vertebral osteomyelitis due to *Candida* is still rare and can be difficult to diagnosis and treat. We evaluated the incidence of vertebral osteomyelitis due to *Candida* species at our facility to try to identify risk factors and determine outcomes.

Methods. We used our electronic record databases to search for patients with a diagnosis of osteomyelitis, and a positive fungal culture. From 2006 to 2018 our hospital had 14 cases of culture proven *Candida* vertebral osteomyelitis.

Results. *Candida albicans* was the most frequently isolated organism, being cultured in 10/14 (71.4%) patients, followed by *C. tropicalis* (2/14), *C. krusei* (1/14), and *C. parapsilosis* (1/14). The two most common risk factors for infection were injection drug use (50%) and prior spinal surgery (35.7%). Almost all patients were treated with caspofungin followed by fluconazole. Ten patients (71.4%) required surgery. Short-term outcomes were favorable with no deaths.

Conclusion. The incidence of vertebral osteomyelitis due to *Candida* may be increasing. In our state, injection drug use seems to be a factor in the increase rate of infection. We have seen a rise in injection drug use as prescription narcotics are becoming more difficult to obtain. Physicians must have a high index of suspicion for fungal disease when treating osteomyelitis in patients with these risk factors. Short-term outcomes seem favorable, but further studies are needed to evaluate long-term outcomes and to determine optimal management.

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299. Tolerance and Serum Concentration of Cefepime Used Subcutaneously (SC) in the Management of Bone and Joint Infections

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Background. Cefepime is a cephalosporin active against most Gram positive and negative bacteria and is used in the management of bone and joint infections (BJIs). Intravenous (IV) perfusion is the standard route of administration. The Subcutanoeous (SC) route may present an interesting alternative in case of outpatient care or when IV perfusion is not possible. The aim of this study was to demonstrate that the SC route of administation for cefepime provides effective serum concentrations in the treatment of BJIs without route-specific side effects.

Methods. Descriptive analysis of a bi-center retrospective observational study from January 2011 to February 2017 in patients with an BJI treated with cefepime SC and who had a cefepime plasma level dosage. Cefepim Cmax and Cmin were considered optimal if they were superior to five MIC.

Results. Eleven patients were included with 21 dosages of cefepime SC, 12 Cmax and nine Cmin. The mean age of the patients was 58 ± 17 years and the mean body mass index was 26.6 ± 5.6. Cefepime was used for the management of infections with at least one Gram-negative bacillus (GNB) (64% of infections were plurimicrobial). Combination with at least one other antibiotic was found in 68% of cases. The median C_{max} and C_{min} levels were 57 mg/L (39.5–124) and 14 mg/L (0–42), respectively. C_{max} was above five MIC for all patient and C_{min} was above this threshold in eight (80%) patients but still well above the MIC of GNB. No local complications related to the SC administration of cefepime has been described.

Conclusion. Plasma concentration during SC administration of cefepime seems to reach similar value to the IV route founded in the literature for BJI management. SC administration appears to be a well-tolerated alternative in the management of BJI. Further prospective clinical efficacy studies are needed.

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

300. Armed to the Teeth: Human Bite-Associated Septic Arthritis

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Background. Fight bite-related septic arthritis (FBSA) occurs when a joint is infected following a human bite injury. We aimed to describe the clinical features, treatment, and outcomes of FBSA and compare these with native joint septic arthritis of other causes.

Methods. Cases were obtained from a previously described retrospective cohort of adult native joint septic arthritis admitted to Middlemore Hospital, Auckland, New Zealand from January 1, 2009 and December 31, 2014. FBSA cases were compared with small-joint non-fight bite septic arthritis (SJNFBSA), and all NFBSA. *P*-values of ≤0.05 were considered significant.

Results. Sixty-seven FBSA and 476 NFBSA cases (including 183 SJNFBSA) were identified. Compared with SJNFBSA and all NFBSA, FBSA was associated with younger age (median 26 years vs. 49 and 52, respectively) and tobacco use, but lower rates of diabetes, osteoarthritis and renal failure. Osteomyelitis was more common and metastatic infection less common in FBSA (all $P \leq 0.05$). FBSA was more likely to be polymicrobial (76% vs. 30% and 20%), and to be caused by oral flora, oral streptococci, HACEK organisms, and anaerobes. SJNFBSA was less likely to be caused by *S. aureus* than FBSA. FBSA was more commonly managed operatively than SJNFBSA and all NFBSA (93% vs. 79% and 81%) and received shorter antibiotic courses (median 2 weeks vs. 4 and 5 weeks), more commonly orally (84% oral vs. 6% and 32%). Hospital length of stay for FBSA was shorter (median 4.5 days vs. 6 and 9 days). Compared with all NFBSA, treatment failure was less common (7% vs. 19%, $P = 0.0242$) and there was a trend toward lower mortality (0% vs. 5%, $P = 0.0604$).

