Conclusion: Our data suggests that ST2 is the predominant sequence type circulating in both the geographically distinct hospitals and is endemic to the ICU. There was in hospital spread of this distinct Acinetobacter sequence type from one patient to the other, raising concerns about infection control practices and the role of environment in the spread of these infections. Early detection of these endemic strains within the hospital may be critical in preventing healthcare-associated infections in the future.

680. The Use of Plasma Next-Generation Sequencing Test in the Management of Immunocompetent and Immunocompromised Patients – A Single Center Retrospective Study

Denise Marie A. Francisco, MD[1]; Laila Woc-colburn, MD[2]; Travis J. Carlson, PharmD, BCIDP[3]; Todd Lasco, PhD[4]; Miriam B. Barrett, MBA, MT (ASCP), M (ASCP), PMP[5]; Mayar Al Mohajer, MD MBA[1]; [1]Baylor College of Medicine, Houston, Texas; [2]Emory University School of Medicine, Atlanta, Georgia; [3]High Point University Fred Wilson School of Pharmacy, High Point, North Carolina; [4]Baylor St. Luke's Medical Center, The Woodlands, Texas; [5]CHI Baylor St. Luke's Medical Center, Houston, Texas

Session: P-26. Diagnostics: Typing/sequencing

Background: Microbiological culture data is a longstanding gold standard in diagnostics. Unfortunately, yield from cultures have been inconsistent and slow, prompting the need for newer tests including the plasma-based next-generation sequencing (NGS) tool. This study aims to describe the use of NGS and the corresponding change in management.

Methods: A descriptive retrospective study was done on hospitalized adults at CHI-Baylor St. Luke's in Houston, Texas with NGS tests from Jan 1, 2017 to Dec 31, 2018.

Graph 1 - Next Generation Sequencing Test Breakdown

Graph 1. Next Generation Sequencing Test Breakdown
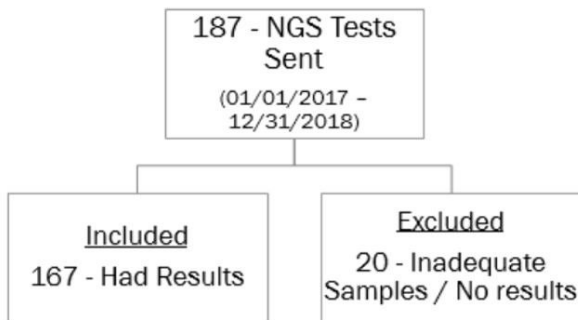
Results: There were 167 NGS tests performed. Most patients were non-Hispanic (n=129) Caucasian (n=106) males (n=116) with a mean age of 52. Furthermore, 61 were immunocompromised patients [solid organ transplant (n=30), HIV-AIDS (n=14) and rheumatology patients on immunosuppression (n=12)].

During the study, the hospital staff prepared a list of indications for NGS testing including: systemic or deep seated infection where a biopsy or other workup is negative or not possible (n=50), fever of unknown origin (n=26), culture negative endocarditis

(n=15), HIV/AIDS with fever (n=10), transplant patient with fever (n=5). There were 60 cases where the indications were not on this list (36%).

Results showed that 118/167 (71%) were positive. The most common organisms identified were gram-negative bacteria (54/118; 46%) followed by viruses (49/118; 42%), gram-positive bacteria (48/118; 41%), fungi (16/118; 14%), atypical bacteria (9/118; 8%), mycobacterium (4/118; 3%), and parasites (4/118; 3%). Blood cultures were concurrently obtained in 148/167 (89%) of the cases and returned negative in 137/148 (93%) of cases.

In terms of change of management, the largest change was found in glycopeptide use (36 fewer patients after NGS results). Next was on anti-mycobacterial drugs where 27 were added among 8 instances. Only 36 patients were taken off antibiotics, even though 49 patients had negative results. In total, 120 out of 160 cases had antibiotic changes.

