York; [2]Allergan plc, Irvine, California; [3]Weill Cornell Medicine of Cornell University, New York, New York; [4]Mapi, ICON plc, Lexington, Kentucky; [5]Weill Cornell Medicine of Cornell University, New York, New York

Session: 51. Soft Tissue and Skin Infections
Thursday, October 3, 2019: 12:15 PM

Background. Prolonged admissions for acute bacterial skin and skin structure infections (ABSSSI) present an opportunity to improve efficiency and quality of care. A primary reason for admission for ABSSSI is to receive intravenous (IV) antibiotics, where multiple guidelines support shifting care to outpatient settings for appropriate patients. A hospital pathway for ABSSSI that leverages long-acting IV antibiotic therapy, such as dalbavancin, may reduce the length of stay (LOS). The ENHANCE ABSSSI trial (NCT03233438) sought to quantify LOS vs. that of usual care after implementing a new ABSSSI pathway.

Methods. A single-center, pre- vs. post-period pragmatic trial at Weill-Cornell Medical Center assessed usual care for consecutively enrolled ABSSSI patients during an observational period (pre-period). A new ABSSSI pathway was implemented in the post-period, which included (1) identification of eligible admitted ABSSSI patients and (2) treatment with dalbavancin. Those with life-threatening infections, requiring multiple antibiotics/intensive care, or with unstable comorbidities were excluded. Outcomes were assessed over a 44-day follow-up period.

Results. Of 48 and 43 patients enrolled in pre- and post-periods (Figure 1), mean infection-related LOS was reduced in the post-period (3.2 days vs. 4.8 days; $P = 0.003$; Figure 2 and 3). Similar results were found in an adjusted LOS analysis. Work productivity and activity impairment outcomes significantly improved in the post-period, apart from absenteeism, while quality of life was similar between periods (Figure 4). Complete response to treatment was similar between periods: 50% (pre-period) and 57% (post-period). A greater proportion of total adverse events (AEs) occurred in the post-period ($n = 20$; 48%) vs. pre-period ($n = 3$; 6%) with most AEs being mild in severity and not related to antibiotic use; few AEs were serious (7% [$n = 3$] post-period vs. 2% [$n = 1$] pre-period). The most common AEs were unrelated infection in the pre-period and fever in the post-period.

Conclusion. After implementing the ENHANCE ABSSSI pathway among eligible patients, LOS was significantly reduced by almost 2 days, with potential improvements in work productivity and the ability to complete daily activities.

Figure 1: Study Population

All patients*	Pre-Period	Post-Period
Total number of study patients		
Enrolled n (%)	48 (100)	43 (100)
Withdrawn† n (%)	6 (12.5)	10 (23.3)
Completed n (%)	42 (87.5)	33 (76.7)
Analysis sample‡ n (%)	48 (100)	42 (97.7)

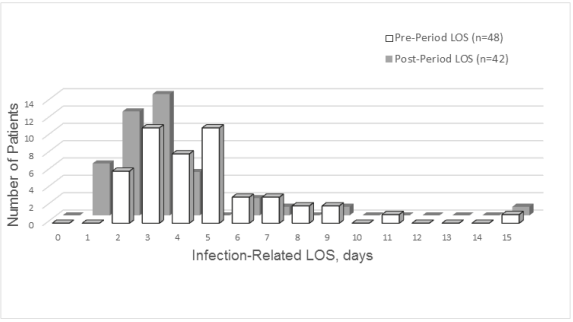
*All patients from the enrolled sample were included in the analysis sample, as long as one antibiotic dose was received in the pre-period or one dose of dalbavancin was received in the post-period.
†The most common reason for withdrawal was loss to follow up for both periods.
‡One patient in post-period did not receive a dalbavancin dose and therefore was not eligible for analysis sample inclusion.

