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Background

Vancomycin-Resistant Enterococci (VRE) are major pathogens for severely immunosuppressed patients. Because of prevalence of immunosuppressed patients in our center, empiric coverage is used to cover VRE, exposing patients to broad-spectrum antimicrobials.

Analogous to nasal screening for Methicillin-resistant *Staphylococcus aureus* carriage, targeted VRE surveillance is performed to identify and isolate colonized patients to reduce transmission. The aim of this study was to evaluate the negative predictive value of this surveillance procedure.

Methods

The NIH Clinical Center is a 200-bed clinical research hospital with a geographically broad referral base. All patients admitted to two inpatient hospital units from 01/01/2019 to 12/31/2021 had routine perirectal VRE surveillance ordered and results retrospectively reviewed.

One swab from each Culturette set was tested by vanA PCR, and the other was inoculated on CHROMEID® VRE (Biomerieux) if the PCR was positive. Subsequent clinical cultures of any site within 14 days of surveillance screening were reviewed for VRE.

Results

- 4872 VRE screening samples were examined during the study period from 1165 unique patients; 274 (5.6%) samples were positive for VRE colonization in 57 (4.9%) patients.
- 353 clinical samples grew enterococci in 179 unique patients during the study period. 37 (10.5%) of the clinical culture samples grew VRE isolate. Majority of positive samples came from urine 150 (42%), wound/abscess 85 (24%), and blood 85 (24%) (Figure).
- Within 2 weeks following VRE screening 42 patients had 43 clinical sample that were positive for an Enterococcus species (20 in the first 7 days and 23 in days 8-14). The most common sites of clinical cultures within 2 weeks of screening were urine, 22 (51%), wound/abscess, 10 (23%), and blood, 7 (16%).
- Only 4 clinical culture isolates were vancomycin resistant, 3 (75%) occurred in patients with prior positive VRE screening, and 1 in a patient who had a negative screening within the prior 2 weeks (Table). The positive predictive value of VRE screening for subsequent clinical VRE infection was 60%, while the negative predictive value was 97%.
- 8/43 (19%) patients received empiric VRE coverage, including 6 patients who had a prior negative VRE screen.

Figure: Sources of Enterococci in Clinical Cultures

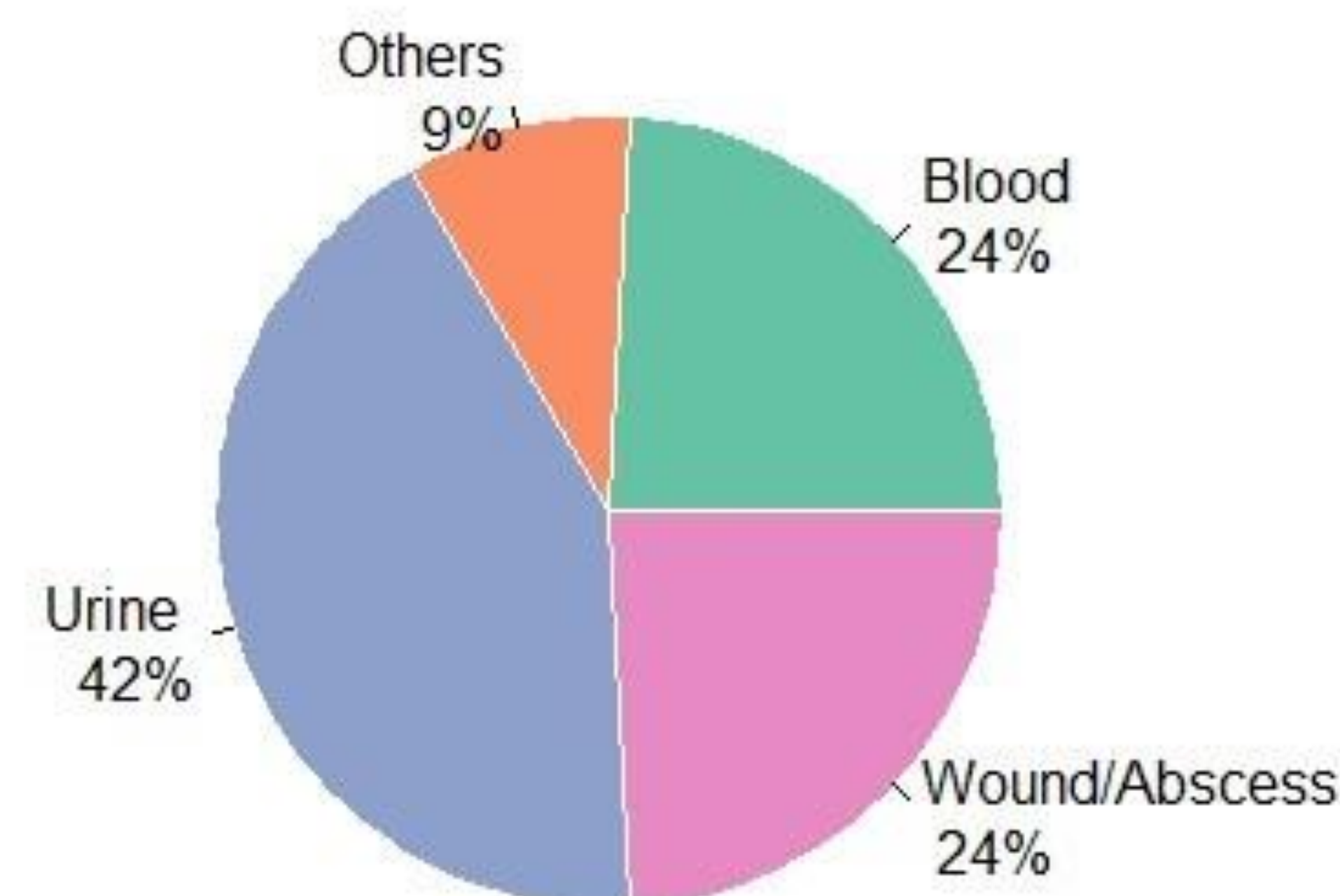


Table: Vancomycin-resistant Enterococcal (VRE) Isolation among VRE Screened Patients

VRE Screening	Positive Clinical Culture for VRE	Negative Clinical Culture for VRE	Total
Negative Screen	1	37	38
Positive Screen	3	2	5
Total	4	39	43

Conclusions

- Only 4 (9%) VRE infections were isolated within 2 weeks of VRE screening, mostly (3/4) in patients who had a positive screen.
- The negative predictive value of VRE screening was 97% for clinical VRE infection, and hence can have a role in antibiotics stewardship.
- Our study limitations included low prevalence rate of VRE carriage and infections which limits the generalizability of the results.



For further information

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