fails to Respond to Cidofovir

**Source:** Little RF, et al. *J Infect Dis*. 2003;187:149-153.

Anecdotal reports have suggested that Kaposi sarcoma (KS), which is believed to be, in part, due to the presence of human herpes virus 8, may respond to antiherpes drugs. Cidofovir, which is one of the most active agents in vitro against HHV-8, was administered to 7 patients with severe KS. Five of the patients had HIV-related KS, and 2 had classical KS (6 of the patients had 50 or more lesions). Sadly, all 7 patients had progression of their disease at a median of 2 months of therapy (range, 5-27 weeks). No decrease in HHV-8 viral load was detected in peripheral blood mononuclear cells. Progression of disease occurred in the 5 patients despite fairly good CD4 cell counts (mean CD4 count, 214 cells/$mm^3$ with a range of 66-1041), and 4 were receiving highly active antiretroviral therapy. ■

## MRSA Hits Big City Gays Hard

**Source:** ProMED-mail post. February 27, 2003; promed@promedmail.org.

Physicians and local health authorities in the San Francisco Bay Area, Los Angeles, and Boston are reporting an epidemic of methicillin-resistant *Staphylococcus aureus* (MRSA) infections, predominantly in gay men. Notices have been posted in bathhouses and other locations throughout San Francisco, warning that the resistant bacteria may be acquired through close contact and sexual activity. One man interviewed for the local nightly newscast disclosed that he acquired his infection after having sex with a man with an abscess.

While current surveillance techniques make it difficult to get an accurate count of the number of individuals affected, physicians in San Francisco estimate that about 150 cases have occurred, some of which have required parenterally administered antibiotics or hospitalization. While most of the cases are mild-to-moderate skin infections, more serious infections, such as post-operative infection and osteomyelitis, have occurred. Although several clones appear to be circulating in the various communities, many are additionally resistant to quinolones. This is hardly surprising since quinolones have become one of the most popular antibiotics prescribed.

Authorities in the Bay Area have wondered if this new strain possesses unique virulence factors, and epidemiologic studies are under way. In the meantime, gay men should be advised to avoid contact with other men with active skin infection or colonization with MRSA, cover any open sores, seek medical assistance for any boils or skin lesions, and wash their hands as frequently as possible. ■

## CCR5 Genotype and HIV Risk in Women

**Source:** Philpott S, et al. *J Infect Dis*. 2003;187:569-575.

The CC chemokine receptor 5 (CCR5) acts as a coreceptor for HIV-1 transmission. Earlier studies of predominantly gay men found that homozygous, but not heterozygous, gene deletion (Δ32) was protective against transmission of HIV. Philpott and colleagues extended this work to an all-female cohort of 2605 women enrolled in the Women's Interagency HIV Study (WIHS). The cohort was largely black and latina, and women were recruited in New York, Los Angeles, Washington, and San Francisco. The Δ32 gene frequency was 0.026 for HIV-positive women compared with 0.040 for HIV-negative women (odd ratio, 0.63), suggesting that even the heterozygous state was partially protective against HIV infection. Δ32 was 4-5 times more common in uninfected white women (0.116) compared with uninfected blacks (0.022) and latinas (0.029), while it was more than 20 times more common than in white women with HIV infection (0.057). The relative infrequency of CCR5 Δ32 in blacks and other minorities may contribute to the higher rates of HIV infection in these groups. ■

## Off-Road Driving and Cocci?

**Source:** ProMED-mail post. February 20, 2003; promed@promedmail.org.

One astute reader suggests that the recent increase in popularity of off-road vehicles (ORVs) may be to blame for the recent increased incidence of coccidioidomycosis, especially in places like Mariposa County, Arizona. ORVs are literally tearing up the desert in certain areas of Arizona, and residents are complaining of clouds of dust that hang in the air for hours, potentially exposing both drivers and residents to the organism. Should drivers of ORVs be warned of the potential risk to their health when purchasing a vehicle? ■