and valacyclovir. However, he continued to have fevers and myalgias. Wound culture was negative for fungus after four weeks of growth. Skin biopsy immunostains were consistent with an unknown protozoan. Specimens were sent to an outside facility and yielded a diagnosis of Anncaliia algerae. Antibiotics were changed to albendazole and voriconazole, with subsequent improvement in all symptoms.

Clinical manifestations of microsporidiosis are extremely diverse. Oftentimes, symptoms are not present in those found to be infected with Microsporidia. A disseminated disease has been identified but remains rare. Although Microsporidia have been identified as a cause of infection in immunocompromised patients, there are few reports of infection in those diagnosed with cancer, and only a few cases have been due to Anncaliia algerae. In studies pertaining to ALL patients, roughly one-fifth of patients were identified as being infected with Microsporidia, but most did not have symptoms. This is the first reported case of disseminated Microsporidia in a patient with ALL and the first disseminated infection presenting as a skin manifestation. Of identified cases of disseminated Microsporidial infection, mortality was high. Thus, prompt recognition of Microsporidia as a cause of infection in patients with ALL is of utmost importance.

446. Epidemiology of Necrotizing Fasciitis in Korea: A Nationwide Study Using Claims Data
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Background. Necrotizing fasciitis (NF) is a rare but fatal infectious disease that causes economic burdens on patient and the healthcare system. We investigated the incidence of necrotizing fasciitis (NF) and the seasonal variation of necrotizing fasciitis in Korea.

Methods. We analyzed a nationwide claims database from the Korean Health Insurance Review and Assessment Service from 2011 to 2017. For case definition, we used two different methods. First, patients who hospitalized with NF diagnosis code and received surgical intervention (NF code method) were defined as NF. Second, patients hospitalized with sepsis codes accompanying surgical intervention codes were defined as NF (sepsis code method). The annual incidence rate per 100,000 population of NF was calculated using the number of identified NF cases as numerator and age- and sex-specific midyear population as the denominator. Poisson regression models were used to assess the relationship of crude incidence rates to year, age, and sex. A multivariate Poisson regression model was used to investigate variations in trends in the monthly NF cases.

Results. The overall average annual incidence rate of NF during 2012–2017 was 0.86/100,000 by NF code method and 1.47/100,000 by the sepsis code method. The incidence of NF, increased with age and 2.5 times higher in males across all age groups. Two-thirds of episodes occurred in diabetes patients. The incidence of NF occurred the most during summer. A multivariate Poisson regression model using national meteorological variables suggested that higher mean temperature of and larger numbers of NF cases during a prior month increased NF cases.

Conclusion. The possibility of NF should be suspected for the cases for an elderly man with diabetes in summer. From a national management perspective, the prior information on the number of NF incidences and the mean temperature can help predict NF outbreaks.

Disclosures. All authors: No reported disclosures.

447. Disease Progression in Patients with Acute Bacterial Skin and Skin Structure Infections: A Comparative Analysis Between Oritavancin and Vancomycin
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Background. Without the appropriate treatment, acute bacterial skin and skin structure infections (ABSSSI) have the potential to progress to more serious infections such as bacteremia and osteomyelitis. Utilizing single-dose oritavancin rather than vancomycin with step-down oral antibiotics, the need for compliance with outpatient antibiotics is eliminated. The objective of this study was to determine whether oritavancin use may reduce the sequelae from ABSSSI treatment failures, prevent skin infection recurrences, and subsequently improve patient outcomes.

Methods. Patients administered oritavancin or vancomycin for treatment of ABSSSI between May 2017 and March 2019 were included in this retrospective evaluation. The primary endpoint was to determine the 30-day ABSSSI progression rate to bacteremia, osteomyelitis, or endocarditis between treatment arms based on hospital readmissions. Study investigators determined that the source of each resultant infection was from the initial ABSSSI based on the presence of their prior skin infection and cultures, as well as history of present illness and reported patient compliance. In cases of osteomyelitis, infection location was also considered. The secondary endpoint was to determine the ABSSSI readmission rates between treatment arms. Data were analyzed by fisher’s exact test, chi-square test or t-test as appropriate.

