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1400. Treatment of HIV and Use of HAART in HIV Infected Patients with Acute Septic Shock

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Session: 156. HIV: Antiretroviral Therapy

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Background. For HIV patients admitted with sepsis, ARVs are often stopped or held due to myriad concerns including drug interactions, acute renal failure, gastrointestinal dysfunction, or inability to administer crushed medications down feeding tubes. We seek to examine prescription patterns of HAART for HIV positive patients admitted for sepsis in our healthcare system and the impact of HAART prescription on patient outcomes.

Methods. We identified HIV positive patients from an institutional database of patients admitted for sepsis within our multi-hospital healthcare system and retrospectively extracted further clinical patient and laboratory information as well as information on HAART prescription by chart review. The impact of HAART prescription and immunologic and virologic parameters of HIV infection on mortality was examined.

Results. Inpatient mortality was 35% in HIV patients admitted for sepsis, compared with 17% for all patients with sepsis in our healthcare system. Opportunistic infections were identified in only 25% of patients while 56% had other infections identified. Only 55% of patients had HAART prescribed while inpatient. CD4 count, virologic suppression, APACHE score, presence of an opportunistic infection, admission to a tertiary care hospital, and inpatient prescription of HAART were all predictors of survival.

Table: Factors impacting mortality in HIV patients with sepsis in univariate analysis.

	Survivors (n = 50)	Deaths (n = 28)	Odds ratio of survival (p value)
Mean baseline CD4 count	309	64	(P < 0.01)
Virologic suppression (VL<200)	48% (n = 21 of 44)	22% (n = 5 of 23)	3.3 (P < 0.05)
Mean APACHE score	67 (n = 32)	110 (n = 17)	(P < 0.01)
Opportunistic infection	18% (n = 9)	39% (n = 11)	0.34 (P < 0.05)
Tertiary hospital admission	50% (n = 25)	21% (n = 6)	3.7 (P < 0.05)
Inpatient HAART prescription	68% (n = 34)	32% (n = 9)	4.5 (P < 0.01)

In a multivariable analysis both CD4 count and inpatient HAART prescription predicted survival in our cohort with an odds ratio of survival of 3.3 for patients prescribed HAART inpatient compared with their untreated peers.

Conclusion. Immunologic and virologic status at time of admission predicted survival in HIV patients admitted for sepsis but prescription of HAART to HIV patients admitted for sepsis may increase survival.

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1401. A Prediction Model of Pretreatment HIV RNA Levels in Naïve Thai HIV-Infected Patients: An Application for Resource-limited Settings

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Background. The use of abacavir (ABC) and rilpivirine (RPV) in the first-line regimen for naïve HIV-infected patients with pretreatment HIV RNA >100,000 copies/mL is not recommended due to a high rate of treatment failure. If a model could accurately predict pretreatment HIV RNA levels, it would be a useful tool for the selection ABC or RPV in the first-line regimen.

Methods. Thai HIV-infected adults enrolled in the TREAT Asia HIV Observational Database (TAHOD) and additional patients of Ramathibodi Hospital were eligible if they had an HIV RNA result at the time of antiretroviral therapy initiation. Factors associated with pretreatment HIV RNA <100,000 copies/mL were determined by logistic regression. Based on the results of the final model, a prediction model was created.

Results. A total of 1,223 patients were included in the analysis. Among those in the derivation data set, median [interquartile range (IQR)] age was 36.3 (30.5–42.9) years, median (IQR) CD4 count was 122 (39–216) cells/mm³, and pretreatment HIV RNA was 100,000 (32,449–229,777) copies/mL. Factors associated with pretreatment HIV RNA <100,000 copies/mL were anemia [odds ratio (OR) 2.05 vs. no anemia; 95% confidence interval (CI) 1.28–3.27], CD4 count >200 cells/mm³ (OR 3.00 vs. CD4 count <200 cells/mm³; 95% CI 2.08–4.33), and non-heterosexual HIV exposure (OR 1.61 vs. heterosexual HIV exposure; 95% CI 1.07–2.43). No AIDS-defining illness (11.5), no anemia (18.5), age <35 years (11), CD4 count >200 cells/mm³ (27), duration of HIV infection >1 year (9), and weight >50 years (11) were included in the clinical prediction tool scores. A score ≥45 yielded a sensitivity of 45.3%, specificity of 76.7%, positive predictive value of 68.1%, and negative predictive value of 56.1% among patients in the derivation. The area under the receiver-operator characteristic curve was 0.655 (95% CI 0.614–0.696) and 0.600 (95% CI 0.533–0.667) in the derivation and validation patients, respectively.

Conclusion. Our final prediction model had poor sensitivity and specificity for predicting HIV RNA <100,000 copies/mL. Further study on a larger population with a greater diversity of data variables available is necessary to improve the model. Pretreatment HIV RNA remains necessary before ABC or RPV initiation for naïve Thai HIV-infected patients.

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1402. Principal Components and Costs of HIV-Associated Hospitalizations in the United States: A National Study in the Current Era

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Background. HIV-associated illness in the US has evolved with the advent of antiretroviral therapy and aging of the HIV-infected population. While changes in the causes of mortality in these patients are well documented, reasons for hospitalization and costs associated with hospital stays are not well studied at the national level.

Methods. We collected billing and demographic data of 84,666 HIV-associated hospitalizations across 3,564 hospitals nationwide using the 2012 and 2013 National Inpatient Sample, and used principal component analysis to arrive at predominant themes of HIV-associated hospitalization. Components with eigenvalues greater than one were retained, and orthogonal rotation was performed to identify variables that significantly loaded each component. Estimated hospital costs were determined by multiplying inflation-adjusted charges with hospital-specific cost-to-charge ratios and inverse wage indexes, and average costs associated with principal components were computed.

Results. Kidney disease predominated as a theme for HIV-associated hospitalization and accounted for 9% of the total variance. This was followed by liver disease, opportunistic infections with *Pneumocystis* and *Candida*, septicemia, and substance abuse, which accounted for 7%, 6%, 5% and 4% of the total variance respectively. Other significant contributors to hospitalization were heart disease, low socioeconomic status, complicated diabetes mellitus, and other opportunistic infections. The highest costs were associated with septicemia which averaged \$25,557 per hospitalization, whereas the lowest costs were associated with substance abuse which averaged \$7,534 per hospitalization.

Conclusion. Kidney and liver disease are important components of HIV-associated hospitalization in the current era reflecting an aging population overlain with complications from HIV and viral hepatitis. Opportunistic infections continue to be major contributors to hospitalization indicating ongoing challenges in access and adherence to antiretroviral therapy. Research efforts should focus on ameliorating