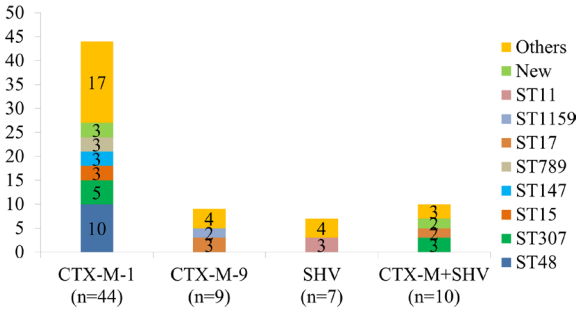
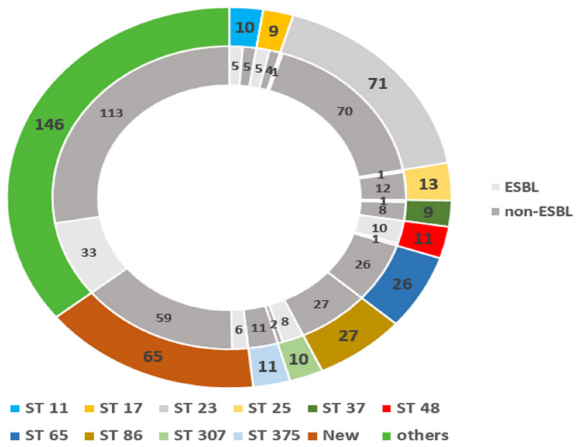
Results. Of 408 patient of community-onset KP BSI, 70 (17%) were ESBL-KP BSI patients. ESBL-KP isolates most frequently carried CTX-M-1-group ESBLs (74%, *n* = 52), followed by CTX-M-9-group ESBLs (16%, *n* = 11). Most prevalent sequence type (ST) among ESBL-KP isolates was ST48 (14%, *n* = 10). Among non-ESBL-KP isolates, ST23 was most prevalent (21%, *n* = 70). Analyzing with multivariate analysis, recent admission to long-term care hospital within 3 months (OR, 5.7; 95% CI, 2.1–15.6; *P* = 0.001), previous usage of trimethoprim-sulfamethoxazole (OR, 11.5; 95% CI, 2.7–48.6; *P* = 0.001), expanded-spectrum cephalosporin (OR, 2.2; 95% CI, 1.2–3.9; *P* = 0.01), and previous use of urinary catheter (OR, 2.3; 95% CI, 1.1–4.5; *P* = 0.02) were identified as independent risk factors for community-onset ESBL-KP BSI.

Conclusion. Recent admission to long-term care hospital, use of urinary catheter, recent usage of antibiotics were identified as risk factors for community-onset ESBL-KP BSI. Strict antibiotic stewardship and infection control measures in long-term care hospital are needed.

