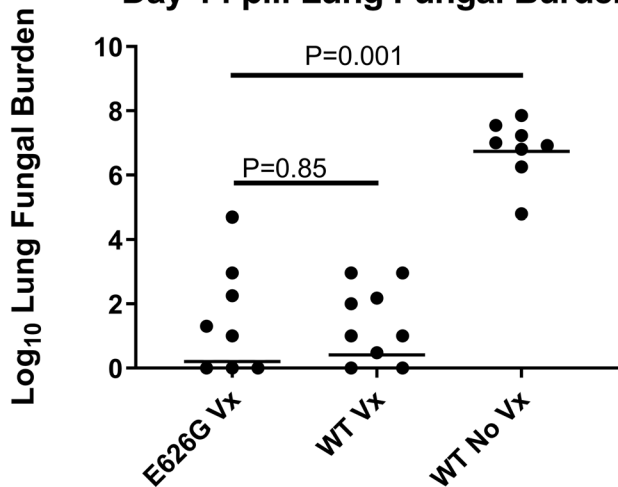


## Vaccinated E626G vs WT Day 14 p.i. Lung Fungal Burden



**Disclosures.** All Authors: No reported Disclosures.

### 2889. Skin Niche Conditions Trigger *C. auris* to Form Robust Biofilms That Resist Desiccation

Jeniel E. Nett, MD PhD; Tarika Patel; Chad Johnson and John Kernien; University of Wisconsin-Madison, Madison, Wisconsin

**Session:** 308. Fungi: Blood, Sweat, and Genes

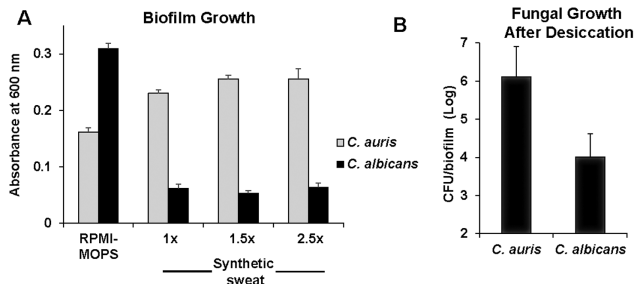
**Saturday, October 5, 2019: 4:15 PM**

**Background.** Emerging pathogen *Candida auris*, the first fungus to be labeled as a public health threat, causes nosocomial outbreaks of invasive candidiasis with mortality as high as 60%. Little is known about the pathogenesis of this species that has newly arisen in the last 10 years. It is unclear why this species readily colonizes the skin and transmits efficiently in healthcare settings. We considered the possibility that *C. auris* may proliferate in conditions of the skin niche.

**Methods.** We analyzed the growth of *C. auris* (B11203) in synthetic sweat media that was designed to mimic human axillary sweat. We included *C. albicans* SC5314 as a comparison. To simulate sweat evaporation, we examined fungal growth in sweat media that had been concentrated up to 2.5-fold. We utilized OD600 readings to quantify planktonic and biofilm growth. Biofilm architecture was assessed by scanning electron microscopy. To determine the resilience of biofilms, biofilm viability was assessed by viable burden following desiccation.

**Results.** In the various concentrations of sweat media, *C. auris* formed biofilms that were 3.5- to 5-fold greater than those observed for *C. albicans* (A). In contrast, *C. auris* biofilms formed in RPMI-MOPS were approximately half the density of the *C. albicans* biofilms. During planktonic growth in synthetic sweat media, *C. auris* and *C. albicans* replicated similarly, including in media that had been concentrated 2.5-fold. This suggests that the various media conditions differently trigger biofilm formation for the two species. The *C. auris* biofilm formed in sweat media was approximately 100-fold more resistant to 1 week of desiccation (B).

**Conclusion.** Skin niche conditions trigger *C. auris* to form resilient biofilms that resist desiccation. We propose that this unique characteristic may account for the propensity of this species to colonize the skin and for its capacity to persist on the surface of contaminated medical devices.



**Disclosures.** All Authors: No reported Disclosures.

### 2890. Antibiotic Overuse at Discharge in Hospitalized Patients with Bacteriuria or Treated for Pneumonia: A Multi-Hospital Cohort Study

Valerie M. Vaughn, MD MSc<sup>1</sup>; Lindsay A. Petty, MD<sup>2</sup>; David Ratz, MS<sup>2</sup>; Anurag N. Malani, MD, FIDSA, FSHEA<sup>3</sup>; Elizabeth McLaughlin, MS, RN<sup>4</sup>; Twisha S. Patel, PharmD, BCPS, BCIDP<sup>1</sup>; Steven J. Bernstein, MD, MPH<sup>2</sup>; Lama Hsaiky, PharmD<sup>5</sup>; Lisa Dumkow, PharmD, BCPS, BCIDP<sup>5</sup>; Jason M. Pogue, PharmD, BCPS, BCIDP<sup>6</sup>;

Scott A. Flanders, MD<sup>2</sup> and Tejal N. Gandhi, MD<sup>2</sup>; <sup>1</sup>Michigan Medicine, Ann Arbor, Michigan; <sup>2</sup>University of Michigan, Ann Arbor, Michigan; <sup>3</sup>St. Joseph Mercy Health System, Ann Arbor, Michigan; <sup>4</sup>Beaumont Hospital, Detroit, Michigan; <sup>5</sup>Mercy Health Saint Mary's, Grand Rapids, Michigan; <sup>6</sup>University of Michigan College of Pharmacy, Ann Arbor, Michigan

**Session:** 309. Glass Half Full or Half Empty? Trends in Antimicrobial Prescribing  
**Saturday, October 5, 2019: 3:15 PM**

**Background.** Antibiotics prescribed at hospital discharge account for half of antibiotic use related to hospitalization for urinary tract infection or bacterial pneumonia. It is unclear how much antibiotic use at discharge represents overuse, and thus, could potentially be improved through antibiotic stewardship.