Results. A total of 99 patients receiving oritavancin and 100 patients receiving vancomycin with prescribed step-down oral antibiotics were identified as meeting inclusion criteria. Eighteen of 100 patients (18%) returned for recurrent ABSSSI infection in the vancomycin arm while 7 of 99 (7.1%) returned in the oritavancin arm (P = 0.0349). Of the 7 returning oritavancin patients, 1 (14.3%) had bacteremia as a result of persistent ABSSSI compared with 7 of 18 (38.9%) patients who previously received vancomycin returned with bacteremia, including 1 case of osteomyelitis (P = 0.0649).

Conclusion. Utilizing oritavancin for treatment of ABSSSI in this population resulted in improved patient outcomes, significantly fewer hospital readmissions for ABSSSI, and decreased infection sequelae from inadequately treated skin infections.

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448. Impact of Doxycycline Prophylaxis on Skin and Soft Tissue Infection Incidence in Naval Special Warfare Trainees
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Background. Incidents of skin and soft tissue infections (SSTIs) are frequent in military service members. Preventing SSTIs is crucial for the well-being of the military and the community at large. The purpose of this study was to determine the impact of prophylactic doxycycline on SSTI incidence in Naval Special Warfare (NSW) trainees.

Methods. A cohort of NSW trainees was followed from March 2016 to March 2018. The cohort included all NSW trainees at the Naval Special Warfare Center, Coronado, California. SSTIs were determined to be any infective process involving skin or subcutaneous tissues. SSTI incidence was calculated using two different methods. First, patients who hospitalized with NF diagnosis code and received surgical intervention (NF code method) were defined as NF. Second, patients hospitalized with sepsis codes accompanying surgical intervention codes were defined as NF (sepsis code method). The annual incidence rate per 100,000 population of NF was calculated using the number of identified NF cases as numerator and age- and sex-specific midyear population as the denominator. Poisson regression models were used to assess the relationship of crude incidence rates to year, age, and sex. A multivariate Poisson regression model was used to investigate variations in trends in the monthly NF cases.

Results. The overall average annual incidence rate of NF during 2012–2017 was 0.86/100,000 by NF code method and 1.47/100,000 by the sepsis code method. The incidence of NF increased with age and 2.5 times higher in males across all age groups. Two-thirds of episodes occurred in diabetes patients. The incidence of NF occurred the most during summer. A multivariate Poisson regression model using national meteorological variables suggested that higher mean temperature of and larger numbers of NF cases during a prior month increased NF cases.

Conclusion. The possibility of NF should be suspected for the cases for an elderly man with diabetes in summer. From a national management perspective, the prior information on the number of NF incidences and the mean temperature can help predict NF outbreaks.

Disclosures. All authors: No reported disclosures.
Background. Skin and soft-tissue infections (SSTIs) are a common complication of military training. Naval Special Warfare (NSW) training requires prolonged periods of extreme physical exertion and unique environmental exposures, including extended immersion in ocean water. A centerpiece of SEAL training is referred to as “Hell Week” (HW), a colloquial term to reflect the intense physical obstacles and exposure to extreme environmental conditions endured by candidates. Due to such environmental exposures, NSW trainees are at increased risk for SSTI due to uncommon organisms. A prior outbreak of Shewanella SSTI and bacteremia among NSW trainees led to the initiation of prophylactic doxycycline 100 mg daily during and for 7 days after HW to attempt to reduce this risk. The efficacy of this intervention is underdetermined.

Methods. Doxycycline prophylaxis was initiated in August 2015. We conducted a retrospective analysis of SSTI incidence presenting for medical attention among NSW trainees from April 2013 to November 2018, using case records collected prospectively at the Naval Special Warfare Center. The incidence of SSTI was calculated based on the size of a given class and the number of affected trainees. SSTI cases were then divided and analyzed as occurring during or vs. after HW.