Variable Number (%)	Non-ESBL KP BSI (n=338)	ESBL KP BSI (n=70)	*P* value
Age	71.0 [60.75-79.0]	75.0 [64.0-81.0]	0.079
Male	201 (59.5%)	48 (68.6%)	0.155
ICU admission	16 (4.7%)	10 (14.3%)	0.003
Previous history of admission	152 (45%)	50 (71.4%)	0.000
Previous history of nursing home admission	9 (2.7%)	9 (12.9%)	0.000
Underlying disease			
End-stage renal disease	38 (11.2%)	10 (14.3%)	0.472
Cerebrovascular disease	17 (5.0%)	6 (8.6%)	0.242
Liver cirrhosis	9 (2.7%)	1 (1.4%)	0.543
Chronic pulmonary disease	15 (4.4%)	2 (2.9%)	0.547
Diabetes mellitus	77 (22.8%)	13 (18.6%)	0.439
Cardiovascular disease	25 (7.4%)	5 (7.1%)	0.941
Mallignancy	92 (27.2%)	20 (28.6%)	0.817
Charlson comorbidity index	1.0 [0.0-2.0]	1.0 [0.0-2.0]	0.630
SOFA score	4.0 [2.0-7.0]	5.0 [2.75-7.0]	0.349
Previous usage of antibiotics			
Penicillins	17 (5.0%)	2 (2.9%)	0.432
ß-bactam and ß-lactamase inhibitor	87 (25.7%)	21 (30.0%)	0.462
Fluoroquinolone	68 (20.1%)	28 (40.0%)	0.000
Colistin	2 (0.6%)	0 (0%)	0.519
Macrolide	26 (7.7%)	2 (2.9%)	0.145
Aminoglycoside	22 (5.4%)	6 (8.6%)	0.534
Carbapenems	30 (8.9%)	16 (22.9%)	0.001
1st cephalosporins	28 (8.3%)	8 (11.4%)	0.399
2nd cephalosporins	33 (9.8%)	11 (15.7%)	0.144
Expanded-spectrum cephalosporins	98 (29%)	36 (51.4%)	0.000
Glycopeptide	14 (4.1%)	9 (12.9%)	0.004
TMT/SMT	3 (0.9%)	7 (10.0%)	0.000
Previous history of intervention			
Urinary catheterization	37 (10.9%)	22 (31.4%)	0.000
Central catheter	21 (6.2%)	6 (8.6%)	0.470
Intubation	5 (1.5%)	1 (1.4%)	0.974
Nasogastric tube	19 (5.6%)	9 (12.9%)	0.029
Major surgery	5 (1.5%)	4 (5.7%)	0.028

	OR (95% CI)	*P*-Value
Previous history of nursing home admission	5.648 (2.073-15.589)	0.001
Expanded-spectrum cephalosporins	2.170 (1.207-3.900)	0.010
TMP/SMT	11.546 (2.746-48.551)	0.001
Urinary catheterization	2.258 (1.136-4.489)	0.020





Disclosures. **All authors:** No reported disclosures.

477. Characterization of Extended-Spectrum B-Lactamase (ESBL) Producing Gram-negative (GN) Urinary Tract Infections (UTI) in Pediatric Patients

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Session: 52. HAI: MDRO – GNR Epidemiology, ESBL Producers
Thursday, October 3, 2019: 12:15 PM

Background. There has been an increase in antimicrobial resistance among GN pathogens, not only in adults, but also pediatrics. UTIs are common in pediatrics; however, reports of pediatric UTI with ESBL producing GN are limited.

Methods. All urine cultures positive for ESBL producing GN from 5/1/18 to December 31/18 were retrospectively reviewed. Proven infection (PI) defined as ≥50,000 colony-forming units (CFU)/mL of bacteria plus pyuria or positive leukocyte esterase for catheterized or clean catch specimens. Relapsed infection defined as same pathogen cultured within 30 days of infection. Abnormal urinary tract systems or functions (AUTS) include neurogenic bladder, structural anomalies, or intermittent catheterization.

Results. A total of 107 urine cultures for ESBL producing GN, from 85 patients, were included. Majority of specimens [78/107 (73%)] were obtained from the ED or outpatient clinics. 43% of specimens were from patients with AUTS. *E. coli* was the majority (95%) of ESBL isolates. 57% of ESBL producing GNs were susceptible to amoxicillin/clavulanate (AC) or trimethoprim/sulfamethoxazole (TMP/SMX). 88% were nitrofurantoin susceptible. Only 1 isolate was meropenem resistant. Antibiotics (ABX) were prescribed for UTI in 67/107 episodes. However, only 52 episodes were PI. Of these, 38 were empirically treated with oral ABX and 29 with intravenous ABX. The most commonly prescribed empiric ABX was oral cephalexin (25/67, 37%.) Ineffective empiric ABX for UTI was very common, 83% (43/52). Of these, 5/43 never received effective therapy and none had relapse. Most common duration of ABX was 10 days (range 5–17 days.) 43% (23/52) of PI were treated with oral AC or TMP/SMX. 15% (8/52) of PI were treated with nitrofurantoin. 12% of PI were treated with a once-daily aminoglycoside. Only 6% of PI were treated with a carbapenem.

