

# An Easy Approach to Obtaining Clean-catch Urine From Infants

Current collection methods leave much to be desired. But a new method may provide a quick alternative.

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## PRACTICE CHANGER

Apply gauze soaked in cold sterile saline to the suprapubic area to stimulate infants (ages 1-12 mo) to provide a clean-catch urine sample. Doing so produces significantly more clean-catch urine samples within 5 minutes than simply waiting for the patient to void, with no difference in contamination and with increased parental and provider satisfaction.

## STRENGTH OF RECOMMENDATION

**B:** Based on a single, good-quality randomized controlled trial (RCT).<sup>1</sup>

A fussy 6-month-old infant is brought to the emergency department (ED) with a rectal temperature of 101.5°F. She is consolable, breathing normally, and appears well hydrated. You find no clear etiology for her fever and suspect that a urinary tract infection (UTI) may be the source of her illness. How do you proceed with obtaining a urine sample?

A febrile infant in a family practice office or ED is a familiar clinical situation that may require an invasive diagnostic workup. Up to 7% of infants ages 2 to 24 months with fever of unknown origin may have a UTI.<sup>2</sup> Collecting a urine sample from pre-toilet-trained children can be time consuming. In fact, in one RCT, obtaining a clean-catch urine sample in this age group took more than an hour, on average.<sup>3</sup> But more convenient methods of urine collection, such as placing a cotton ball in the diaper or using a perineal collection bag, have contamination rates of up to 63%.<sup>4</sup>

In its guidelines for evaluating possible UTI in a febrile child younger than age 2, the American Academy of Pediatrics (AAP) recommends obtaining a sample for urinalysis “through the most convenient means.”<sup>5</sup> If urinalysis is positive, only urine obtained by catheterization or suprapubic aspiration should be cultured. Guidelines from the National Institute for Health and Care Excellence in the United Kingdom are similar, but allow for culture of clean-catch urine samples.<sup>6</sup>

A recent prospective cohort study examined a noninvasive alternating lumbar-bladder tapping method to stimulate voiding in infants ages 6 months or younger.<sup>7</sup> Within five minutes, 49% of the infants provided a clean-catch sample, with contamination rates similar to those of samples obtained using invasive methods.<sup>7</sup> Younger infants were more likely to void within the time allotted. Another trial of bladder tapping conducted in hospitalized infants younger than 30 days old showed similar results.<sup>8</sup> There are, however, no previously reported



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randomized trials demonstrating the efficacy of a noninvasive urine collection technique in the outpatient setting.

Use of invasive collection methods requires skilled personnel and may cause significant discomfort for patients (and parents). Noninvasive methods, such as bag urine collection, have unacceptable contamination rates. In addition, waiting to catch a potentially cleaner urine sample is time consuming, so better strategies to collect urine from infants are needed. This RCT is the first to examine the efficacy of a unique stimulation technique to obtain a clean-catch urine sample from infants ages 1 to 12 months.

## STUDY SUMMARY

### **Noninvasive stimulation triggers faster samples**

A nonblinded, single-center RCT conducted in Australia compared two methods for obtaining a clean-catch urine sample within

five minutes: the Quick-Wee method (suprapubic stimulation with gauze soaked in cold fluid) or usual care (waiting for spontaneous voiding with no stimulation).<sup>1</sup> A total of 354 infants (ages 1-12 mo) who required urine sample collection were randomized in a 1:1 ratio; allocation was concealed. Infants with anatomic or neurologic abnormalities and those needing immediate antibiotic therapy were excluded.

The most common reasons for obtaining the urine sample were fever of unknown origin and “unsettled baby,” followed by poor feeding and suspected UTI. The primary outcome was voiding within five minutes; secondary outcomes included time to void, whether urine was successfully caught, contamination rate, and parent/clinician satisfaction.

Study personnel removed the diaper, then cleaned the genitals of all patients with room temperature sterile water. A caregiver or clinician was ready and waiting to catch

urine when the patient voided. In the Quick-Wee group, a clinician rubbed the patient's suprapubic area in a circular fashion with gauze soaked in refrigerated saline (2.8°C). At five minutes, clinicians recorded the voiding status and decided how to proceed.

Using intention-to-treat analysis, 31% of the patients in the Quick-Wee group voided within five minutes, compared with 12% of the usual-care patients. Similarly, 30% of patients in the Quick-Wee group provided a successful clean-catch sample within five minutes, compared with 9% in the usual-care group (number needed to treat, 4.7).

Contamination rates were no different between the Quick-Wee and usual-care samples. Both parents and clinicians were more satisfied with the Quick-Wee method than with usual care (median score of 2 vs 3 on a 5-point Likert scale, in which 1 is "most satisfied"). There was no difference when results were adjusted for age or sex. No adverse events occurred.

## WHAT'S NEW

### Method could reduce need for invasive sampling

A simple suprapubic stimulation technique increased the number of infants who provided a clean-catch voided urine sample within five minutes—a clinically relevant and satisfying outcome. In appropriate patients, use of the Quick-Wee method to obtain a clean-catch voided sample for initial urinalysis, rather than attempting methods with known high contamination rates, may potentially reduce the need for invasive sampling using catheterization or suprapubic aspiration.

## CAVEATS

### Complete age range & ideal storage temperature are unknown

Neonates and precontinent children older than 12 months were not included in this trial, so these conclusions do not apply to those groups. The intervention period lasted only five minutes, but other published studies suggest that this amount of time is ad-

equated for voiding to occur.<sup>6,7</sup> Although this study used soaking fluid stored at 2.8°C, the ideal storage temperature is unknown.

## CHALLENGES TO IMPLEMENTATION

### AAP doesn't endorse clean-catch urine samples

The Quick-Wee method is simple and easy to implement, and requires no specialized training or equipment. AAP guidelines do not endorse the use of clean-catch voided urine for culture, which may be a barrier to changing urine collection practices in some settings. **CR**

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