Novel Blood Collection System May Reduce Contamination Rates

BY JEFF BAUER

Use of a blood collection system that diverts and sequesters the initial 1.5 to 2 mL of blood was associated with a significant decrease in blood culture contamination compared to standard practice, according to an open-label trial conducted at a single ED. The results were published online in the journal *Clinical Infectious Diseases*.

An estimated 0.6% to 6% of blood cultures are contaminated. Some blood cultures may become contaminated by skin fragments colonized with bacteria that are dislodged during venipuncture. Such false-positive results lead to increased costs and harm associated with unnecessary additional testing and treatment.

Researchers at the University of Nebraska Medical Center evaluated a novel sterile blood collection system, the SteriPath initial specimen diversion device (ISDD), to determine if it could reduce contamination rates by diverting and excluding the initial portion of collected blood. Investigators evaluated 1,808 blood cultures from 904 adult ED patients at an urban 689-bed university hospital. The patients' mean age was 59 years, and 55% were male. For each patient, the first 20-mL blood sample was obtained using a standard procedure in which blood was drawn into a syringe and then injected into blood culture vials. A second 20-mL sample was obtained using the ISDD; the initial 1.5 to 2 mL of blood was diverted into a holding chamber, and the rest of the sample was directed into the blood culture vials. A culture was determined to be contaminated if one or more of several skin-residing organisms, including coagulase-negative staphylococci, *Propionibacterium* species, *Micrococcus* species, viridans group streptococci, *Corynebacterium* species, or *Bacillus* species, was recovered from only one of the paired cultures.

Compared to standard practice, use of the ISDD was associated with a significant reduction in blood culture contamination. Overall, two of the 904 samples (0.22%) collected with the ISDD were contaminated, compared to 16 of the 904 samples (1.78%) collected via standard practice ($P = .001$). Sensitivity was not affected by use of the ISDD; true septicemia was observed in 65 of 904 samples (7.2%) collected via ISDD and 69 of 904 samples (7.6%) collected via standard procedure ($P = .41$).

Rupp ME, Cavalieri RJ, Marolf C, Lyden E. Reduction in blood culture contamination through use of initial specimen diversion device. *Clin Infect Dis*. 2017 Apr 3. [Epub ahead of print]. doi:10.1093/cid/cix304.

FDA: Fluoroquinolone Use Not Linked to Retinal Detachment, Aortic Problems

LUCAS FRANKI

FRONTLINE MEDICAL NEWS

The Food and Drug Administration (FDA) has found no evidence of a link between fluoroquinolone antibiotic use and retinal detachment or aortic aneurysm and dissection, according to a new Drug Safety Communication update on potential serious, disabling adverse effects of oral and injectable fluoroquinolones.

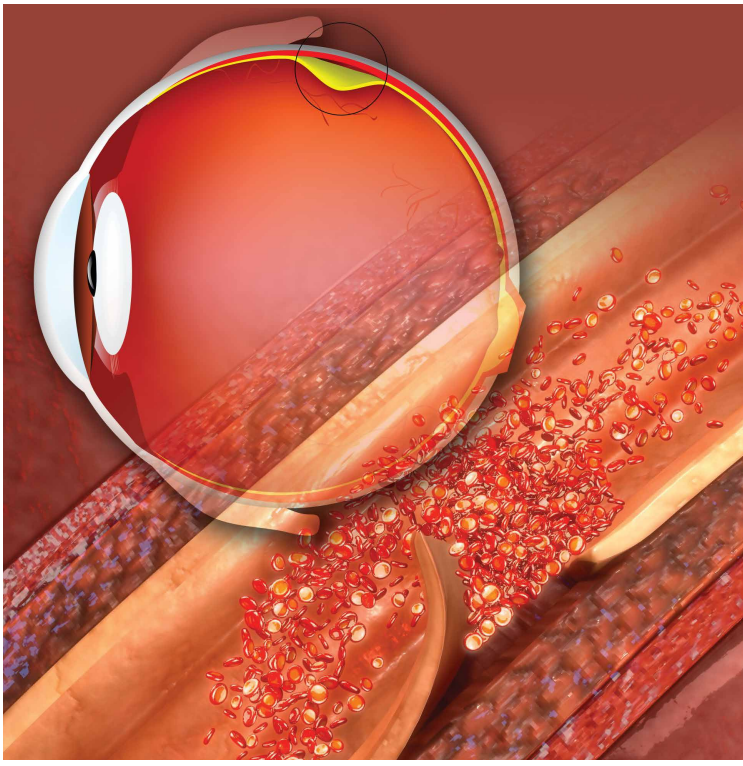
Fluoroquinolones are used to treat acute bacterial sinusitis, acute bacterial exacerbation of chronic bronchitis, and uncomplicated urinary tract infections.

