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Warming Up to Prevent Infection

ABSTRACT & COMMENTARY

Synopsis: *Warming the surgical site or the patient for a half hour before clean surgeries reduces the incidence of wound infections by one half.*

Source: Melling AC, et al. Effects of preoperative warming on the incidence of wound infection after clean surgery: A randomized controlled trial. *Lancet.* 2001;358:876-880.

Melling and colleagues at the university hospital of North Tees in the United Kingdom undertook a study of 421 patients scheduled for either a breast biopsy, hernia repair, or varicose vein surgery to determine the effect of warming on the incidence of wound infection. Patients were randomized to receive at least a half hour of body warming with a forced air warming blanket (which produced a rise in body temperature by 0.35°C), or a local noncontact radiant heat dressing (which raised the body temperature by 0.13°C), or standard care.

A postoperative infection was diagnosed if there was purulent drainage for 5 days or painful erythema plus antibiotic therapy within 6 weeks after surgery. An investigator interviewed and examined patients at 2 and 6 weeks after the operation. They found the infection rates to be 5% for those who were warmed and 14% for those who were not, with a *P* value of less than 0.001. The local and systemic warming effects were almost identical. Wound scores by the ASEPSIS system were also lower for the warmed groups. There were no differences in the incidence of hematomas or seromas. The use of antibiotics was also lower in the warmed group at the *P* level of 0.002.

COMMENT BY ALAN D. TICE, MD, FACP

The work by Melling et al is basic but logical. Warming an area of surgery increases the tissue oxygen partial pressure—an effect that can last for up to 3 hours. This was noted as early as 1956 but no one seems to have picked up on it or applied this knowledge since then. The circulation to the operative wound is clearly

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increased also by the heat.

There were no apparent adverse effects associated with either of the heating techniques. This is in contrast to other interventions, such as prophylactic antibiotics. Melling et al make the point that warming an anticipated area of surgery preoperatively may be as effective as giving prophylactic antibiotics with clean surgery. This is an excellent point and may be practical as well. It is certainly less expensive, associated with fewer adverse effects, and less harmful to our fragile microbiology environment with the increasing problem of multidrug resistant bacteria. It also avoids the problem of which antibiotic to use and how to use it.

It is interesting to note that there have been attempts to cool wounds as well with clean surgery—especially with orthopedics. The cooling may reduce swelling and inflammation but might reasonably be associated with an increase in wound infections—as has been demonstrated with animals more than a decade ago.

The idea of warming up a patient or an area of the body preoperatively is another example of applying some common sense and basic insight that somehow seems to have been overlooked in the quest for more medicines or high-tech solutions for problems. There has also been insight into the benefits of simply giving oxygen to patients during surgery,[1,2] and of leaving barrier dressings in place to protect the wound from the introduction of bacteria.[3]

A confirmatory study is in order but, if the results are correct, there are a lot of other questions to answer. How long should the body be kept warm? Do the benefits increase with warming during or after surgery? How much heat is best? Are the attorney-approved heating pads in the hospitals adequate and effective? Are there added or synergistic benefits to warming with nasal oxygen? ❖

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The Quality of Antimicrobial Susceptibility Testing in Europe

ABSTRACT & COMMENTARY

Synopsis: *The apparent differences in resistance rates between countries might simply reflect technical variation rather than true divergence of susceptibility.*

Source: Snell JJ, Brown DF. External quality assessment of antimicrobial susceptibility testing in Europe. *J Antimicrob Chemother.* 2001;47:801-810.