Conclusion. Many ESBL UTI isolates remain susceptible to oral ABX. Although small numbers, patients treated with ineffective ABX did not return with relapsed infection. Non-carbapenem ABX are a reasonable option to minimize selective pressure or unnecessary use. Empiric narrow-spectrum antibiotic therapy may still be appropriate.

Disclosures. **All authors:** No reported disclosures.

478. Outcomes of Extended-Spectrum β-Lactamase-Producing *Escherichia coli* Bloodstream Infection in Neutropenic Patients with Hematological Malignancies

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Background. Infections with extended-spectrum β-lactamase (ESBL) producing Enterobacteriaceae is an emerging problem leading to poor clinical outcomes and increased mortality. The purpose of this study was to determine the prevalence, risk factors and outcomes of ESBL-producing *E. coli* (EC) in bloodstream infections (BSIs) of neutropenic patients with hematological malignancies and compare the difference with Non-ESBL producing EC.

Methods. Through an IRB approved protocol, a retrospective cohort study was conducted at the H. Lee Moffitt Cancer Center from January, 2007 till October, 2017. Of the 310 records, who had +ive blood cultures for E. Coli, a total of 63 neutropenic patients with hematological malignancies were identified based on the bloodstream infections with ESBL-EC and Non ESBL EC. Data included demographics, underlying malignancy, type of bone marrow transplant, duration of neutropenia, antibiotics use pre and post culture, length of hospital stay, severity of infection, ventilator use, and mortality data.

Results. A total of 310 cases with hematological malignancy and neutropenia were reviewed, 63 were identified as +ive blood culture for *E. coli*. Out of the 63 cases, 17 were ESBL-EC +ive and 46 were non-ESBL-EC. The prevalence of ESBL-EC was highest in the year 2015 (29.4%) and decreased in the subsequent years (Figure 1). The mean ages of the two groups were 53.59 ±12.4 and 60.82 ± 11.1, respectively. The average length of stay for the ESBL-EC group was 26.59 ± 11.2 days, longer than the non-ESBL EC group 21.96 ± 11.2. Days of neutropenia in non-ESBL vs. ESBL EC were 9 days ± 8.3, and 19 days ± 22.0, respectively, *P* < 0.01). No differences were observed in the 30–60 day mortality and other outcomes listed in Table 1.

Conclusion. The prevalence of ESBL-EC was observed to be higher in patients who were neutropenic for longer duration, were older and resulted in longer hospital stay. Early identification and empirical therapy in neutropenic patients suspected to have ESBL-EC infection is crucial. Also, the infection with ESBL-EC was higher in the year 2015 and decreased in the subsequent years. After higher rates, perhaps infection control, lab reporting changes, antibiotic stewardship and transmission-based precautions might have played a role.