In a Safety Communication published May 12, 2016, the FDA noted that serious adverse effects were possible from fluoroquinolone usage and that fluoroquinolones should be prescribed only when no other treatment options are possible. Serious adverse effects associated with fluoroquinolone use include hallucination, depression, suicidal thoughts, tendinitis and tendon rupture, a pins-and-needles feeling in the arms and legs, joint pain and swelling, skin rash, and severe diarrhea.

After reviewing patient cases and study findings, the FDA said the evidence did not support an association between fluoroquinolone use and potential retinal or aortic dangers, according to its May 10, 2017, Drug Safety Communication update.

"We will continue to assess safety issues with fluoroquinolones, and will update the public if additional actions are needed," the FDA said in a statement.

US Food and Drug Administration. FDA Drug Safety Communication: FDA updates warnings for oral and injectable fluoroquinolone antibiotics due to disabling side effects. May 10, 2017. https://www.fda.gov/Drugs/DrugSafety/ucm511530.htm. Accessed May 25, 2017.



Intravenous tPA Increases Risk of Mortality in Children With Acute Ischemic Stroke

SHARON WORCESTER

FRONTLINE MEDICAL NEWS

Intravenous thrombolysis with tissue plasminogen activator (tPA) is associated with adverse outcomes, including an increased risk of death, in children with acute ischemic stroke, based on a review of cases from the 2006-2010 Nationwide Inpatient Survey.

Of 20,587 patients ages 0 to 17 years who were included in the survey, 198 received an intervention, including tPA in 169 patients, intra-arterial thrombectomy (IAT) in five patients, and both tPA and IAT in 24 patients. The overall mortality rate was 7.8%, but in those who received tPA, it was 13.8%, compared with 7.7% in those who did not, Kathryn Ess, MD, of Rush University Medical Center, Chicago, reported at the annual meeting of the American Academy of Neurology. No deaths occurred in those who underwent only IAT, said Dr Ess.

Other outcomes were also worse for those who received tPA. For example, untreated patients were more likely to be discharged home than were tPA-treated patients (67.8% vs 47.5%), and intracerebral hemorrhage was more common in treated vs untreated patients (10.1% vs 3.8%). Costs for treated patients averaged $200,346 vs $123,015 for untreated patients.

Children included in the review had a mean age of 6 years, 43.9% were girls, and 47.7% were white. Treated patients were older (10 years vs 5.9 years), and comorbidities included Moyamoya disease in 12.4% of patients, cardiac valvular disease in 6.6%, and sickle cell disease in 6.5%. Those who received tPA had a higher prevalence of procoagulable conditions (15.2% vs 2%). Of note, the higher prevalence of intracerebral hemorrhage in treated patients was not explained by Moyamoya or sickle cell disease, as patients with those comorbidities were less likely than those without those conditions to receive treatment, Dr Ess said.

Though limited by the retrospective study design, small numbers of treated patients, a lack of data on stroke severity or functional outcomes, and the inclusion of data from years before newer thrombectomy devices became available, the findings highlight concerns about the safety and efficacy of tPA in children with ischemic stroke, she said, noting that few studies have looked at the utility of tPA with or without IAT in the pediatric population.

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"Studies of the efficacy of ischemic stroke treatment in adults can't necessarily be extrapolated to children," she said, adding that this is especially true given the difference in etiologies of pediatric acute ischemic stroke.

Indeed, the findings underscore "the age-old adage that children are not just little adults," said Andrew Southerland, MD, of the University of Virginia, Charlottesville, who was the discussant for the session. "We need prospective clinical trials in children," he said.