Figure 2: Primary Outcome for Analysis Sample

	Pre-Period N=48	Post-Period N=42		
Unadjusted Total Infection-Related LOS (days)			Difference (SD)	P*
Mean (SD)	4.8 (2.5)	3.2 (2.5)	1.6 (2.5)	0.003
Median (Q1,Q3)	4.0 (3.0, 5.5)	3.0 (2.0, 3.0)		
Min, Max	2.0, 15.0	1.0, 15.0		
95% CI	4.1, 5.6	2.4, 4.0	0.6–2.6	
Adjusted† Total Infection-Related LOS (days)			Difference (SE)	P‡
Mean (SE)	5.5 (0.4)	3.9 (0.4)	1.6 (0.5)	0.002

95% CI, 95% confidence interval; LOS, length of stay; Q1, 25th percentile; Q3, 75th percentile; SE, standard error; SD, standard deviation.
*P values from a two-sided, two sample, equal variance t-test for the unadjusted analysis.
†Generalized Linear Mixed Model assessing the effect of treatment period on total infection-related length of stay (days) by treatment period adjusting for age, and immunocompromised status (patients were defined as immunocompromised if they had evidence of any of the following at baseline: connective tissue disease, diabetes mellitus, leukemia, or malignant lymphoma).
‡P values from a two-sided, two sample, equal variance t-test for the adjusted analysis.

Figure 3: Histogram of Infection-Related LOS for Analysis Sample



LOS, length of stay.

Figure 4: Other Outcomes for Analysis Sample

Outcomes	Pre-period N=48	Post-period N=42	P
Work Productivity and Activity Impairment, % (95% CI) at Day 14 visit*			
Absenteeism	n=17	n=16	
	49.9 (30.1, 69.7)	36.7 (12.2, 61.3)	0.38
Impairment while working	n=14	n=9	
	47.9 (24.7, 71.0)	8.9 (1.8, 16.0)	0.01
Overall work impairment	n=14	n=9	
	59.3 (36.7, 81.9)	18.0 (0.0, 36.0)	0.01
Activity Impairment (non-work related)	n=42	n=33	
	60.2 (48.1, 72.3)	18.5 (9.2, 27.8)	<0.001
Quality of Life (mean, SD)*			
SF-12 MCS at Baseline	n=47	n=42	0.85
	42.9 (10.5)	49.2 (11.9)	
SF-12 MCS at Day 14 visit	n=42	n=34	
	43.9 (10.2)†	50.8 (10.9)‡	
SF-12 PCS at Baseline	n=47	n=42	0.07
	36.8 (9.6)	37.6 (10.7)	
SF-12 PCS at Day 14 visit	n=42	n=34	
	40.5 (11.4)†	46.3 (11.2)‡	
Response to treatment (n, %) at Day 14 visit*			
Complete Response	24 (50.0)	24 (57.1)	0.58
Partial Response	0 (0)	0 (0)	
Failure	12 (25.0)	9 (21.4)	
Unknown	12 (25.0)	9 (21.4)	

95%CI, 95% confidence interval; MCS, mental health composite scale; PCS, physical health composite scale; SD, Standard Deviation; SF-12, Short Form 12.

*Data from all patients in analysis sample were not available due to loss to follow up or incomplete data at Baseline and/or Day 14 visit.
†Change from baseline to Day 14 for MCS and PCS nonsignificant in pre-period.
‡Change from baseline to Day 14 for MCS non-significant, yet PCS significant (P<0.001) in post-period.

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

457. *Cutibacterium* (*Propionibacterium*) *acnes* Infection Rate and Optimization of Surgical Culture Duration

Carlos Christian. Cueva, MD[1]; Robert Odrobina, MD[2]; Jakrapun Pupaibool, MD[3] and Mark Fisher, PhD, D(ABMM)[4]; [1]University of Utah, North Salt Lake, Utah; [2]VA Salt Lake City Health Care System, University of Utah School of Medicine, Salt Lake City, Utah; [3]University of Utah School of Medicine, Salt Lake City, Utah; [4]ARUP Infectious Diseases Laboratory, Salt Lake City, Utah

Session: 51. Soft Tissue and Skin Infections
Thursday, October 3, 2019: 12:15 PM

Background. *Cutibacterium acnes* is part of the normal skin and gastrointestinal tract flora that is increasingly recognized as a causative organism of surgical infections. Distinguishing between infection and contamination is difficult. The standard culture duration for *C. acnes* has not been determined. As a slow-growing organism, a prolonged incubation of 10–14 days is adopted in many laboratories. Ideally, only samples with high pretest probability for infection should be worked up this way, otherwise resources are overutilized with likely no benefits and potential harms to patients. We conduct a study to assess the optimal incubation duration for *C. acnes*.