The quality assurance laboratory of the central Public Health Laboratory has been running a quality assurance scheme for antimicrobial susceptibility testing in England and Wales since 1975 and branched out into Europe some 10 years later. Beginning in 1985 with *Haemophilus influenzae* that did not

express ß-lactamase, but were resistant to ampicillin and co-amoxiclav, and in 1990 with stains that were resistant to chloramphenicol, they added enterococci expressing *van B* vancomycin resistance or high-level gentamicin resistance in 1991; methicillin-resistant coagulase-negative staphylococci and methicillin-resistant *Staphylococcus aureus* (MRSA) in 1992; and, finally, moderately penicillin-resistant *Streptococcus pneumoniae* to their distribution. By this time, a total of 716 laboratories in Switzerland and 9 countries of the European Union (EU) had become involved. Each participant was asked to use their routine method for antimicrobial susceptibility testing and report the results as either "susceptible" or "resistant." As is customary in these exercises, the true identity of the countries was concealed.

Considerable variation was noted between countries. The number of times the laboratory performance for the test fell below average (ie, getting the right answer) ranged from 12% for country I to 70% for country F (*see Table 1*). The poorest performance was seen for *van B* enterococci with resistance being detected by a mean of only 77% of participants and the best performance was seen for MRSA with all participants arriving at the correct answer (*see Table 2*). Snell and Brown cautioned against reading too much into the divergence in results because the organism-antimicrobial combinations were known to be the most challenging to even the best laboratories. Also, some of the participants had joined the program only recently, although their apparent inexperience was not always reflected in poorer performance. Snell and Brown were unable to offer an explanation for the divergent results but surmised that it was almost certainly due to different methodologies that would be the subject of future investigations. Whatever the explanation, the differences observed would almost certainly distort any comparisons of resistance rates and would make estimates of incidence rates of resistance unreliable.

Table 1

Performance by Country

Country	Number of tests done	Number of times the laboratory performance for the test fell below average	%	rank
A	58	9	16	2
B	58	32	55	7
C	50	21	42	5
D	53	25	47	6
E	49	15	31	3
F	27	19	70	10
G	28	11	39	4
H	45	26	58	8
I	26	3	12	1
J	38	23	61	9

Table 2

Average Performance for Different Bacterial Strains on the Last Round of Tests

	Average performance
Haemophilus influenzae that do not express ß-lactamase but were resistant to ampicillin	92%
Haemophilus influenzae that do not express ß-lactamase but were resistant to co-amoxiclav	82%
Haemophilus influenzae resistant to chloramphenicol	82%
Enterococci expressing van B vancomycin resistance	77%
Enterococci high-level gentamicin resistance	88%
Methicillin-resistant coagulase-negative staphylococci	71%
Methicillin-resistant *S aureus*	100%
Moderately penicillin-resistant *Streptococcus pneumoniae*	85%

COMMENT BY J. PETER DONNELLY, PhD

Whatever else these results show, it is clear that different laboratories arrive at different answers and that this is to some extent determined by local conditions. Unlike the United States, which has adopted a single national standard for antimicrobial susceptibility testing, we still await a single standard for the EU. In fact, countries like Germany are the exception, rather than the rule, in having a national standard. As a result, there are a variety of methods used many of which are, in fact, variants of the National Committee for Clinical and Laboratory Standards (NCCLS) protocols. The lack of a common standard here in Europe motivated the European Society of Clinical Microbiology and Infectious Diseases to set up a Standing Committee called the European Committee on Antimicrobial Susceptibility Testing of EUCAST "to try to ensure that susceptibility testing in Europe produces comparable results and interpretations."[1] Besides the main committee there are specific subcommittees for Breakpoints, Dilution methods, Diffusion methods, Quality control, Fungi (of which I am currently secretary), Intracellular pathogens, and Automation. EUCAST already liases with the NCCLS, the European Medicines Evaluation Agency, and other agencies for setting standards. As with other areas of life, this initiative does not enjoy unanimous support within the EU nor across Europe. But it has gotten further than before, and fulfills an obvious need to have standards. The current trend toward drawing up resistance

league tables requires them, the greater public interest in antibiotic resistance demands them, and the results of the NEQAS external quality assessment program illustrate the need for them. ❖

Reference

1. http://www.escmid.org/preview.html?wparties.html.