Table 1 - Demographic and Laboratory Characteristics

Table 1. Demographic and Laboratory Characteristics

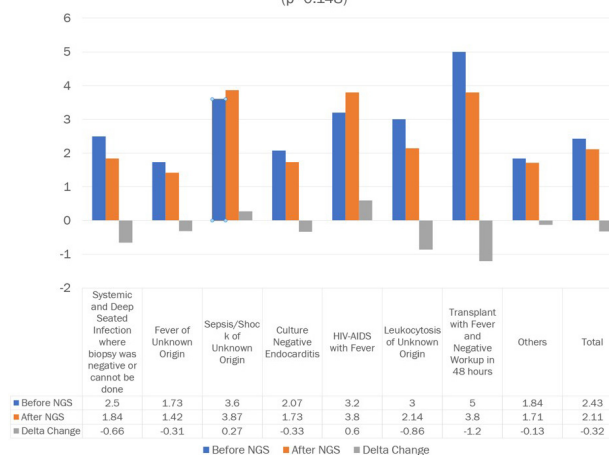| Variable	Total N (%/SD) N=167	NGS + (%/SD) N=118	NGS - (%/SD) N=49	P-Value
Age (mean, SD)	52 (16)	51 (16)	54 (15)	0.26
Gender				
Male	116 (69%)	83 (70%)	33 (67%)	0.70
Female	51 (31%)	35 (30%)	16 (33%)	
Race				
Caucasian or White	106 (63%)	75 (64%)	31 (63%)	0.87
Black or African American	38 (23%)	28 (24%)	10 (20%)	
Asian	13 (8%)	9 (8%)	4 (8%)	
Others	10 (6%)	6 (5%)	4 (8%)	
Ethnicity				
Hispanic	36 (22%)	27 (23%)	9 (18%)	0.44
Not Hispanic	129 (77%)	89 (75%)	40 (82%)	
Unable to Determine	2 (1%)	2 (2%)	0 (0%)	
Charlson's Comorbidity Index (mean, SD)	3.70 (2.79)	3.74 (2.76)	3.61 (2.87)	0.79
Immune System Status				
Immunocompetent	106 (64%)	75 (64%)	31 (63%)	0.97
Immunosuppressed	61 (36%)	43 (36%)	18 (37%)	
HIV-AIDS	14 (23%)	13 (30%)	1 (6%)	
Neutropenic	3 (5%)	2 (5%)	0 (0%)	
Solid Organ Transplant	30 (49%)	21 (49%)	9 (50%)	
Hematopoietic Stem Cell Transplant	1 (2%)	0 (0%)	1 (6%)	
Rheumatological	12 (20%)	7 (16%)	5 (28%)	
Others	1 (2%)	0 (0%)	1 (6%)	
Approved Indications for Testing	107 (64%)	79 (67%)	28 (57%)	0.23
Culture Negative Endocarditis	15 (9%)	10 (8%)	5 (10%)	
Fever of Unknown Origin	26 (16%)	20 (17%)	6 (12%)	
HIV-AIDS with Fever	10 (6%)	9 (8%)	1 (2%)	
Transplant with Fever	5 (3%)	4 (3%)	1 (2%)	
Systemic/Deep Seated Infection Where Biopsy or Other Workup is Negative or Not Possible	50 (30%)	35 (29%)	15 (31%)	
Others	60 (36%)	39 (33%)	21 (43%)	
Waiting Period (mean, SD)				
Days between Collected and Received	2 (1)	2 (1)	2 (1)	
Days between Collected and Reported	3 (1)	3 (1)	3 (1)	

Graph 2 - Change in Number of Antibiotics (Total: Before and After)

Graph 2: Change in Number of Antibiotics (Total: Before and After)
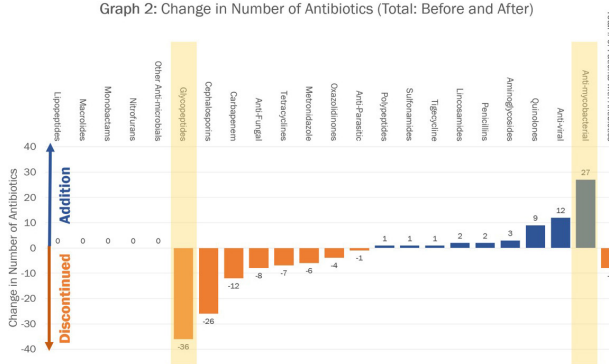
Graph 3 - Indications for Testing and Change in Number of Antibiotics

Graph 3. Indications for Testing and Change in Number of Antibiotics (p=0.148)

	Systemic and Deep Seated Infection where biopsy was negative or cannot be done	Fever of Unknown Origin	Sepsis/Shock of Unknown Origin	Culture Negative Endocarditis	HIV-AIDS with Fever	Leukocytosis of Unknown Origin	Transplant with Fever and Negative Workup in 48 hours	Others	Total
Before NGS	2.5	1.73	3.6	2.07	3.2	3	5	1.84	2.43
After NGS	1.84	1.42	3.87	1.73	3.8	2.14	3.8	1.71	2.11
Delta Change	-0.66	-0.31	0.27	-0.33	0.6	-0.86	-1.2	-0.13	-0.32

Conclusion: We observed a large decrease in glycopeptide use after NGS results which suggests physicians' comfort in withdrawing MRSA coverage. In addition, anti-mycobacterial coverage increased corresponding to early mycobacterial detection with NGS. This study highlights the importance of clinical judgement in the age of rapid diagnostics.

