

# Lab Tests Find More Infants' Bacterial Infections

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HONOLULU — A few simple, inexpensive laboratory tests conducted in the outpatient setting could have identified which febrile infants were likely to have serious bacterial infections and should have been considered candidates for hospital admission, according to the results of a retrospective study of more than 10,000 febrile infants.

Dr. Eric W. Glissmeyer and his associates examined the records of 10,316 febrile infant visits to hospitals and emergency clinics and found that in about half of cases—5,221—the infants were evaluated and discharged home.

Of those, 63 (1%) of the infants were admitted within 3 days of discharge, 23 of them for serious, culture-confirmed bacterial infections, Dr. Glissmeyer said at the annual meeting of the Pediatric Academic Societies.

Bacteremia (10 cases), urinary tract infection (7 cases), bacterial meningitis (5 cases), and salmonella gastroenteritis (1 case) were among the missed cases.

Most of the infections were life threatening, he said.

Among these 23 cases, just one infant had received a complete blood count and a urinalysis with results within normal limits at the initial presentation, conferring a low risk of a serious bacterial infection, reported Dr. Glissmeyer, who

was affiliated with the University of Utah, Salt Lake City, at the time of the study.

Another 12 (52%) of these 23 infants were discharged home despite being at high risk for a serious bacterial infection.

Risk assessment was based on laboratory results and the degree of risk was considered high if an infant had a white blood cell count of fewer than 5,000 cells/mcL or more than 15,000 cells/mcL; an absolute band count of greater than 1,500/mm<sup>3</sup>; and/or more than 10 white blood cells per high-powered-field in a urine sample.

Infants with laboratory results meeting these high-risk criteria had more than a twofold increased likelihood of being readmitted within 3 days for any reason, and for a serious bacterial infection specifically.

No laboratory tests were performed in 10 febrile infants who went on to be hospitalized with a serious bacterial infection within 3 days, said Dr. Glissmeyer, who is now at Children's Hospital Boston.

**Many institutions routinely admit all febrile infants younger than 28 days old; clinical appearance alone is a poor determinant of risk for bacterial infection.**

Consensus guidelines for the management of febrile infants, which were originally issued in 1993

(Ann. Emerg. Med. 22:1198-210), as well as criteria that were developed by several institutions on the basis of prospective studies, routinely recommend performance of a CBC and a urinalysis to detect high-risk infants between the ages of 1 day and 90 days.

Many institutions, including the University of Utah, routinely admit all febrile infants younger than 28 days old.

One reason for that policy is that clinical appearance alone is a poor determinant of risk for serious bacterial infection for febrile infants 1-90 days old, said Dr. Glissmeyer.

"Febrile infants with a missed serious bacterial infection are at risk for serious morbidity and mortality," Dr. Glissmeyer added.

"Simple laboratory testing, including a CBC and a urinalysis, should be obtained before the decision is made to manage [a febrile infant] as an outpatient," he concluded.

The study findings prompted the Intermountain Healthcare system to set a goal for 2008 of having 80% of febrile infants seen as outpatients receive a urinalysis, compared with 50%-60% at the beginning of the year.

To date, that goal has been exceeded, with more than 80% of febrile infants receiving both a CBC and a urinalysis in the outpatient setting.

Some barriers had to be overcome to reach this goal, including training rural nurses in how to obtain a catheterized urine sample on a newborn, said Dr. Glissmeyer. ■



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