Pathogenic *Cryptosporidium* Species Widen

ABSTRACT & COMMENTARY

Synopsis: *A newly identified, apparently pathogenic species of cryptosporidium, C meleagridis, is described.*

Source: Pedraza-Diaz S, et al. *Cryptosporidium meleagridis* from humans: Molecular analysis and description of affected patients. *J Infect.* 2001;42:243-250.

Several groups worldwide have been diligently studying the genus *Cryptosporidium*. Infection is usually due to the species *C parvum*, and gained notoriety as an opportunistic infection in patients with HIV infection. Large outbreaks have occurred in recent years due to contaminated urban water supplies. The infection often produces diarrhea and has become more than just a pest. The prospect of additional pathogenic species implies how little we know about this protozoan.

This current work from England, a large cooperative endeavor, features 19 patients with diarrhea from whose stools a *cryptosporidium* was detected. Because this organism cannot be isolated with routine microbiological methods, its presence is detected as in this study by modified microscopy and immunoflourescence staining. Two anticryptosporidial monoclonal antibodies, 1 made "in house" and 1 commercially available, were used for immunoflourescence. The study also involved extensive analysis by polymerase chain reaction (PCR) amplification and sequencing of 8 different gene fragments including a heat shock protein, ß-tubulin, and 18S rRNA genes.

The results taken together suggested that a species other than *C parvum* was associated with diarrhea. The molecular analysis—in particular the DNA sequence data—showed a genetically homogenous group (except for 1 sample). Five of the genes analyzed had sequences that were identical and different for those reported previously for *C parvum*. Sequences for oocyst wall proteins, and 18S rDNA and HSP70, were identical or very similar to those reported for *C meleagridis* from turkeys.

The tubulin gene PCR produced products only in 3 samples. Genetic analysis of the tubulin sequences produced dendograms (species similarity plots) showing identity for a first group called *C parvum* genotype 1, *C parvum* genotype 2, and a third group of *C meleagridis* that is genetically related to *C parvum* genotype 2 but only distantly related to genotype 1.

Fecal samples were collected for more than 2000 patients. Only brief clinical data were reviewed for patients with diarrhea and that brief clinical data from the 19 patients with *C meleagridis* showed that 6 had recent foreign travel, 4 with sea or swimming pool bathing, and 2 with HIV underlying infection. Four of the patients were coinfected with *Giardia* and 1 with *C parvum*. Two patients reported contact with a sick pet, 1 with a dog, and 1 with a cat. Cases dated back to 1995 (stools had been frozen) and were as recent as July 2001. Three cases were part of drinking water outbreaks in which *C parvum* was causal in most other patients.

COMMENT BY JOSEPH F. JOHN, MD

Very little is known about the natural reservoirs for cryptosporidia. *C parvum* has become a scourge for companies who provide potable water for communities since they know it is almost impossible to remove every last ooycyst. *C parvum* has been highly implicated as a pathogen in urban water outbreaks. The team of McLauchlin and colleagues (including Pedraza-Diaz from this current paper) has been central to defining the expanding epidemiology of cryptosporidia.[1] Livestock and, now in this paper, poultry, seem to be important reservoirs. The mechanism of potable water contamination remains a much bigger question.

Since there are only brief clinical data on the 19 patients presented here, we cannot glean much about the severity of their disease or response to therapy. More important is the fact that at least 1 patient with HIV became infected, having no other intestinal pathogens detected.

This article highlights the discrimination of modern molecular techniques for characterizing microbial pathogens, in this case even a nonculturable one. Five gene loci had identical DNA sequences suggesting identity among the isolates that could be placed in the meleagridis species.

In this study, patients were identified by the presence of oocysts consistent with cryptosporidium morphology, one that cannot be used for species dif-

ferentiation. So, it is possible that the prevalence of *C meleagridis,* may be grossly underestimated. Persons infected with *Giardia* may also harbor *C meleagridis,* detectable only by DNA amplification of cryptosporidium loci; examples of this were used in this study.

