INTENDED USE
Remel VACC Agar is a solid medium recommended for use in qualitative procedures for primary, selective isolation of extended-spectrum β-lactamase-producing Enterobacteriaceae.

SUMMARY AND EXPLANATION
Extended-spectrum β-lactamase (ESBL)-producing gram-negative bacilli are an increasingly important nosocomial pathogen in hospitals and other healthcare facilities. ESBLs inactivate broad-spectrum cephalosporins, such as cefotaxime and ceftazidime, by hydrolysis of the β-lactam bond and cause clinically significant resistance in several strains of Enterobacteriaceae. Prior to the emergence of ESBLs, the evolution of β-lactamase-mediated resistance included increased prevalence in certain organisms (e.g., Staphylococcus aureus) and spread to new hosts (e.g., Haemophilus influenzae), but not fundamental changes in the substrate spectra of the enzymes. According to a report issued in 2003 by National Nosocomial Infections Surveillance (NNIS) >20% of Klebsiella isolates from patients in intensive care units have been identified as ESBL-producers, underscoring the need for active surveillance of hospitalized patients. From 2000 to 2005, Reddy et al. conducted a study in which 17,872 inpatients were screened for rectal colonization with ESBL-producing Enterobacteriaceae using a selective culture medium, VACC Agar, which contained vancomycin, amphotericin B, ceftazidime, and clindamycin. The colonization-rate doubled during the study period and 8.5% of colonized patients developed a subsequent bloodstream infection. Active surveillance screening of inpatients for colonization with ESBL-producing gram-negative bacilli can be used to identify patient-associated risk factors, such as age (i.e., >60), coexisting chronic disease, or previous exposure to certain antibiotics (i.e., piperacillin-tazobactam). Such information has lead to more accurate use of empiric antibiotic therapy in patients with identified risk factors, leading to reduced morbidity and mortality rates. An understanding of the potential causal mechanisms of colonization can lead to successful infection control and guide antimicrobial stewardship and public health interventions aimed at controlling the proliferation of ESBL-producing bacteria. The use of selective media, such as VACC Agar, facilitates earlier identification of colonized patients thereby reducing the cost of surveillance screening.

PRINCIPLE
Casein and soy peptones supply nitrogen, carbon, vitamins, and trace elements necessary for bacterial growth. Sodium chloride is a source of essential electrolytes and maintains osmotic equilibrium. Sheep blood provides the X factor (hemin) necessary for the growth of many bacteria. Ceftazidime, clindamycin, vancomycin, and amphotericin B are selective agents, which inhibit many commensal microbial organisms commonly found in the large intestine while at the same time allowing the growth of certain resistant organisms.

REAGENTS (CLASSICAL FORMULA)*
<table>
<thead>
<tr>
<th>Casein Peptone</th>
<th>Sodium Chloride</th>
<th>Soy Peptone</th>
<th>Vancomycin</th>
<th>Amphotericin B</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.0 g</td>
<td>5.0 g</td>
<td>5.0 g</td>
<td>10.0 mg</td>
<td>2.0 mg</td>
</tr>
</tbody>
</table>

Ceftazidime ...................................................... 2.0 mg
Clindamycin ..................................................... 1.0 mg
Sheep Blood ..................................................... 5 %
Agar ................................................................. 15.0 g
Demineralized Water ........................................... 1000.0 ml

*pH 7.3 ± 0.2 @ 25°C

PROCEDURE
1. Inoculate and streak the specimen as soon as possible after it is received in the laboratory.
2. If material is being cultured directly from a swab, roll the swab over a small area of the agar and streak for isolation.
3. Incubate plates aerobically at 33-37°C for 24-48 hours.
4. Examine plate for typical colony morphology and hemolytic reaction.
5. Examine all oxidase-negative, gram-negative bacilli for ESBL production following established laboratory guidelines. Consult appropriate references for further instructions.

QUALITY CONTROL
All lot numbers of VACC Agar have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL
Klebsiella pneumoniae ATCC® 700603
Candida albicans ATCC® 10231
Enterococcus faecium ATCC® 35667
Escherichia coli ATCC® 25922

INCUBATION
Aerobic, 24-48 h @ 33-37°C

RESULTS
Growth
Inhibition (partial to complete)
Inhibition (partial to complete)
Inhibition (partial to complete)

LIMITATIONS
1. VACC Agar is recommended for selective isolation of gram-negative bacilli with increased resistance to broad-spectrum cephalosporins; it is not intended for use as a method of antimicrobial susceptibility testing.
2. Organisms other than gram-negative bacilli, including vancomycin-resistant gram-positive cocci, may grow on this media; further biochemical and serological testing is required for definitive identification.
3. Confirmation of resistance by an approved method is necessary, as some organisms on initial isolation may overcome the inhibitory effects of this medium.
4. The absence of suspect colonies on VACC Agar does not rule out the presence of resistant organisms.

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BIBLIOGRAPHY


Refer to the front of Remel Technical Manual of Microbiological Media for General Information regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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