Conclusion. FBSA represents a distinct subset of septic arthritis with differing morbidity and better outcomes than NFBSA. FBSA may be able to be safely managed with shorter, oral antibiotic regimens if adequate operative management is undertaken. Further studies are required to validate these findings.

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

301. The Use of Multiplex Touchdown PCR to Genotype *Cutibacterium* (*Propionibacterium*) *acnes* Isolated from Periprosthetic Shoulder Infections

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Background. As biogeographic surveys of the human skin microbiome have shown that *C. acnes* is a major component of the residential axillary microflora, the organism is frequently isolated from synovial tissue and joint aspirates obtained from patients with suspected periprosthetic shoulder infections. We hypothesized that multilocus sequence typing (MLST) applying a prior validated rapid high through-put multiplex PCR protocol would segregate *C. acnes* into distinctive phylogroups associated with periprosthetic infections compared with commensal strains.

Methods. *C. acnes* collected between 2015 and 2017 were correlated with the presence or absence of infection in a detailed retrospective chart review. To determine the *C. acnes* genotype, bacterial genomic DNA isolated from a single patient isolate served as template in a six locus multiplex touchdown PCR assay using organism-specific primers targeting six genes (16S rRNA, ATPase, *sodA*, Fic toxin, *aspD* and *recA*). Isolates were classified as a contaminant in the absence of multiple positive cultures from an anatomic site and without corresponding clinical, laboratory and histopathologic correlates of infection. The assignment of a diagnosis of prosthetic joint infection (PJI) conformed to the definition recommended by the IDSA Clinical Practice Guidelines of PJI.

Results. Of the *C. acnes* recovered from 94 patients, 14 (14.9%) were from patients with shoulder implants of which shoulder PJI was present in 10 individuals (10.6% of the total). The remaining 84 (89.4%) isolates were retrieved from a variety of tissue and fluid samples of which the majority (65.5%) were deemed as contaminants. Overall, phylogroups IA1, IB, and II predominated (79.8%). Although a similar genetic profile was present in all of the shoulder isolates, no phylogroup association was detected with PJI ($P < 0.72$). No genetic difference was present in the lineage of strains not causing PJI compared with those responsible for PJI ($P < 0.25$).

Conclusion. Our results mirror those from a previous investigation using a less robust four gene MLST PCR based scheme that showed a lack of a phylogenetic association with shoulder PJI. Our results are a reflection of the phylogroup composition of the circulating *C. acnes* sequence types in our community.

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

302. Role of Inflammatory Markers in Diagnosing Diabetic Foot Infection: A Meta-Analysis

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Background. Diabetic foot ulcers (DFUs) cause significant morbidity and put great economic burden on patient and healthcare facilities. Infection is the main driving force behind admissions related to DFU. Culture of soft tissue or bone is invaluable in diagnosing infection but is time consuming. Inflammatory markers including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and procalcitonin (PCT) are rapid, simple, and inexpensive laboratory tests that can aid in early diagnosis of diabetic foot infection (DFI) and monitor response to treatment. We did a meta-analysis to compare diagnostic performance of inflammatory markers for detecting DFI.

Methods. We searched PubMed, Embase, and Cochrane databases from their inception to December 2017. This meta-analysis was performed according to PRISMA guidelines. We included studies based on following inclusion criteria: (1) at least one of the biomarkers (ESR, CRP, PCT) was evaluated; (2) both sensitivity and specificity were measured as outcomes; and (3) sufficient data were available to construct 2 × 2 contingency table. We used bivariate random effect regression model to pool the sensitivity and specificity of the targeted biomarkers.