Pedraza-Diaz and colleagues are to be commended for their crafty use of molecular techniques to define the range of *Cryptosporidium* species that may infect humans. Much more needs to be discovered about the host range of this group of parasites and the mechanism of their transmission. ❖

Reference

1. McLauchlin J, et al. Molecular epidemiological analysis of *Cryptosporidium* spp. in the United Kingdom: Results of genotyping *Cryptosporidium* spp. in 1705 fecal samples from humans and 105 fecal samples from livestock animals. *J Clin Microbiol.* 2000;38: 3984-3990.

Varicella Vaccination for HIV-Infected Children

ABSTRACT & COMMENTARY

Synopsis: *A study of 41 children who were mildly affected by HIV infection showed that varicella vaccination is safe and also immunogenic in the majority of these children. Varicella vaccination should be given to asymptomatic or mildly symptomatic HIV-infected children.*

Source: Levin MJ, et al. Immunization of HIV-infected children with varicella vaccine. *J Pediatr.* 2001;139:305-310.

Two doses of the live attenuated varicella vaccine were administered to 41 HIV-infected children who were seronegative for varicella-zoster virus infection and who were in CDC class 1 (no evidence of immune suppression, with CD4 cell percentage of ≥ 25% and normal CD4 cell number for age), either N1 (no signs or symptoms) or A1 (mild signs or symptoms). Local reactions occurred with 20% of first vaccinations and 10% of second vaccinations. Minor systemic reactions occurred with 37% of first vaccinations and 25% of second vaccinations. Vaccine-related rash occurred only twice after first vaccinations and only once after the second. The CD4 cell percentage and CD4 cell count were minimally decreased at 4 weeks after the first vaccination, but no effect was present at 8 weeks. Two months after immunization, 60% of children were seropositive for varicella antibodies, and 83% had positive lymphocyte proliferation assays to varicella. Vaccination had no effect on HIV RNA plasma load, and no patient experienced a change in CDC clinical category within 1 month after the first vaccination or within 2 months after the second.

COMMENT BY HAL B. JENSON, MD, FAAP

At the time of licensure in 1995, varicella vaccine was contraindicated for HIV-infected children and all persons with primary or acquired immunodeficiencies. On the basis of the unpublished results from this study, and after considering the potential risks and benefits, the Advisory Committee on Immunization Practices (ACIP) of the CDC revised the varicella vaccination guidelines in 1999 and recommended varicella vaccine for HIV-infected children in CDC class N1 or A1 with age-specific CD4 T lymphocyte percentages of ≥ 25%. In contrast to the single varicella vaccination recommended for healthy children < 13 years of age, HIV-infected children who are candidates for varicella vaccination should receive 2 doses with a 3-month interval between doses. The use of varicella vaccine in HIV-infected children with more significant immunologic impairment is being studied.

The updated ACIP guidelines in 1999 and updated American Academy of Pediatrics guidelines in 2000 recommended that in addition to mildly affected HIV-infected children, varicella vaccine be given to persons with impaired humoral immunity.[1,2] However, varicella vaccine continues to be contraindicated for persons with cellular immunodeficiencies including blood dyscrasia, leukemia, lymphoma of any type, other malignancies affecting bone marrow or lymphatic systems, and congenital T cell abnormalities. One exception is children with acute lymphocytic leukemia who have been in continuous remission for 1 year with lymphocyte counts > 700/mm^3 and platelet counts > 100,000/mm^3 who may receive varicella vaccine through a research protocol sponsored by the manufacturer (Merck). ❖

References

1. American Academy of Pediatrics, Committee on Infectious Diseases: Varicella vaccine update. *Pediatrics.* 2000;105:136-141.
2. Centers for Disease Control and Prevention: Prevention of varicella. Update recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep.* 1999;48(RR-6):1-5.