Methods. We retrospectively reviewed microbiologic and clinical data of patients who underwent surgical procedures at the Veterans Affairs (VA) Hospital and the University of Utah Hospital in Salt Lake City, Utah, between 2015 and 2018 for which prolonged incubation of surgical samples was requested. Samples that grew C. acnes were divided into three groups (infection, contaminant, indeterminate) based on the quantity of growth and the number of positive samples (Figure 1). Samples in the "indeterminate" group were re-classified into the other two groups based on clinical criteria (Figure 2). Time to culture positivity (TTP) was calculated for each group.

Results. 741 patients contributed to a total of 909 surgical cases. There were 2,401 samples collected resulting in 4,408 bacterial cultures. *C. acnes* grew in 131 cases (14.41%). Fifty-five cases (44%) fulfilled the criteria for true infections and 70 cases (56%) were contaminants. 6 cases were lost to follow-up. The mean TTP of the infection and the contamination groups were 5.60 + 0.76 days and 8.67 + 0.81 days, respectively. The TTP of C. acnes from specimens of true surgical infections was significantly shorter than that of contaminants by the mean of 3.07 days (95% CI: -4.22 to -1.92); $P < 0.001$.

Conclusion. Using our microbiological and clinical criteria to differentiate infections and contaminations, this study provides evidence that surgical sample cultures should be held no longer than 7 days to limit the effect of contaminated *C. acnes* on cultures and reduce unnecessary antimicrobial use.

Figure 1

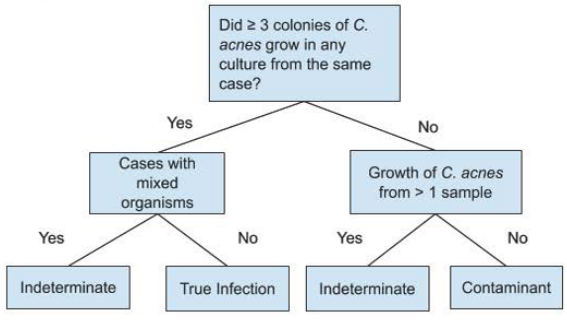
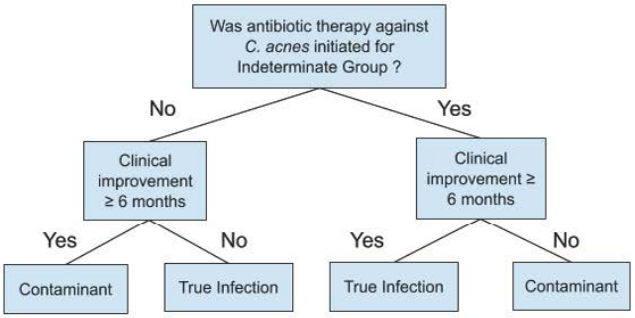


Figure 2



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

458. Diagnostic Accuracy and Management of Suspected Moderate to Severe Cellulitis Referred to an Infectious Diseases Outpatient Parenteral Antibiotic Clinic: A Prospective Cross-Sectional Study

Jolanta Piszczek, PharmD, MSc (EBM)[1]; Eric Partlow, MD, FRCP(C)[1]; Shay-Anne Daniels, MD[1]; Milena Semproni, MD[2] and Wayne Ghesquiere, MD, FRCP(C)[1]; [1]University of British Columbia, Victoria, BC, Canada; [2]University of Manitoba, Victoria, BC, Canada

Session: 51. Soft Tissue and Skin Infections

Thursday, October 3, 2019: 12:15 PM

Background. Moderate to severe cellulitis is a common reason for presentation to the emergency department and administration of intravenous antibiotics. Misdiagnosis of cellulitis occurs frequently as the disease can masquerade as a wide variety of noninfectious and infectious problems. There are currently no studies evaluating the impact of infectious diseases physicians on the diagnostic accuracy and management of cellulitis referred to an outpatient parenteral antibiotic clinic from the emergency department. The objective of this study was to quantify the prevalence of misdiagnosed moderate to severe cellulitis through an evaluation by an infectious diseases specialist, characterize the alternative diagnoses, and assess variables associated with misdiagnosis.