**Methods.** From July 2017 to December 2018, trained abstractors at 46 Michigan hospitals collected detailed data on a sample of adult, nonintensive care, hospitalized patients with bacteriuria or treated for community-acquired or healthcare-associated pneumonia (discharge diagnosis of pneumonia plus antibiotic treatment). Antibiotic prescriptions at discharge were assessed for overuse using a guideline-based hierarchical algorithm: evaluating first for unnecessary antibiotics (noninfectious/nonbacterial syndrome), then excess duration (antibiotics needed, but prescribed for longer than necessary), and finally avoidable fluoroquinolones (safer alternative antibiotic available) (Figure 1). For each disease state, descriptive results are shown with comparisons by *t*- or Fisher's exact tests.

**Results.** Of 17,157 patients (7,283 with bacteriuria; 9,874 treated for pneumonia), 30.1% of patients with bacteriuria had asymptomatic bacteriuria and 11.4% of patients treated for pneumonia did not meet diagnostic criteria for pneumonia. The most common antibiotics prescribed at discharge were fluoroquinolones. Nearly half (43.6%) of patients had antibiotic overuse at discharge (33.8% bacteriuria, 50.9% pneumonia), with a median 4 days of overuse after discharge (Table 1). For bacteriuria, 45.0% of overuse days at discharge were due to unnecessary antibiotics, 61.2% were due to excess antibiotic duration (Figure 2). Patients with community-acquired pneumonia and those with sepsis on admission had the highest rates of antibiotic overuse at discharge (Table 2).

**Conclusion.** In the largest assessment of antibiotics at discharge to-date, antibiotic overuse at discharge was extremely common. Specific targets for discharge stewardship vary by disease state. Notably, interventions may be more effective at reducing fluoroquinolone prescribing at discharge indirectly by stopping treatment for asymptomatic bacteriuria and reducing excess duration in pneumonia.

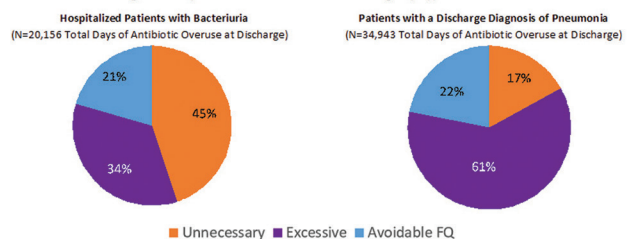
**Figure 1.** Example Cases with Classification of Antibiotic Overuse at Discharge for Hospitalized Patients with Bacteriuria or a Discharge Diagnosis of Pneumonia

Hierarchical Classification Antibiotic Overuse	Antibiotic Overuse at Discharge							
	Condition		Inpatient, days		Post-Discharge, days			
Unnecessary	ASB		FQ	FQ	FQ	FQ	FQ	FQ
Excess Duration	CAP	nonFQ	nonFQ	nonFQ	FQ	FQ	FQ	FQ
Avoidable FQ					FQ	FQ	FQ	FQ

Days of antibiotic overuse at discharge were assessed using a hierarchical algorithm. First, patients were assessed for unnecessary antibiotics (those given for a non-infectious/non-bacterial syndrome, e.g., asymptomatic bacteriuria or "pneumonia" without symptoms or with normal radiographs). Second, patients were assessed for excessive antibiotics (antibiotics needed, but prescribed for longer than necessary). Finally, patients were assessed for avoidable fluoroquinolones (antibiotics needed, but safer alternative exists).

**Abbreviations:** ASB, asymptomatic bacteriuria; CAP, community-acquired pneumonia; FQ, fluoroquinolone

**Figure 2.** Days of Antibiotic Overuse at Discharge by Type of Overuse



Proportions of days of antibiotic overuse at discharge that are due to unnecessary antibiotics, excessive duration, and avoidable fluoroquinolones are shown by disease state. Categories are hierarchical (unnecessary > excessive > avoidable FQ) and therefore mutually exclusive for each day (though one patient may have two types of overuse on different days). Analysis include 17,157 patients (7,283 with bacteriuria; 9,874 with discharge diagnosis of pneumonia). **Abbreviations:** FQ, fluoroquinolone

**Table 1.** Types of Antibiotic Overuse at Discharge in Hospitalized Patients with Bacteriuria or Treated for Pneumonia

	Patients; N (%)	Days of Antibiotic Overuse at Discharge; Median (IQR)
<b>Patient with Bacteriuria; N=7,283</b>		
Any Overuse at Discharge	2459 (33.8%)	5 (3-7)
Unnecessary	1024 (14.1%)	5 (3-7)
Excess	1160 (15.9%)	3 (1-5)
Avoidable Fluoroquinolones	467 (6.4%)	5 (4-6)
<b>Patients Treated for Pneumonia; N=9,874</b>		
Any Overuse at Discharge	5027(50.9%)	4 (2-6)
Unnecessary	720 (7.3%)	5 (3-7)
Excess	3849 (39.0%)	3 (2-5)
Avoidable Fluoroquinolones	1551 (15.7%)	3 (2-4)

Proportions of patients with antibiotic overuse at discharge due to unnecessary antibiotics, excessive duration, and avoidable fluoroquinolones are shown by disease state. Categories are hierarchical (unnecessary > excessive > avoidable FQ), however one patient may have two types of overuse on different days.