Meningococcal Infection in College Students

ABSTRACT & COMMENTARY

Synopsis: *College freshmen who live in dormitories have an elevated risk of developing meningococcal disease when compared with other college students. Administering currently available vaccines could reduce the risk of a meningococcal disease.*

Source: Bruce MG, et al. Risk factors for meningococcal disease in college students. *JAMA*. 2001;286:688-693.

Neisseria meningitidis causes an estimated 2400 cases of invasive meningococcal disease each year in the United States with a fatality rate of 10-15%. Although only 2-3% of cases occur on college campuses, recent outbreaks have attracted widespread media attention. These outbreaks have led the American College Health Association to recommend that college students should consider receiving meningococcal vaccine.

This study, by Bruce and associates, sought to determine the rates of meningococcal disease among American college students and to identify risk factors for the disease. They reviewed all cases of meningococcal disease among college students from Sept. 1, 1998, through Sept. 1, 2000, and then matched these cases with similar control students without a history of meningococcal vaccination. Interviews with case patients were conducted by telephone within 2 weeks of receiving a case report. Surrogates were used for case patients who died. Case-controls were similarly interviewed with information collected about demographics, class level, housing, active and passive smoking, drug and alcohol use, medical history, and exposure to large groups of people.

Ninety-six cases of meningococcal disease were identified for an incidence of 0.7 cases per 100,000 vs. 1.4 per 100,000 for the general population ($P < .001$) Freshmen living in dormitories had the highest incidence with a rate of 5.1 per 100,000. Of the case-patients, 68% were from vaccine preventable serogroups.

The finding that students are at no greater overall risk for meningococcal disease than noncollege students of similar age groups matches the results reported in a companion study in the same issue by Harrison and colleagues.[1] However, Bruce et al did find a significant increased incidence among freshman college students residing in dormitories. They speculate that crowding may account for the increased rates. Subsequent, lower rates after the first year may be due to the development of protective antibodies among the freshman who become asymptomatic carriers. The study also identified a recent upper respiratory infection (URI) as a risk factor, similar to previous reports. Students exposed to radiator heat were also at higher risk, but most likely this is a marker for dormitory residence.

Among the 96 cases, 28% were due to serotype B but the majority of cases were due to serotypes that are potentially vaccine preventable. The current available polysaccharide vaccine has an 85-95% efficacy against serogroups A,C,Y, and W-135, which could reduce meningococcal cases among this age group by approximately 70% in the college community.

COMMENT BY MARTIN LIPSKY, MD

This summer, virtually all of the students going away to college that I saw for school physicals wanted the meningococcal vaccine. This study supports administering the vaccine to this group of new freshman that will be living on campus. Although from a societal perspective, it may not be cost effective to administer the vaccine to all college freshman, this study supports immunizing those individuals who request it. Although Bruce et al acknowledge that a cost-effectiveness analysis might not support routine vaccination, they also point out that this type of analysis does not take into consideration the anxiety, disruption of campus life, and tragedy of a young person suffering meningococcal disease.

In an accompanying editorial, Dr. Jay Wenger states that developing an effective long-lasting meningococcal vaccine that can be administered in childhood is clearly the best long-term solution.[2] Recently, a serotype C vaccine was introduced for use in Europe and appears to be safe and effective when given with other routine childhood immunizations. Further development of a Y and W135 conjugated vaccine and an effective vaccine against serotype B will be necessary to offer extended protection.

In the meantime, the prudent thing seems to be to offer this vaccine to college students. If parents ask me what I would do for my child, I say that I would vaccinate. It is safe with minimal side effects. Its downsides are its expense and that it does not protect against all meningococcal disease. ❖

Dr. Lipsky is Professor and Chair, Department of Family Medicine, Northwestern University Medical School, Chicago, Ill.