HCV Seroconversion Rate 0.1% After Occupational Exposure

BIANCA NOGRADY

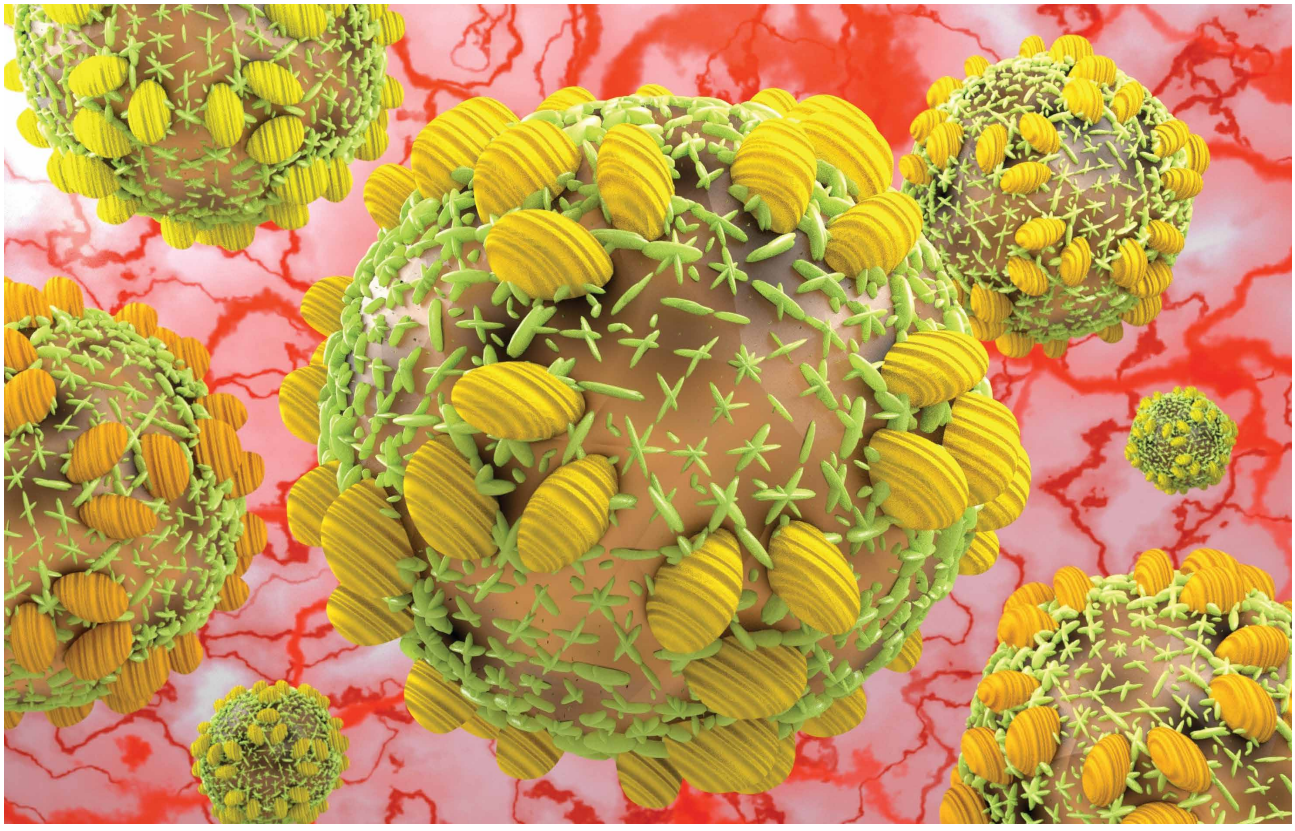
FRONTLINE MEDICAL NEWS

An analysis of 13 years of accidental occupational exposures to hepatitis C virus (HCV)-contaminated fluids or instruments has revealed a seroconversion rate of just 0.1%, significantly lower than that previously reported in the literature. This finding is from a longitudinal analysis of data from a prospectively maintained database of 1,361 occupational injuries involving HCV-positive source that occurred between 2002 and 2015 conducted by Francesco M. Egro, MD, and his colleagues from the University of Pittsburgh Medical Center. Results were published online in the *American Journal of Infection Control.*

The two incidents of seroconversion occurred in patients who were exposed to blood from an HCV-positive patient via percutaneous injuries to the thumb from a hollow-bore needle, representing an overall seroconversion rate of 0.1%. In both cases, the source patients whose blood was involved were not coinfected with hepatitis B virus or human immunodeficiency virus.

Researchers also conducted a review of literature on needlestick injuries and occupational exposure to HCV-infected blood and fluids; from this review, they calculated an overall seroconversion rate average of 0.7%, with an average rate of 0.8% for percutaneous exposures. The review did not include mucomembranous exposure, as there were not enough data.

In this study, 65% of exposures were caused by percutaneous injuries and 34% were caused by mucocutaneous injuries; the cause of the remaining 1% was uncertain.



The hand was the most common site of injury (63%), followed by the face and neck (28%), and the arm, foot, leg, or trunk (4%). There was no record of the anatomical location of the injury in 5% of cases.

In nearly three-quarters of cases, blood was the source of exposure, while blood-containing saliva accounted for 3% of cases. The remaining 24% of cases were linked to other fluids, such as peritoneal fluid, tracheal secretions, amniotic fluid, bloody irrigation fluid, and blood-containing feces.

"The risk of transmission after exposure to HCV-positive patients' fluids or tissues other than blood is expected to be low, but has not been formally quantified," the authors wrote. "Although there have been reports of HCV seroconversion after human bites and after punching a HCV-positive individual in the teeth, percutaneous exposures to the blood of a HCV-positive source remain the most common cause of occupational HCV transmission."

While the rate of seroconversion was low, the authors encouraged prompt reporting, testing, and follow-up of exposed individuals.

Egro FM, Nwaiwu CA, Smith S, Harper JD, Spiess AM. Seroconversion rates among health care workers exposed to hepatitis C virus-contaminated body fluids: The University of Pittsburgh 13-year experience. *Am J Infect Control*. 2017 Apr 24. [Epub ahead of print]. doi:10.1016/j.ajic.2017.03.011.