Disclosures: **All Authors**: No reported disclosures

681. Induction Immunosuppression Selection in People Living with HIV Undergoing Deceased Donor Kidney Transplantation: U.S. National Trends from 2000 to 2018

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Session: P-27. Diagnostics: Virology

Background: Human Immunodeficiency Virus (HIV) outcomes have significantly improved at the expense of other age-related diseases including chronic kidney disease. Early reports of people living with HIV (PLWH) undergoing deceased-donor kidney transplantation (DDKT) showed poor outcomes, but these have notably improved after introduction of antiretrovirals. Despite years of experience, the optimal induction immunosuppression (IIS) in PLWH remains subject of debate. Large-scale studies describing the current ISS practices in PLWH undergoing DDKT are lacking. Here, we describe the U.S. national trends of IIS used in PLWH undergoing DDKT from 2000 to 2018 using the United Network of Organ Sharing (UNOS) database.
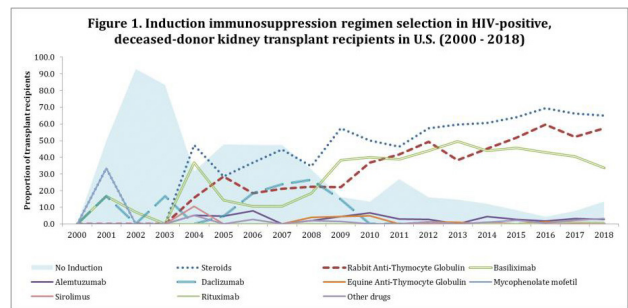
Methods: We analyzed the UNOS database to determine the selection of IIS in PLWH undergoing first-time DDKT between 1/1/2000 and 12/31/2018. Cases with unknown HIV status at the time of transplant were excluded. Age, sex and demographics were analyzed. The regimen used for IIS was compared based on HIV serostatus and the change in induction regimen was trended over time.

Results: A total of 139,650 cases underwent DDKT during the study period. Among these, 1,384 were identified as HIV-positive. PLWH were significantly younger than HIV-negative (49±10 years vs. 51.6 ± 15.3 years; p< 0.001) (Table 1). A greater proportion of men was seen in the PLWH group compared to HIV-negative persons (76.2% vs. 60.4%; p< 0.0001). In the HIV-negative group, 12.1% undergoing DDKT did not receive IIS compared to 16.4% in PLWH (p< 0.0001). Medications that have significantly increased in use with years in PLWH included rabbit anti-thymocyte globulin (rATG), steroids, and basiliximab (3.54, 3.25, 2.28, respectively; p< 0.001). On our trend analysis (Figure 1), the percentage of PLWH receiving any IIS is increasing by 4.04% each year (p< 0.001).

Table 1

Table 1. Characteristics of HIV-positive and HIV-negative deceased-donor kidney transplant recipients in the U.S. from 2000 to 2018.

	All Cases		HIV-positive		HIV-negative		p-value
	n= 139650		n= 1387		n= 138263		
Mean age (SD)	51.6	(15.3)	49.7	(10.0)	51.6	(15.3)	< 0.001
Male	84507	(60.5)	1057	(76.2)	83450	(60.4)	< 0.001
Female	55143	(39.5)	330	(23.8)	54813	(39.6)	
Age group (%)							
0-10 yo	2246	(1.6)	1	(0.1)	2245	(1.6)	< 0.001
11-20 yo	4825	(3.5)	10	(0.7)	4815	(3.5)	
21-30 yo	6936	(5.0)	32	(2.3)	6904	(5.0)	
31-40 yo	15182	(10.9)	195	(14.1)	14987	(10.8)	
41-50 yo	26813	(19.2)	485	(35.0)	26328	(19.0)	
51-60 yo	38890	(27.8)	467	(33.7)	38423	(27.8)	
61-70 yo	35918	(25.7)	180	(13.0)	35738	(25.8)	
71-80 yo	8581	(6.1)	17	(1.2)	8564	(6.2)	
81 and older	259	(0.2)	0	(0.0)	259	(0.2)	
Induction at time of transplant	122720	(87.9)	1159	(83.6)	121561	(87.9)	< 0.001
No induction	16930	(12.1)	228	(16.4)	16702	(12.1)	
Number of induction drugs	1.6		1.5		1.6		0.008
Steroids	90936	(65.1)	808	(58.3)	90128	(65.2)	<0.001
Rabbit anti-thymocyte globulin	67337	(48.2)	624	(45.0)	66713	(48.3)	<0.001
Basiliximab	28991	(20.8)	522	(37.6)	28469	(20.6)	<0.001
Alemtuzumab	16712	(12.0)	41	(3.0)	16671	(12.1)	<0.001
Daclizumab	5653	(4.0)	42	(3.0)	5611	(4.1)	0.067
Equine anti-thymocyte globulin	1731	(1.2)	15	(1.1)	1716	(1.2)	0.468
Mycophenolate mofetil	1205	(0.9)	2	(0.1)	1203	(0.9)	<0.001
Sirolimus	1222	(0.9)	3	(0.2)	1219	(0.9)	0.003
Rituximab	935	(0.7)	6	(0.4)	929	(0.7)	0.518
Other drugs	2720	(1.9)	19	(1.4)	2701	(2.0)	0.118