References

1. Harrison LH, et al. Invasive meningococcal disease in adolescents and young adults. *JAMA.* 2001;286: 694-699.
2. Wenger J. Toward control of meningococcal disease: Reducing risk in college students. *JAMA.* 2001;286: 720-721.

use, most common of which was prescription of aminopenicillins. They have demonstrated that community-based primary care physicians commonly overprescribe antibiotics, and often choose agents that are not traditionally recommended as first-line. ❖

Dr. Kuritzky is Clinical Assistant Professor, University of Florida, Gainesville, Fla.

Antibiotic Treatment of Adults with Sore Throat by Community Primary Care Physicians

ABSTRACT & COMMENTARY

Source: Linder JA, Stafford RS. Antibiotic treatment of adults with sore throat by community primary care physicians: A national survey, 1989-1999. *JAMA.* 2001;286: 1181-1186.

Despite the fact that a diversity of suggested management plans for acute upper respiratory infections abounds, clinicians often use methods that reflect practice contrary to such guidance. Linder and Stafford propose that in cases of sore throat, the only bacteria that merits treatment is Group A beta-hemolytic streptococci (GABHS), for which first-line treatment recommendations generally include penicillin and erythromycin.

Linder and Stafford performed a retrospective analysis of 2244 adult primary care visits for sore throat over a 10-year period (1989-1999). Almost three-fourths of patients received antibiotic treatment, though it has been repeatedly demonstrated that the majority of adult pharyngitis cases are viral. Additionally, less than one-third of the antibiotic prescriptions were for penicillin or erythromycin.

COMMENT BY LOUIS KURITZKY, MD

Over the 10-year study period, use of nonrecommended antibiotics actually increased. On the other hand, in the most recent year surveyed, overall antibiotic prescribing was reduced by almost one-third, though there was no diminution of nonrecommended antibiotic

CME Questions

24. Infections following clean surgery appear to be reduced by any of the following *except*:
a. warming the entire body before surgery.
b. warming the area of anticipated surgery before surgery.
c. giving nasal oxygen during surgery.
d. cooling the wound after surgery.

25. What emerging species of *Cryptosporidium* (named after the turkey, its natural host) has been associated with diarrhea in immunocompetent and immunocompromised (HIV) infected patients?
a. *C felis*
b. *C meleagridis*
c. *C parvum*
d. Cryptosporidium dog type

26. Which HIV-infected children should *not* receive varicella vaccine?
a. All children with suspected or confirmed HIV infection
b. All children with confirmed HIV infection
c. All symptomatic HIV-infected children
d. All HIV-infected children except those in CDC class 1 with age-specific CD4 T lymphocyte percentages of ≥ 25%

27. For which of the following groups is live varicella vaccination officially recommended?
a. HIV infected children in CDC class N1 or A1 with age-specific CD4 ≥ 25%.
b. Children with congenital T-cell abnormalities.
c. Patients with cellular immunodeficiency associated with leukemia.
d. Patients with cellular immunodeficiency associated with lymphoma.

28. Which of the following meningococcal serogroups is *not* included in the quadrivalent meningococcal polysaccharide vaccine available in the United States?
a. Serogroup A
b. Serogroup B
c. Serogroup C
d. Serogroup Y
e. Serogroup W-135

In Future Issues:

Ribavirin—A New Option for the Treatment of Hepatitis C

UPDATES

By Carol A. Kemper, MD, FACP

Eco-Unfriendly Cow Dung

Source: *San Francisco Chronicle*. September 2, 2001.

