Background. Orthopedic implant-associated surgical site infection (SSI) is a severe complication presenting a treatment challenge. Recently, Gram-negative bacteria orthopedic infections have become a global concern.

Objectives: To describe the bacterial profile of orthopedic implant-associated Gram-negative infections and specific outcome of *Acinetobacter baumannii* infections.

Methods. A single-center, retrospective cohort study analyzing the infection control database on the year 2016. Cases selected were those osteosynthesis or prosthetic joint, which evolved with SSI and Gram-negative bacterial growth in bone tissue or periprosthetic cultures.

Results. In 2016, 4001 clean surgeries with orthopedic implant placement were performed; of which 84 fulfillled the criteria for SSI, according to CDC/NHSH definitions (54 cases of open fracture reduction, 24 of hip arthroplasty, five of knee arthroplasty). Main agent of infections was *Staphylococcus aureus* (29.9%); Gram-negative bacteria however were responsible for 57.3% of infections (*Enterobacter* ssp. 22.4%; *Acinetobacter baumannii* 14.9%; *Klebsiella pneumoniae* 10%; *Pseudomonas aeruginosa* 10%). Among them, 100% *Enterobacter* ssp. were sensitive to carbapenems and 75% to ciprofloxacin. *Klebsiella pneumoniae* showed sensitivity to carbapenems in 85.7%, *Pseudomonas aeruginosa* showed sensitivity in 85.7% to carbapenems and 100% to ciprofloxacin. However, *Acinetobacter baumannii* showed the least favorable profile amongst Gram-negatives since only 12.5% of strains were sensitive to carbapenems, 28.6% to Ampicilin-sulbactam, 22.2% to ciprofloxacin, while showing 100% sensitivity to polymyxins. From 13 patients in whom *Acinetobacter baumannii* was isolated, none presented sepsis related to this infection, yet four of them died as result of hospitalization-related complications (30.7% mortality rate). Among these deaths, two were related to total hip arthroplasty, one to knee arthroplasty and one to open fracture fixation. Among the survivors, two remain in antimicrobial use and seven showed remission/cure.

Conclusion. SSI caused by carbepenem-resistant *Acinetobacter baumannii* represents great impact on morbi-mortality in patients who undergo surgery with placement of orthopedic implants.

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264. Polymicrobial Soft-Tissue Infection (P-STI) in the Lower Extremities, Perineal, Sacral, or Gluteal Locations: Is Empirical Coverage for *Staphylococcus aureus* (SA) Necessary

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Background. *S. aureus* is a common cause of STI, usually monobacterial (M-STI). The frequency of *S. aureus* (SA) in P-STI is unsubstantiated.

Methods. A retrospective review of positive microbiology culture results (1/1/2015–6/30–2016), selection of soft tissue samples (ST-S) from sacrum/gluteal/perineal (SGP) and lower extremity (LE) sources and review of their records. Each patient was included once and the first episode of infection was selected. Cases with and without SA were compared. The differences in categorical and continuous variables were assessed by χ^2 and Student t-tests for, respectively. The predictors of *S. aureus* were identified by logistic regression (using SPSS) and a -value <0.05 was considered significant.

Results. We reviewed 2419 cultures, 834 were ST-S; 276 met our selection criteria including 210 LE and 66 SGp. 212 (76.8%) of selected cases were P-STI. SA was encountered in 83 (39.2%) P-STI and 39 (60.9%) M-STI ($P = 0.002$); MRSA accounted for 65.2% of SA isolates. Characteristics of patients with P-STI were stratified according to SA status (table). SA was less frequent in SGP sources ($P = 0.01$), Predictors of SA were the presence of drainage (OR=2.0; 95% CI: 1.11, 3.46) and LE site (OR=2.11; CI: 1.10, 4.38). In LE cases, SA was uncommon in cases with necrosis/gangrene (OR=0.44; CI: 0.23, 0.86).

Conclusion. Most SA STIs are monomicrobial. It is less common in SGP sites, cases with gangrene/necrosis and in cases without drainage. Such patients may not need empirical anti-staphylococcal therapy.

