

A point-of-collection urine culture device for fast turnaround time and ease of use

BY ELIZABETH LLOYD

An alternative to conventional urine culture methods combines the sensitivity and specificity of the traditional urine culture method with the convenience and efficiency of a system for detecting, enumerating, and identifying bacteria in urine.

The onSite™ urine culture device (**TREK Diagnostic Systems**, Westlake, OH) is a transparent, hinged casing containing face-to-face plates of agar with a plastic sampler with two curved tips located between the plates (*Figure 1*). The plastic sampler is disposable and eliminates the use of calibrated urine loops. Designed to streak a standardized amount of urine onto the agar plates, the plastic sampler is dipped into the urine sample and is pulled through the device. After the device is streaked, it is returned to the plastic casing for incubation. Due to the longitudinal nature of the agar plates, the device allows for exact streaking of the sample. This eliminates any variables for sample setup and allows for accurate colony counts of positive samples.

Because urine cultures account for at least 50% of specimens in the routine microbiology laboratory, the device was designed to provide an accurate and cost-effective mechanism for laboratories to set up and transport urine specimens. It provides the laboratory with a safe, efficient, and accurate means of testing.

With onSite, the laboratory technologist tests urine culture samples utilizing Gold Standard methodology. Each onSite device contains one plate of MacConkey agar, a selective medium that provides differentiation between coliforms and nonlactose fermenters with inhibition of gram-positive cocci, and the option of one plate of the following media (*Figure 2*):

1. Tryptone soya blood agar (TSA)—A gen-



Figure 1 onSite urine culture device provides fast turnaround times and ease of use.

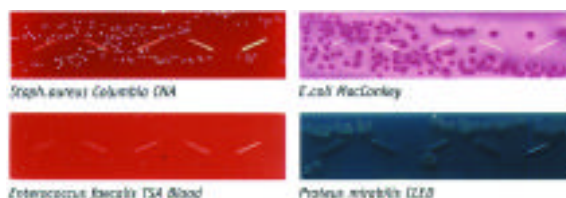


Figure 2 Media configurations available with onSite.

eral-purpose medium for the growth of a wide variety of organisms, the agar and medium containing two peptones and 5% sheep blood is suitable for the cultivation of aerobes and for determining hemolytic reactions (catalog #UR-TSA).

2. Columbia CNA agar—A selective medium for *Staphylococci* and *Streptococci*, this agar contains nalidixic acid, colistin sulfate, and 5% sheep blood in a Columbia agar base. The medium suppresses growth of gram-negative rods while permitting unrestricted growth of *Staphylococci*, hemolytic *Streptococci*, and *Enterococci* (catalog #UR-CNA).

3. CLED agar—A differential medium that supports the growth of both gram-positive and

gram-negative bacteria, this agar also supports the growth of *Pseudomonas* and *Proteus*, which do not ferment lactose (catalog #UR-CLED).

onSite offers numerous advantages in terms of sample collection, transportation, handling, incubation, plate reading, and disposal. The system is an effective alternative for the setup, transportation, and reading of urine cultures in clinical laboratories. In addition, it can provide more accurate results and faster turnaround time. Since specimens are set up at the point of collection, technologists can concentrate on other tasks. With the current shortage of medical technologists, time is at a premium in the clinical laboratory. Any device or test system that can save time greatly benefits the laboratory. Customers benefit by being able to provide results to physicians more rapidly. For example, treatment of urinary tract infection can be initiated more quickly, thereby lowering patient costs.

onSite differs from conventional urine culture methods by providing a mechanism for culture setup and transportation in one device. Traditional culture methods utilize transportation of urine samples from the point of collection to the laboratory, where the specimen is set up and incubated. onSite provides laboratories the opportunity for culture setup at the point of collection, which allows positive samples to be detected more rapidly. Agar configurations for the three different configurations permit laboratories to choose the option that will work best in their facility.

At the point of sample collection, the device offers an easy setup solution and immediate inoculation of the urine sample. Specimen transportation is simplified by the elimination of leaks, spills, and delays that negatively impact colony counts and result accuracy. Laboratory technologists can bypass the use of sharps as well as the use of boric acid transport systems.

The handling of urine specimens in the laboratory with the device reduces the time technologists spend with culture setup. Users can eliminate all culture setup in the laboratory, additional disposable supplies, and primary iso-

lation media. During incubation, the device provides a compact, self-contained test as well as the ability to incubate more tests per cubic foot of incubator space.

For plate reading, onSite offers the reliability of the culture media Gold Standard. ID/susceptibility testing can be performed directly from the growth. Disposal of the device reduces the amount of biohazard and plastic waste when compared to the conventional urine culture.

Dr. Geraldine Hall, Staff Microbiologist at the Cleveland Clinic Foundation (Cleveland, OH), summarized the findings of an in-house evaluation by microbiology laboratory after examining 160 randomly selected urine samples submitted for routine culture analysis. onSite culturing performed on these samples subsequent to the routine test included an instrumented urine screen and culture of the positively screened samples or a culture directly, without a screen. Using Cleveland Clinic laboratory guidelines for the determination of insignificant or mixed flora, the evaluators found an overall 94% agreement between the urines that were screened first and cultured only if positive versus onSite. Of these, 79% were negative by both, contained insignificant numbers of bacteria, or contained a mixed flora of gram-positive and gram-negative bacteria. There were no routine method positive and onSite negative findings. Of those urines that were screened negative, the device picked up an additional five positive cultures. In this small study, the device was easy to use and offered a potential replacement for routine conventional culture methods. In addition, it may provide a higher level of sensitivity than the screening method presently used to determine a positive urine.

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