Authorities met in the french Alps recently to discuss the growing problem of "poisonous" dung in pastures. With the increased use of ivermectin (and other avermectins) as parasiticides in cows, sheep, and horses, the ecotoxicity of drug excreted in feces is creating a significant problem (which has largely been ignored for years). Apparently up to 90% of ivermectin can be excreted in feces and is not significantly changed over a long period of time. Unfortunately, the drug is toxic to many flies and beetles—a single cow pat can kill up to 20,000 dung-eating beetles in one week! A recent study documented significant reductions in dung-eating beetles in feces of sheep treated with ivermectin but not in those treated with albendazole. The result being that cow pats and sheep feces in pastures and hillsides are not decomposing but are left to dry rock-solid in the field where they remain for years. The potential toxic effects on smaller invertebrate creatures is not known, but apparently earthworms are not affected—they just don't eat dried dung. A colleague once described the world as covered by a thin layer of feces—now maybe it really will be true. ■

Albendazole in Echinococcus

Source: Keshmiri M, et al. *Trans R Soc Trop Med Hyg.* 2001;95:190-194.

Keshmiri and colleagues in mashhad, Iran, evaluated the effectiveness of albendazole in the treatment of echinococcus in patients with inoperable disease, multiple cysts, or who refused surgery. Twenty-nine patients were randomized to receive albendazole vs. placebo in a 2:1 ratio. Albendazole was administered 10-15 mg/kg per day in 2 divided doses for 3 6-week cycles with 2 weeks off between cycles. The 29 patients had a total of 240 cysts (1-46 per patient). The groups were fairly balanced with regard to age and cyst size and number.

By 6 months, 21 patients remained on study (8 were lost to follow-up). The difference in the frequency of response between the 2 groups was significant. Of 17 patients completing the course of albendazole, 8 (47%) were cured, 7 (41%) showed improvement, and 2 (12%) were unchanged for an overall response rate of 88%. In contrast, only 1 of 4 control patients showed spontaneous improvement at 6 months. Cyst number and volume was significantly reduced in patients receiving albendazole (and many of those remaining may have represented "dead" cysts). While only 8.7% increased in size in treated subjects, about two-thirds of cysts increased in size in controls. Although Keshmiri et al were disappointed that the response rates were not higher despite the increased number of weeks of drug exposure than previously examined, these data support the administration of albendazole as a safe and effective first-line therapy thereby obviating the need for surgical intervention in many patients. ■

Hepatitis B Tops 75% in Guangdong

Source: ProMED-mail post August 28, 2001; promed@promedmail.org.

Based on screening blood samples obtained from hospital patients in Guangdong, China, medical experts fear that up to 75% of the people (~10 million) in this southernmost province of China have been infected with Hepatitis B virus. Although earlier reports suggested that up to two-thirds of the population in some areas of China might have been infected, the Guangdong Province may be the most heavily infected area in the world.

Infection rates of Hepatitis B have soared in China during the past 20 years, especially in rural areas where trafficking of illegal syringes and IV tubing is profitable and the cost of sterile medical supplies is prohibitive. Although many people are believed to have been infected as children during routine vaccinations, adults are also at risk. Apparently many Chinese prefer medications to be administered parenterally—believing they are more potent. As a result, rural "doctors," many of whom are not truly physicians, will administer injections of nutritional supplements, vitamins, and antibiotics as a "cocktail" to ill patients. Needles are ostensibly sterilized before reuse but the process is not monitored. Illegal blood donations have also contributed to the problem. Chinese authorities recently promised hundreds of millions of dollars to attempt to rectify the problem, which now has reached crisis proportions. ■

Nipple Piercing Goes Straight to the Heart

Source: Ochsenfahrt C, et al. *Ann Thorac Surg.* 2001;71:1365-1366.

A 24-year-old man with a history of congenital bicuspid aortic valve and coarctation of the aorta that had been surgically repaired about 15 years earlier decided to do what many kids his age do—he got his nipple pierced. Unfortunately, he received no prophylactic antibiotics for the procedure. Within days of getting his new nipple ring, he developed mastitis at the site. And, within 2 months, he presented with *Staphylococcus aureus* endocarditis eventually requiring valve replacement (the nipple ring was first removed). This case serves as a reminder to alert patients at risk for endocarditis that even simple cosmetic procedures, such as piercing, require antibiotic prophylaxis. ■