Figure 1

Figure 1. Induction immunosuppression regimen selection in HIV-positive, deceased-donor kidney transplant recipients in U.S. (2000 - 2018)

Conclusion: Our study suggests that IIS is an increasing practice in PLWH undergoing DDKT, predominantly using rATG, steroids, and basiliximab. Understanding the current practices might lead to further studies to determine the long-term outcomes after different induction regimens in PLWH.

Disclosures: **All Authors**: No reported disclosures

682. Is There a Role for the Early Use of Tocilizumab and Interleukin-6 Levels in the Management of SARS-CoV-2 Patients with Early Respiratory Failure?

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Session: P-27. Diagnostics: Virology

Background: The severity of respiratory failure in SARS-CoV-2 infection appears to be related to cytokine release syndrome (CRS), resulting in mechanical ventilation (MV). In this observational study, we investigated tocilizumab's role in the treatment of SARS-CoV-2 and the use of interleukin-6 (IL-6) levels in the management of these patients.

Methods: Patients with positive SARS-CoV-2 PCR were prospectively observed from February 1, 2020 to May 31, 2020. Data on demographics, medical history, and clinical outcomes were collected. Tocilizumab (TCZ) 4 mg/kg/day q12h was given for 24 hours, followed by methylprednisolone 60 mg q8h for 72 hours to patients with oxygen requirement of 3 L and above. IL-6, C-reactive protein (CRP), ferritin, lactate dehydrogenase (LDH), and D-dimers were monitored on days: 0, 3, and 6 following the initiation of therapy. Statistical analyses were performed using a Wilcoxon signed-rank test with significance (α) less than or equal to 0.05 ($P \le 0.05$).

Results: A total of eighty patients (45 males, 56.96%) and (34 females, 43.04%) with positive SARS-CoV-2 PCR were included in this study. The median age was 63 (51 - 72) years. Seven patients expired (8.75%), and nine patients required mechanical ventilation (11.25%). The median of IL-6 levels before administration of TCZ was 342.50 (78.25 – 666.25) pg/mL compared to after administration of TCZ on day 3, 563 (162-783) pg/mL ($P < 0.00001$). On day 6, the median dropped to 545 (333.50 - 678.50) pg/mL as compared to day 3 ($P = 0.709$). Moreover, CRP, ferritin, LDH, and D-dimers levels were reduced following the administration of TCZ.

TABLE 1: IL-6 of SARS-CoV-2 patients at before and after Tocilizumab treatment

TABLE 1 IL-6 of SARS-CoV-2 patients at before and after Tocilizumab treatment

Variables	Days	Median (IQR)	Wilcoxon Signed Rank	P-value
Interleukin-6 (IL-6)	IL-6 Day 0 (pre)	342.50 (78.25 – 666.25)	5.022	< 0.00001**
	IL-6 Day 3 (post)	563.00 (162 – 783)		
	IL-6 Day 0 (pre)	342.50 (78.25 – 666.25)	2.750	0.006**
	IL-6 Day 6 (post)	545 (333.50 - 678.50)		
	IL-6 Day 3 (post)	563 (162 - 783)	0.374	0.709
	IL-6 Day 6 (post)	545 (333.50 - 678.50)		

**Statistically significant (P<0.05)*
Abbreviations: (pre), prior to tocilizumab use; (post), post tocilizumab use.