

## 249. Frequency of Antimicrobial Complications Following Initiation of Palliative Chemotherapy in Advanced Cancer Patients

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**Background.** Evaluating antimicrobial complications in advanced cancer patients on palliative chemotherapy may guide clinical care and stewardship efforts.

**Methods.** We identified advanced cancer patients aged  $\geq 65$  years started on palliative chemotherapy from January 2016 to September 2017 at Yale New Haven Hospital. Complications with and without antimicrobials were assessed during first hospitalizations until death or March 2018. We compared differences with  $\chi^2$  tests.

**Results.** Of 2,680 patients started on palliative chemotherapy, 1181 had  $\geq 1$  hospitalization. Median age was 74 years (range 65–98), and 856 (72%) had solid tumors. Median time to hospitalization from starting palliative chemotherapy was 77 days (range 1–580) and length of stay was 4 days (range 1–50). During first hospitalization, 158 (13%) died or were discharged to hospice. Overall, 493 (42%) died. Palliative chemotherapy often included FOLFIRINOX ( $n = 257$ ), FOLFOX ( $n = 239$ ), or pembrolizumab ( $n = 210$ ). During first hospitalizations, patients given antimicrobials more likely incurred nephrotoxicity, hepatotoxicity, or *C. difficile* infection within 7 days of use than patients not given antimicrobials (Table 1).

**Conclusion.** Antimicrobial complications are common in advanced cancer patients on palliative chemotherapy. Increased stewardship and alignment of infection treatment with goals of care are needed.

**Table 1:** Complications in Palliative Chemotherapy Patients.

Complication <sup>a</sup>	Definition	No		P value
		Antimicrobials (N = 805)	Antimicrobials (N = 376)	
Cardiotoxicity	>60ms QTC rise	83 (10%)	35 (9%)	0.68
Nephrotoxicity, mg/dL	QTC > 500ms $S_{CR} \geq 0.5$ if Cr < 3.0 $S_{CR} \geq 1.0$ if Cr $\geq 3.0$	49 (6%)	6 (2%)	<0.001
Hematologic, /mm <sup>3b</sup>				
Aplastic anemia	Two of: ANC < 1,500 Plt < 50,000 Hg < 10	9 (2%)	4 (1%)	0.78
Leukopenia	ANC < 1,500	10 (2%)	4 (1%)	0.59
Thrombocytopenia	Plt < 100,000	9 (2%)	6 (2%)	0.79
Hepatotoxicity, U/L	ALT $\geq 102$ ALP $\geq 390$	88 (12%)	26 (7%)	0.03
Electrolyte, mEq/L				
Hypokalemia	K < 3.0	45 (6%)	17 (5%)	0.49
Hyperkalemia	K > 5.5	3 (0%)	21 (6%)	<0.001
Hypomagnesemia	Mg < 1.2	10 (1%)	5 (1%)	1.00
<i>Clostridium difficile</i>				
	Antigen +	27 (3%)	1 (0%)	<0.001
	Toxin +	16 (2%)	1 (0%)	0.02

<sup>a</sup>Within 7 days of specified antimicrobials vs. entire hospitalization in those not given antimicrobials.

<sup>b</sup>Solid tumor patients only: antimicrobials N = 538; no antimicrobials N = 318.

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## 250. Antimicrobial Management in Extracorporeal Membrane Oxygenation: The AMMO study

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**Background.** The use of extracorporeal membrane oxygenation (ECMO) in critically ill adults is increasing with no guidelines for antimicrobial prophylaxis. Patients on ECMO are at a high risk for infections, 6.1% of neonates and 20.5% of adults. An Extracorporeal Life Support Organization (ELSO) Infectious Disease Task Force statement concludes that no additional antibiotic coverage is needed for patients on ECMO.

Since patients on ECMO are severely ill, providers tend to prescribe empiric antibiotics. To guide rational antibiotic therapy we introduce an ECMO antimicrobial protocol on July 1, 2014 and report its impact.