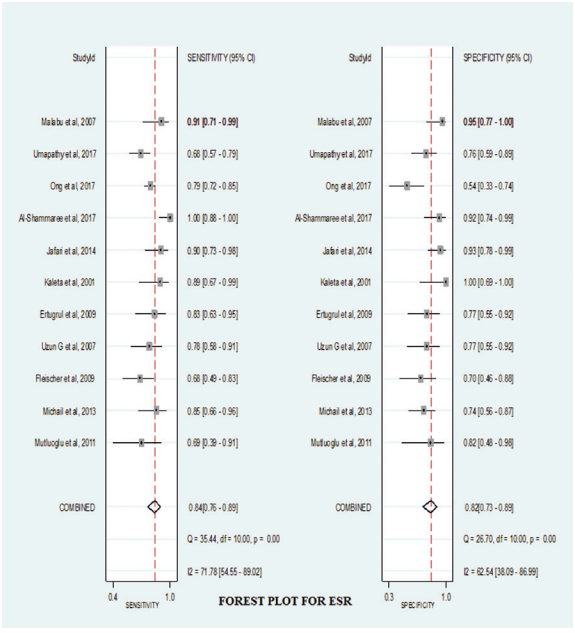
Results. A comprehensive literature search identified a total of 73 studies. Twelve studies met our inclusion criteria. Number of studies reporting data on each individual biomarker was as follows: 11 for ESR, seven for CRP, and five for PCT. Pooled sensitivity and specificity for ESR were calculated to be 0.84 (95% CI 0.76–0.89) and 0.82 (95% CI 0.73–0.89) with area under receiver operating characteristic curve (AUROC) of 0.90 (95% CI 0.87–0.92). Pooled

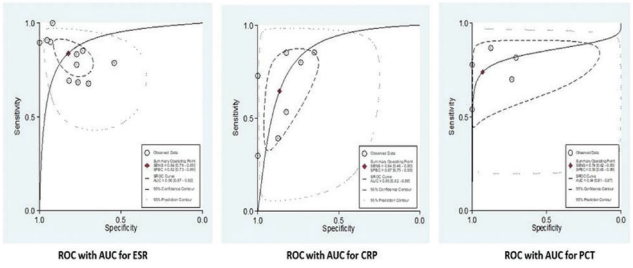
sensitivity and specificity for CRP were found to be 0.64 (95% CI 0.46–0.80) and 0.87 (95% CI 0.75–0.93) with AUROC of 0.85 (95% CI0.82–0.88). Pooled sensitivity and specificity for PCT were 0.74 (95% CI 0.62–0.83) with AUROC of 0.84 (95% CI 0.81–0.87).

Conclusion. ESR could be beneficial in ruling out infection in persons who have low suspicion of disease. For those who have high suspicion of disease, PCT could be helpful in ruling in infection. Clinicians should avoid ordering both ESR and CRP because role of CRP is limited. All inflammatory markers need standardization of threshold levels for detecting infection.

Study	Sample size	ESR					CRP					Procalcitonin				
		Cut off value (mm/hr)	No. of results TP/FN	FP/TN	Sensitivity (%)	Specificity (%)	Cut off value (mg/dl)	No. of results TP/FN	FP/TN	Sensitivity (%)	Specificity (%)	Cut off value (ng/ml)	No. of results TP/FN	FP/TN	Sensitivity (%)	Specificity (%)
Ong *et al.*	24 for NIDFU, 179 for IDFU	40 (ULN)	141/38	11/13	80	55	10 (ULN)	70/109	3/21	39	89	NS				
Umapathy *et al.*	34 for NIDFU, 76 for IDFU	40.4*	52/24	8/26	68*	76*	35.8*	41/36	6/28	53*	82*	0.5	41/35	0/34	54	100
Al-Shammaree *et al.*	25 for NIDFU, 30 for IDFU	31.5	30/0	2/23	100	93	NS					0.06 (66.55pg/dl)	26/4	4/22	88	87
Jafari *et al.*	30 for NIDFU, 30 for IDFU	≥40.5	27/3	2/28	90	94	≥7.1	24/6	8/22	80	74	0.21	21/9	8/22	70	74
Michail *et al.*	34: soft tissue infection, 27: OM	67	23/4	9/26	84	75	1.4	23/4	6/28	85	83	0.3	22/5	10/24	81	71
Mutluoglu *et al.*	13: OM, 11: no OM	47	9/4	2/9	73	85	NS					NS				
Fleischer *et al.*	34 OM, 20 cellulitis	>60	23/11	6/14	68	70	>3.2	29/5	7/13	85	65	NS				
Ertugrul *et al.*	24 OM, 22 without OM	≥70	20/4	17/5	83	77	NS					NS				
Jeandrot *et al.*	23 grade 1, 22 grade 2	NS					17	16/6	0/23	73	100	NS				
Malabu *et al.*	22 OM, 21 cellulitis	70	20/2	0.32/2 0.68	90	94	NS					NS				
Uzun *et al.*	27 IDFU group. 22 NIDFU group	40.5	21/6	5/17	77	77	32.1	8/19	0/22	29	100	0.08	21/6	0/22	77	100
Kaleta *et al.*	19 OM, 10 cellulitis	≥70	17/2	0/10	90	100	NS					NS				