Methods. A prospective cross-sectional study of adults referred from emergency departments with presumed moderate to severe cellulitis to an outpatient parenteral antibiotic clinic staffed by infectious diseases specialists.

Results. 301 consecutive patients with presumed cellulitis were evaluated over a 6-month period. A concurring diagnosis of cellulitis was found in 170 patients (56.5%), for a misdiagnosis rate of 43.5% (131/301). Table 1 summarizes the alternative diagnoses. Infectious conditions other than cellulitis were the most common (63/301; 20.9%), with abscess being present in 23 (7.6%) of patients. Fifty-two of 301 (17.3%) of the diagnoses were noninfectious and 16/301 (5.3%) patients had a dual diagnosis where minor cellulitis was present, but secondary to another, predomintating condition. The presence of stasis dermatitis (OR 6.62, $P = 0.013$) and a history of physical trauma (OR 1.76, $P = 0.046$) were associated with a misdiagnosis. 31.9% (107/335) of antibiotic regimens prescribed by emergency physicians were inappropriate or sub-optimal compared with 7.9% (22/280) of those ordered by infectious disease doctors.

Conclusion. Moderate to severe cellulitis was incorrectly diagnosed in nearly half of the patients referred for intravenous antibiotics and resulted in a high rate of unstewardly antimicrobial use. Infectious diseases physicians at an outpatient antibiotic clinic improved the diagnostic accuracy and management of this complicated condition.

Table 1. Misdiagnosis Rate of Cellulitis and Alternative Diagnoses, Total = 301	
Correctly Diagnosed, n (%)	170 (56.5%)
Incorrectly Diagnosed, n (%)	131 (43.5%)
Alternative Infectious Disease Diagnoses, n (%)	63 (20.9%)
Abscess	23 (7.6%)
Osteomyelitis	9 (3%)
Bursitis	8 (2.7%)
Septic arthritis	7 (2.3%)
Wound/ulcer infection	5 (1.7%)
Tenosynovitis	3 (1%)
Diabetic Foot Infection	2 (0.7%)
Other*	6 (2%)
Alternative Non-infectious Diagnoses, n (%)	52 (17.3%)
Soft tissue injury	12 (4%)
Stasis dermatitis	12 (4%)
Gout	8 (2.7%)
Drug eruption	4 (1.3%)
Contact dermatitis	2 (0.7%)
Fracture	2 (0.7%)
Other#	12 (4%)
Dual Diagnosis, n (%): Minor cellulitis present but secondary to:	16 (5.3%)
Eczema	3 (1%)
Cutaneous candidiasis	2 (0.7%)
Stasis dermatitis	2 (0.7%)
Other^	9 (3%)
*One of each: furunculosis, impetigo, infected hematoma, odontogenic, septic thrombophlebitis, wet gangrene #One of each: balanoposthitis, dry gangrene, deep vein thrombosis, eczema, edema, lipodermatosclerosis, lymphedema, necribiosis lipoidica diabeticorum, osteoarthritis, pseudogout, pyoderma gangrenosum, vasculitis ^One of each: dacryocystitis, folliculitis, herpes zoster, odontogenic, otitis externa, peristomal irritation, pitting edema, sinusitis, soft tissue injury	

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

459. Gaps in Diabetic Foot Care in an Inner-City Hospital

Marcos C. Schechter, MD[1]; Maya Fayfman, MD[1]; Lubna SMF. Khan, MBBS[1]; Sierra Patterson[2]; David Ziemer, MD[1]; Guillermo Umpierrez, MD[1]; Ravi Rajani, MD[1] and Russell R. Kempker, MD, MSc[1]; [1]Emory University School of Medicine, Atlanta, Georgia; [2]Rollins School of Public Health, Atlanta, Georgia

Session: 51. Soft Tissue and Skin Infections

Thursday, October 3, 2019: 12:15 PM

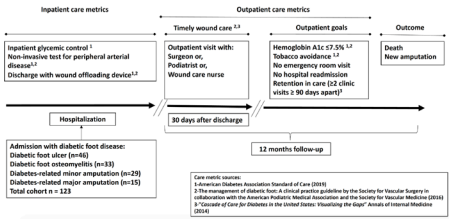
Background. Diabetic foot disease is the leading cause of preventable limb loss in the United States. Care continuum models to measure gaps in care are lacking.