**Methods.** We conducted a retrospective review of 294 patients on ECMO between July 1, 2011 and July 1, 2017. The ECMO antimicrobial protocol was introduced on July 1, 2014. We had a cohort of 133 patients before and 161 patients after the implementation of protocol. We evaluated days of antimicrobial use, antibiotic-free days and days of individual antimicrobial use, adjusted for APACHE scores and ECMO duration.

**Results.** Total days of antimicrobial use after the protocol decreased from 2,508 to 2,186 days ( $P = 0.01$ ) with statistically significant reduction of individual antimicrobials; vancomycin (407 to 266,  $P < 0.03$ ), cefepime (196 to 165,  $P < 0.06$ ), along with reduced days of anidulafungin, caspofungin, fluconazole, meropenem, and daptomycin. However, when adjusted for mean days on ECMO 7 (4–14) before as compared with 5 (3–9.5) after ( $P < 0.0119$ ), “antimicrobial free days” actually reduced after implementation of the protocol. Early trends of improved stewardship were off-set when time frame and number of patients were increased. Despite this, no difference was seen in rate of nosocomial infections, with increased rates seen for *Clostridium difficile* (0 vs. 4,  $P < 0.06$ ).

**Conclusion.** “Protocolization” and standardization of antimicrobial recommendations for patients on ECMO led to reduction in the use of specific antibiotics but paradoxically increased overall antibiotic use. We are in the process of emphasizing compliance with this protocol, which will be followed by implementation of a more restrictive protocol. We will do a step wedge randomized control prospective analysis to evaluate compliance differences between the medical and surgical critical care services, and the impact on patient outcomes.

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

## 251. Overuse of Antimicrobials in the End-of-life Care: Factors Influencing Physicians' Prescribing Behaviors in Treating Patients With an Advanced Stage of Illnesses in the Robust Era of Antimicrobial Stewardship

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**Background.** Antimicrobials are frequently administered to patients with an advanced stage of illnesses. Understanding current practice of antimicrobial use at the end of life and factors influencing physicians' prescribing behavior is necessary to provide an effective antimicrobial stewardship program and the best end-of-life care in terminally ill patients.

**Methods.** The current study was a 1-year retrospective cohort study of patients with an advanced stage of illnesses and was conducted at a 790-bed, public, tertiary care center in Japan. Patterns in current antimicrobial use in the last 14 days of the life of terminally ill patients and the factors influencing physicians' prescribing behaviors were analyzed.

**Results.** Of the 260 patients, 192 (73.8%) had an advanced stage malignancy, 136 (52.3%) received antimicrobial therapy in the last 14 days of their life, of whom 60 (44.1%) received antimicrobials for symptom relief. Overall antimicrobial use in the last 14 days of their life was 421.9 days of therapy per 1,000 patient-days. Factors associated with antimicrobial use in this period included a history of antimicrobial use prior to the last 14 days of life during index hospitalization (adjusted odds ratio [aOR]: 4.86; 95% confidence interval [CI]: 2.67–8.84), antipyretic use in the last 14 days of life (aOR: 4.19 95% CI: 2.01–8.71), and the Charlson comorbidity index  $\leq 5$  (aOR: 2.18 95% CI: 1.06–4.53).

**Conclusion.** Approximately half of the patients hospitalized with an advanced stage of illnesses received antimicrobials in the last 14 days of their life. Antimicrobials were commonly prescribed and their overall consumption was significant despite their limited efficacy. The factors associated with antimicrobial use at the end-of-life in this study are likely to explain physicians' prescribing behaviors. In the era of robust antimicrobial stewardship, reconsidering antimicrobial use in terminally ill patients is necessary.

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## 252. Relative Use of Carbapenems in Immunocompromised Patients

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**Background.** Gram-negative bacterial infections are associated with high mortality in immunocompromised hosts, and the presence of drug resistance further increases mortality. Antibiotic consumption is a key outcome measure for Antimicrobial