Table 1: Data extracted from 2 x 2 table of individual studies.
Notes: All numbers have been rounded off to the nearest whole number. **Abbreviations:** NIDFU: non infected diabetic foot ulcer, IDFU: infected diabetic foot ulcer, ULN: upper limit of normal, TP: true positive, FN: false negative, FP: false positive, TN: true negative, *: Data personally requested from authors, OM: osteomyelitis





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303. Clinical Characteristics and Outcomes of Patients Naïve Septic Arthritis Caused by Methicillin-Resistant *Staphylococcus aureus*

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Background. To evaluate the clinical characteristics and outcomes of patients with naïve septic arthritis caused by methicillin-resistant Staphylococcus aureus (MRSA).

Methods. We conducted a retrospective review of adult patients with naïve septic arthritis at three tertiary-care hospitals from 2005 through 2017.

Results. Of the 101 patients with S. aureus naïve septic arthritis, 39 (38.6%) was identified MRSA. Compared with patients with methicillin-susceptible Staphylococcus aureus (MSSA), patients with MRSA presented more frequently with nosocomial infection (1.6% vs. 17.9%; $P = 0.005$), and inappropriate antibiotics within 48h (0% vs. 74.4%; $P < 0.001$). The overall 30-day mortality was 4% and tended to be higher in MRSA group (1.6% vs. 7.7%; $P = 0.296$). The treatment failure was 23.8%, which was higher in the MRSA group (35.9% vs. 16.1%; $P = 0.031$). The independent risk factors for treatment failure were end-stage of renal disease with hemodialysis (odds ratio [OR] = 32.073; 95% confidence interval [CI]: 2.669–385.372; $P = 0.006$) and antibiotics duration less than 6 weeks (OR = 4.987; 95% CI: 1.204–20.662; $P = 0.027$)

Conclusion. MRSA septic arthritis was associated with more frequent nosocomial infection and delayed treatment compared with MSSA septic arthritis. Antibiotic therapy, for less than 6 weeks, may be cautioned for S aureus septic arthritis until better outcomes are assured.

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

304. Comparison of Short and Long Courses of Antibiotics in Patients with Prosthetic Joint Infection: A Systemic Review and Meta-analysis

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Background. Current guidelines for treatment of prosthetic joint infection (PJI) suggest a combination of intravenous (IV) antibiotics for 2–6 weeks and oral antibiotics for 3–6 months. However, recent studies did not find significant benefits from prolonged use of antibiotics for patients with PJI. We conducted a systemic review and meta-analysis to assess the outcomes of short- and long-term antibiotics in patients with PJI.

Methods. We designed three queries to retrieve literature of PJI from PubMed and Embase databases until December 2017. Each query comprised medical subject headings, title/abstract keywords, and exclusion terms. Two reviewers independently screened literature for three rounds and disagreements were resolved by a third reviewer. Quality of a cohort study and that of a randomized control trial (RCT) were assessed by Newcastle-Ottawa Quality Assessment Form and a modified Jadad scale respectively.

Results. A total of 3,309 studies were retrieved, and nine observation studies and one RCT were included for final analysis (Figure 1). Nine of the 10 studies investigated total hip arthroplasty and/or total knee arthropathy, while one study further included shoulder, elbow, and ankle arthroplasty. Five studies focused on patients receiving debridement and implant retention (DAIR) procedure, three studies on staged exchange arthroplasty (SEA), and two studies on mixed procedures. Eight of the 10 studies were graded as good or fair quality. All of the 10 studies found equivalent outcomes in patients prescribed with short- and long-term antibiotics, regardless of IV or oral form of antibiotics. The aggregate odds ratio (OR) in our meta-analysis was 1.04 (95% CI, 0.70, 1.55), showing no significant difference in outcomes between short-term and long-term antibiotics (Figure 2).

Conclusion. Our meta-analysis demonstrated that patients prescribed with short-term antibiotics for PJI had similar outcomes when compared with those prescribed with long-term antibiotics.

Figure 1. Flow diagram for selection of articles for systemic review