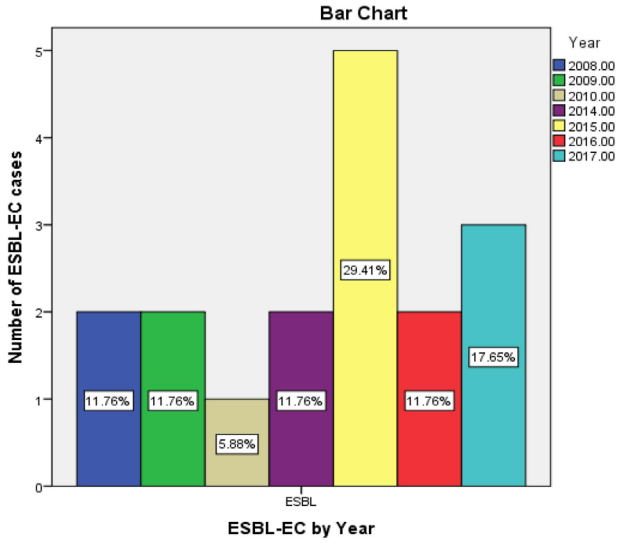

Figure 1: Trends of ESBL-EC cases by the year at Moffit Cancer Center

Table 1: Demographics and Outcomes of Non ESBL-EC and ESBL-EC Infections

Demographics/Patient outcomes	Non ESBL E-Coli N= 46	ESBL-EC N= 17	P values
Age	53.59±12.4	Mean: 60.82±11.1	P< 0.03
Sex	Male: 32 (69%) Female: 14 (31%)	Male: 11 (65%) Female: 6 (35%)	P= 0.713
Days of Neutropenia	9±8.3	19±22.0	P<0.01
30 Day Mortality	Alive: 42 Dead: 3	Alive: 14 Dead: 3	OR= 0.33 (95% CI 0.060-1.84) P= 0.192
60 Day Mortality	Alive: 37 Dead: 6	Alive: 12 Dead: 5	OR: 0.389 (95% CI 0.101-1.50) P=0.163
Quinolone Prophylaxis	No: 17 Cipro: 16 Levofloxacin: 13	No: 7 Ciprofloxacin: 6 Levofloxacin: 7	P= 0.922
Length of Stay	21.96 days±17.3	26.59 ±11.2	P=0.310
Degree of Infection	Asymptomatic: 9 SIRS :21 Sepsis including septic shock : 16	Asymptomatic: 2 SIRS: 8 Sepsis including septic shock: 7	P=0.749
Type of Cancer	ALL: 5 AML: 21 NHL: 7 MDS +AML: 4 MM:3 Other: 9	ALL: 2 AML: 9 NHL: 1 MDS+AML: 2 MM:1 Other: 2	P=0.966
BMT before + culture	Yes: 10 No: 36	Yes: 3 No: 14	P= 0.722
Allo/Auto	Allo: 7 Auto: 6	All0:2 Auto: 1	P=0.64

Abbreviations:

BMT- Bone Marrow Transplant; Auto- autologous; Allo- allogeneic

ALL- Acute Lymphoblastic Leukemia; AML- Acute Myeloid Leukemia; NHL- Non Hodgkin's Lymphoma; MM- Myeloid Leukemia; MDS; Myelodysplastic Syndrome

SIRS- systemic inflammatory response syndrome

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479. Associated Factors for Extended-Spectrum β-Lactamase Infection Among Patients with Solid or Hematological Malignancy

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Session: 52. HAI: MDRO – GNR Epidemiology, ESBL Producers
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Background. Cancer patients are susceptible to infections due to immunodeficiency, frequent invasive interventions-devices, chemotherapy and antibiotics exposure. Infections caused by extended-spectrum β-lactamase (ESBL)-producing *Enterobacteriaceae* increase morbidity and mortality. The objective was to identify clinical factors associated with ESBL in infected patients with cancer at the Instituto Nacional de Cancerología.

Methods. A case–control study was conducted from 2013 to 2015. Cases were infected patients with ESBL-producer *Enterobacteriaceae*. Controls (matched for date and ward) with non-ESBL-producer *Enterobacteriaceae* were included. Data were extracted from electronic medical records at index culture: clinical and admission data, Charlson index, immunosuppressive, radio and chemotherapy, neutropenia, invasive devices, surgical procedures and antimicrobial therapy. Microorganisms were identified by the automatized system. Conditional logistic regression and backward stepwise was used to identify predictors of ESBL isolation.

Results. A total of 265 patients with ESBL producer *Enterobacteriaceae* and 445 non-ESBL producers were identified, mean age 59, 61% male, 48% admitted as outpatients, 73% with solid tumors, 38% with Charlson index ≥4. *E.coli* and *Klebsiella* spp. represented 90% of microorganisms. Factor associated with ESBL producer *Enterobacteriaceae* were hospitalization ≥7 days (OR: 1,59; CI 1.11–2,29), hospitalization the previous year (OR: 4.02; CI 2,68–6,02), immunosuppressive therapy (OR: 2.07; CI 1,05–4.05), B-lactam therapy the last month (OR: 1.54; CI 1.05–2.26), invasive devices (OR: 1.58; CI 1.10–2.27), active neoplasia (OR: 2,22; CI1.05–4.68), neutropenia (OR: 2.03; CI:1.26–3.27) and absence of chemotherapy during last 3 months (OR: 1.91; CI1.29–2.82). Discriminatory capacity was acceptable (AUC: 0.71).

