Conclusion. A host gene expression test discriminated bacterial, viral, and non-infectious etiologies at a lower overall accuracy in IC patients compared to immunocompetent patients, though this difference was only significant for bacterial vs non-bacterial disease. With modified interpretive criteria, a host response strategy may offer clinically useful and complementary diagnostic information for IC patients.

1227. Plazomicin Susceptibility Testing using ETEST° MIC for Enterobacterales

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Background. Plazomicin (PLZ) approved by FDA in June of 2018, is an aminoglycoside class antibacterial indicated for the treatment of adults with complicated urinary tract infections (cUTI) including pyelonephritis caused by Enterobacterales. It is used in patients who have limited or no alternative treatment options, e.g. CRE and MDRO patients. The drug has bactericidal activity, it is active against organisms producing ESBL, Carbapenemase and aminoglycoside-modifying enzymes. The purpose of this study was to compare ETEST° PLZ bioMérieux to the broth microdilution reference method (BMD) for *Citrobacter freundii, Enterobacter cloacae, Escherichia coli, Klebsiella oxytoca and pneumoniae, Morganella morganii, Providencia stuartii, Proteus mirabilis and vulgaris* and *Serratia marcescens* isolates.

Methods. A total of 598 isolates were tested by ETEST® (PLZ) and BMD at four clinical trial sites.

Isolates were subcultured on tryptic soy or Columbia agar plates supplemented with 5% sheep blood. Suspensions of the isolates were prepared in 0.85% saline, which were used to inoculate BMD and Mueller Hinton agar for ETEST°. Results were read after 16-20 hours incubation at 35°C +2°C in ambient air. QC organisms were tested with each run following CLSI QC guidelines.

Results were analyzed using FDA breakpoints for PLZ (Susceptible <2 µg/mL, Intermediate 4 µg/mL, Resistant >8 µg/mL).

Performance was evaluated using FDA performance criteria, EA and CA (≥ 90%), major error rate (≤3.0%) and very major error rate (≤2.0%).

Results.

Table 1. Performance for Plazomicin ETEST® PLZ for Enterobacterales

EA	CA	Very Major Error Rate	Major Error Rate	Minor Error Rate
99.0% (592/598)	92.8% (555/598)	1.9% (1/53)	0.0% (0/478)	7.0% (42/598)

Table 2. MIC distribution BMD and ETEST® PLZ (mode MIC in bold)

MIC/Interp µg/ml	≤0.016 S	0.032 S	0.064 S	0.125 S	0.25 S	0.5 S	1 S	2 S	4 I	8 R	16 R	32 R	64 R	128 R	≥256R
BMD	0	0	0	5	**122**	172	98	81	67	15	7	1	0	1	29
ETEST® PLZ	0	0	0	5	59	**232**	93	94	65	11	7	3	0	0	30

Conclusion: ETEST® PLZ clinical performance met the FDA acceptance criteria and was found useful for determining Plazomicin MIC of Enterobacterales, including ESBL, CRE (MBL, KPC, Oxa-48), high level AmpC and aminoglycoside resistant strains. Percent susceptibility of Plazomicin is at 80% among the 598 isolates tested, the mode MIC is 0.5 ug/ml as Susceptible.

1228. The Role of Procalcitonin (PCT) and Lactic Acid in Febrile Neutropenic Cancer Patients in an Oncological Emergency Center

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Background. Procalcitonin (PCT) and lactic acid have emerged as biomarkers that increase in bacterial infections/sepsis and have been used in conjunction with clinical judgment to guide antibiotic administration. The Multinational Association for Supportive Care in Cancer (MASCC) risk index has been used to classify the risk for patients with neutropenic fever. However this index includes subjective elements and complex metrics that make it difficult to use in an oncological emergency center (EC). The purpose of this study is to evaluate the role of serum PCT alone and in combination with lactate to predict bloodstream infections (BSI), hospitalization and 14 days mortality in febrile neutropenic cancer patients presenting to the EC.

Methods. We conducted a retrospective study of all febrile neutropenic cancer patients who presented to our EC between April 1, 2018 and April 30, 2019 and had a serum PCT and lactic acid levels done. Fever was defined either as a documented temperature of ≥100.4 °F or a chief complaint of fever reported at home. Neutropenia was defined as an absolute neutrophil count ≤500 cells/mL.

Results. We included 550 cancer patients of which 385 (70%) had hematologic malignancies and 165 (30%) had solid tumors. A BSI was documented in 116 (21%) patients due to gram negative organisms in 66%, gram positive organisms in 30%, and both in 4%. A higher rate of mortality within 14 days of EC presentation was seen in patients whose PCT ≥ 0.25 compared to those with PCT < 0.25 (5.2% vs 0.7%; p=0.002). Similarly a higher rate of BSI and a longer hospital stay was seen in patients whose PCT ≥ 0.25 compared to those with PCT < 0.25. A PCT ≥ 0.25 or a lactate level >2.2 had a sensitivity of 93% and a negative predictive value of 100% for a 14 day mortality. A logistic regression analysis showed an association between BSI and hematological malignancy, PCT ≥ 0.25, and lacate level >2.2 mmole/L.

Conclusion. A PCT ≥ 0.25 was associated with BSI, LOS and 14 day mortality. The combination of PCT / serum lactate have a good sensitivity and high negative predictive value for BSI and mortality. Because this combination could be useful in identifying the high risk febrile patients requiring hospital admission, it will be compared to the standard but more labor intensive MASCC score index.

1229. Volatile Biomarkers of Influenza Infection in the Breath

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Session: P-55. New Approaches to Diagnostics

Background. Annual influenza epidemics cause significant morbidity and mortality. New, emerging strains threaten to cause catastrophic pandemics. Assay of exhaled breath for volatile organic compounds (VOCs) via gas chromatography-mass spectroscopy (GC-MS) is an emerging diagnostic modality ideally suited to fill the gap in influenza diagnostics.

Methods. Patients with influenza like illness (ILI) presenting to the Troop Medical Clinic on JBSA Fort Sam Houston, TX, from 3/2017 to 3/2019 submitted a 2-minute breath sample in addition to a nasopharyngeal swab collected for polymerase chain reaction (PCR) assay for influenza virus. ILI was defined as temperature > 100.4°F AND respiratory symptoms like cough, sputum production, chest pain and/or sore throat. Breath VOCs were assayed with GC-MS and data were analyzed in order to identify the significant breath VOC biomarkers that discriminated between ILI patients with and without a PCR assay positive for influenza with greater than random accuracy.

Results. Demographic, clinical, PCR and breath data were available for 237 episodes of ILI. PCR was positive for influenza for 32 episodes (30 influenza A and 2 B). The median age of participants was 21 (IQR 19, 23) and 69% were male. There were no differences in age, gender, education, race, or smoking, between the influenza positive and negative groups. Likewise, there was no difference in days of limited activity or missed work, or symptoms at presentation between the groups. The algorithm achieved near maximal predictive accuracy of 78% with four biomarkers (74% sensitivity and 70% specificity). Based on their mass spectra, these biomarker VOCs were tentatively identified as 2-amino-1-propanol, 2-butanamine, n-nitro, 3-methyl-hexanal, and heptane, which are consistent with products of oxidative stress.