Table: Characteristics of polymicrobial soft-tissue infection in the lower extremities and sacrum/gluteal/perineal sites, stratified according to S. aureus status

	S. aureus status (*n*)		
Characteristic: *n* (%)	Non S. *aureus* (129)	*S. aureus* (83)	*p*
Age: means ± SD (years)	56.9 ± 16.3	55.8 ± 16.0	0.6
Male gender	78 (60.5)	59 (71.1)	0.1
Diabetes	73 (56.6)	45 (54.2)	0.4
Kidney disease	35 (27.1)	23 (27.7)	0.5
Paraplegia	16 (12.4)	12 (14.5)	0.4
Peripheral arterial disease	36 (20.0)	24 (21.8)	0.7
Intravenous drug user	1 (0.8)	3 (3.6)	0.2
Site			
Lower extremities	87 (58.3)	69 (77.3)	0.006
Sacrum/gluteal/ perineal	42 (20.7)	8 (9.9)	<0.001
Necrosis	61 (47.3)	30 (36.1)	0.07
Erythema	106 (58.9)	72 (65.5)	0.3
Swelling	110 (61.1)	76 (69.1)	0.2
Abscess	32 (24.8)	14 (16.9)	0.2
Drainage	51 (39.5)	48 (57.8)	0.01
Fever	35 (27.1)	25 (30.1)	0.6
Leukocytosis	70 (54.3)	35 (42.2)	0.09

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265. Dynamics of *S. aureus* Acquisition and Colonization in a Military Training Environment

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Background. Military trainees are known to be at increased risk for *S. aureus* colonization and skin and soft-tissue infections (SSTI). The longitudinal epidemiology of *S. aureus* colonization in this high-risk population is not well understood.

Methods. A longitudinal cohort study of colonization and SSTI was conducted among Army trainees at Fort Benning, GA from 6/2015 to 11/2016. In total, four companies (~200 trainees/company) were enrolled. Each subject was swabbed at four body sites at five time points (days 0, 14, 28, 56, and 90) to assess *S. aureus* colonization status. Specimens were processed by standard methods. *S. aureus* isolates underwent antibiotic susceptibility testing and molecular characterization, including PCR and pulsed-field gel electrophoresis.

Results. Three-hundred forty-three subjects from two companies were enrolled in year one. At baseline, 70% were colonized with *S. aureus* in at least one site. Overall *S. aureus*/methicillin-resistant *S. aureus* (MRSA) colonization was highest in the oropharynx (60%/7%), followed by the nose (32%/3%), and the inguinal (11%/1%), and peri-anal (10%; 1%) regions. The prevalence of colonization in at least one body site was generally consistent throughout the training period: day 14 – 63%/9%; day 28 – 71%/10%; day 56 – 64%/11%; and day 90 – 62%/8%. MRSA were largely USA300 (54%) and USA800 (36%). The oropharynx was the most frequently colonized site (range, 29%-60%). Among those not nasally colonized at baseline, 54%/8% acquired *S. aureus*/MRSA in the nose by day 90. Sixty-nine (20%) subjects were persistently colonized in the nares (>80% cultures) throughout training while 108 (32%) subjects remained nasal colonization-negative at every time point.

Conclusion. Military trainees experience a prolonged and intense exposure to *S. aureus*, as evidenced by a high colonization prevalence and colonization of multiple body sites over the duration of the training period. Effective decolonization strategies are needed to reduce the colonization burden of *S. aureus*, decrease transmission rates, and thereby reduce the risk of SSTI in the military training setting.

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266. The Efficacy of Intramuscular Benzathine Penicillin for Preventing Recurrent Cellulitis: A Nationwide Population-Based Study

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Background. Recurrent cellulitis is a vexing clinical problem with huge financial burden on healthcare resources. Though intramuscular antibiotics had been suggested as a prevention strategy but the evidence is scarce.

Methods. We conducted a cohort study by using Taiwan's National Health Insurance Research Database (NHIRD) between 2000 and 2008. Patients received intramuscular benzathine pencillin 2.4 MU every 4 weeks at least three prescriptions within half a year were enrolled and followed for 1 year since the first dose. The prevention efficacy was determined by comparing the incidence of recurrent cellulitis in the prophylactic period to non-prophylactic period in each enrolled subject by a Poisson regression model. The prophylactic period was defined as 4 weeks after the date of each dose of benzathine penicillin injection and non-prophylactic period was the time not covered by penicillin during the follow-up period.

Results. In total, 211 patients were enrolled, including 123(58.3%) men. An average of 7.9 doses of IM benzathine penicillin was given in the study period. The incidence