Conclusion. The presence of ESBL-producer *Enterobacteriaceae* in oncologic patients is associated with health care, hospital admission and length of stay, invasive devices and exposure to antibiotics. The magnitude of associated factors are weak and do not completely allow the identification of cancer patients infected with ESBL-producer *Enterobacteriaceae*.

Table 1. Clinical characteristics of oncologic patients with *Enterobacteriaceae* isolation, categorized by ESBL producers and non-ESBL producers. ESBL=extended-spectrum β-lactamase.

Variable	Cases (ESBL producers)	Controls (non-ESBL producers)	p
Total, No.(%)	265 (37)	445 (63)	
Demographics			
Age, median (IQR), years	56 (39 - 67)	60 (47 – 70)	0.009
Age ≥70 years	49 (18)	114 (25)	0,029
Male sex	148 (56)	286 (64)	0.026
Admission as out-patient	231 (87)	425 (96)	0.000
Solid tumor	186 (70)	336 (76)	0.120
Hematological malignancy	79 (30)	209 (34)	
Active neoplasia at index culture	245 (92)	428 (96)	0.031
Remission of neoplasia at index culture	20 (8)	17 (4)	
Comorbidities			
Acute myocardial infarct	6 (1,5)	7 (2,2)	0,050
Sintomatic heart failure	5 (1,8)	9 (2)	0,900
Periferal artery disease	1 (0,38)	1 (0,22)	0,711
Cerebrovascular disease	2 (0,7))	3 (0,6))	0,901
Dementia	2 (0,7)	4 (0,9)	0,839
Chronic obstructive pulmonary disease	14 (5,2)	18 (4,0)	0,442
Connective tissue disease	2 (0,7)	8 (1,8)	0,254
Peptic ulcer disease	2 (0,7)	3 (0,6)	0,901
Chronic liver disease	5 (1,8)	6 (1,3)	0,574
Diabetes mellitus	18 (6,7)	44 (9,8)	0,158
Hemiplejia	9 (3,4)	12 (2,7)	0,595
Kidney disease	20 (7,5)	28 (6,2)	0,519
Active solid tumor	188 (71)	334 (75)	0,230
Active leukemia	50 (19)	49 (11)	0,003
Active lymphoma	21 (8)	53 (12)	0,093
Metastatic solid tumor	85 (32)	135 (30)	0,628
AIDS	4 (1,5)	3 (0,6)	0,276
Charlson comorbidity index ≥4	104 (39)	167 (36)	0,649
History			
Hospitalization during 12 months preceding index culture	223 (84)	264 (59)	0,000
Prolonged hospitalization (≥7 days)	119 (45)	141 (32)	0.000
Immunosuppressive therapy 3 months preceding index culture	27 (10)	19 (4)	0,002
Radiotherapy 3 months preceding index culture	23 (9)	43 (10)	0.662
Chemotherapy 3 months preceding index culture	89 (34)	183 (41)	0.046
Neutropenia at index culture	59 (22)	68 (15)	0.019
Surgical procedures during 12 months preceding index culture	130 (49)	168 (38)	0.003
Invasive devices use at index culture (central venous catheter, dialysis catheter, surgery drains, nasogastric tube, nephrostomy)	146 (55)	177 (40)	0.000
Urinary catheterization previous 30 days	93 (35)	127 (29)	0,068
Recent antibiotic therapy 1 month preceding index culture			
Any antibiotic therapy	102 (38)	108 (24)	0,000
Beta-Lactam-Beta-lactamase inhibitor	80 (31)	82 (18)	0,000
Aminoglycosides	5 (2)	2 (0,4)	0,108
Fluoroquinolones	10 (3,8)	8 (1,8)	0,136
Carbapenems	26 (10)	16 (3,6)	0,001
Sulfas	11 (4)	7 (1,5)	0,045
Others	21 (8)	23 (5)	0,125
Microorganism isolated			
E. coli.	166 (63)	299 (67)	0.000
Klebsiella spp.	92 (35)	80 (18)	
Proteus spp.	3 (1)	55 (12)	
Others	4 (2)	11 (2)	