Methods. Retrospective cohort study conducted in an urban safety-net hospital in Atlanta, GA (Grady Memorial Hospital). All patients admitted between January-May 2016 with diabetes-related foot ulcer, osteomyelitis, or for lower-extremity amputation were included. A care continuum model for inpatient and post-discharge outpatient metrics was developed based on national guidelines and available diabetes care continuum models (figure). We followed patients for 12 months after initial hospital admission.

Results. Among 123 patients, the median age was 56 (IQR 48–64) years and most were male (67%) and black (83%) (table). Prior to hospital admission, 12% of patients had a major amputation (above ankle) and 21% had a minor amputation (below ankle). Tobacco use (34%), homelessness (29%), and no medical insurance (20%) rates were high. Few patients (28%) had hemoglobin A1c (Hb1Ac) at goal (≤7.5%) and 10% had end-stage renal disease. Regarding inpatient care metrics, 59% had a median glucose at goal on the day of discharge (≤180 gm/dL). Few patient patients had a noninvasive vascular test (13%) or received a wound offloading device (16%) during hospitalization. Regarding post-discharge outpatient metrics, 33% had wound care ≤30 days after hospitalization, 14% with tobacco use at baseline quit, and 24% had Hb1c ≤7.5%. Emergency room (ER) visits and hospital readmissions within 12 months post-discharge were common (77% and 66%, respectively). Only 54% were retained in care (≥2 clinic visits ≥90 days apart). Outcomes during 12 months after the first day of initial hospital admission were poor: 6% died, 23% had a new major amputation and 22% had a new minor amputation. Including major amputations prior to initial hospital admission, 37% of patients died or were living with a major amputation 12 months after hospitalization.

Conclusion. Our care continuum model demonstrated large gaps in diabetic foot care. Over a third of these patients died or were living with major limb loss and there were high rates of ER visits and hospital readmissions. Implementing measures to close gaps in care could improve outcomes.

Diabetic foot disease care continuum



Baseline characteristics	N = 123 [1]
Median age, years (IQR)	56 (48-64)
Male	83 (67)
Black	102 (83)
No medical insurance	24 (20)
History of homelessness	36 (29)
Current tobacco use	42 (34)
Baseline hemoglobin A1c ≤7.5%	34 (28)
End-stage renal disease	12 (10)
Amputation prior to index admission	
Major amputation at baseline [2]	15 (12)
Minor amputation at baseline [3]	26 (21)
No amputation at baseline	82 (67)
Index admission diagnosis	
Major amputation [2]	15 (12)
Minor amputation [3]	29 (24)
Osteomyelitis	33 (27)
Ulcer	46 (37)
Inpatient care metrics	
Median last hospital admission day glucose ≤180 mg/dl	72 (59)
Non-invasive vascular test [4]	16 (13)
Wound offloading device (n=106) [5]	17 (16)
Outpatient care metrics (n=119) [6]	
Wound care ≤30 days after discharge	39 (33)
Retention in care (≥2 clinic visits ≥90 days apart)	64 (54)
Tobacco cessation (n=42) [7]	6 (14)
End of follow-up hemoglobin A1c ≤7.5% [8]	29 (24)
Emergency room visit	92 (77)
Hospital readmission	78 (66)
Outcomes	
Death	8 (6)
New major amputation [2]	28 (23)
New minor amputation [3]	27 (22)
Alive and no new amputation	60 (49)
Death, baseline or new major amputation [2]	45 (37)

1-Data are no. (%) unless otherwise specified
2-Below knee or above knee amputation
3-Below ankle amputation
4-Includes arterial-brachial index test
5-Excludes patients with major amputation
6-Excludes patients with death at index hospital admission (n=4)
7-Among patients with current tobacco use at baseline (n=42)
8-No follow-up hemoglobin A1c n= 36 (30%)

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