Results. The pre-intervention cohort consisted of 1626 NSW trainees. A total of 76 trainees developed SSTI, with 20 cases during HW and 56 cases in the post-HW period. In the post-intervention cohort, 220 trainees experienced a total of 81 cases of SSTI during HW and 85 in the post-HW period. 45% of all SSTI cases occurred in the months of June, July, and August. The incidence of cellulitis distinguishes the pre- and post-intervention cohorts during HW was 2% and 4%, respectively, and 5% and 6.4% in the post-HW period. There were no hospitalizations for invasive gram-negative infections following the initiation of doxycycline prophylaxis.

Conclusion. Doxycycline prophylaxis does not appear to reduce the incidence of SSTI but may reduce the severity of certain severe SSTIs.

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449. Epidemiology of Combat-Related Deep Soft-Tissue Wound Infections
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Background. Deep soft-tissue infections (DSTIs) are a common complication of combat-related extremity trauma. We present an epidemiologic assessment of combat-related DSTIs among wounded military personnel.

Methods. Wounded personnel were included in the analysis if they sustained an open combat-related extremity wound (2009–2014), were admitted to a participating US military hospital, had a DSTI as the first confirmed extremity wound infection (within 30 days post-injury), started antibiotics ≥3 days of DSTI diagnosis, and received ≥5 days of directed antibiotic treatment.

Results. Among 1961 combat casualties with open extremity wounds, 259 had a DSTI diagnosis with 173 (67%) having only 1 index DSTI and 86 (33%) having >1 index DSTI diagnosed on the same day. Nearly all patients (95%) were injured via a blast mechanism. Patients with >1 index DSTI were more severely injured (median injury severity score: 35 vs. 33, P = 0.009) and required large volume blood transfusions within 24 hours of injury (median units: 23 vs. 17, P < 0.001). Initial empiric antibiotic treatment largely involved carbapenem and vancomycin (77% and 72% of patients, respectively). For diagnosis timing, 130 (50%) patients had an early DSTI diagnosis (≤7 days post-injury), while the remaining 129 (50%) patients had a delayed diagnosis (>7 days post-injury). Patients with early DSTI diagnoses more often had >1 index DSTI (47% vs. 19% with delayed DSTI, P < 0.001). Polymicrobial DSTIs were common (73% of early DSTIs; 58% of delayed DSTIs) with Enterococcus spp. most frequently identified (56% of early DSTIs; 31% of delayed DSTIs) as well as Enterobacter spp., Escherichia coli, Pseudomonas aeruginosa, and Acinetobacter spp. Moreover, 26% and 39% of early and delayed DSTIs had multidrug-resistant Gram-negative bacteria. Receipt of ≥20 units of blood within 24 hours of injury and having >1 index DSTI were independently associated with an early DSTI diagnosis (odds ratio [OR]: 3.21; 95% CI: 1.47–7.02 and OR: 2.98, 95% CI: 1.63–5.42, respectively).

Conclusion. Multiple index DSTIs and massive blood transfusion requirement are associated with early infection onset post-injury. Awareness of wound microbiology findings relative to DSTI onset provides guidance on empiric antimicrobial therapy.

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450. Evaluation of Linezolid Pharmacokinetics in Obese Patients with Severe Skin and Soft-Tissue Infections
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Background. Linezolid is an oxazolidinone antibiotic with broad activity against Gram-positive bacteria and serves as an option for treating severe skin and soft-tissue infections (SSTIs). Adult FDA-labeled dosing is fixed at 600 mg IV/PO twice daily. Although conflicting, current literature is suggestive that critically ill, obese patients require increased doses. Based on this literature, our institutional guidelines recommend linezolid 600 mg every 8 hours for patients ≥150 kg. This study aimed to determine whether obese patients receiving linezolid for severe SSTI attain pharmacokinetic/pharmacodynamic (PK/PD) targets.

Methods. Adult patients with a body mass index (BMI) ≥30 who were hospitalized and receiving IV linezolid were eligible for consent in this prospective cohort study. A severe SSTI was defined by one of the following: necrotizing fasciitis, myonecrosis, or SSTI with sepsis based on qSOFa score or SIRS criteria. Four blood samples were collected at steady state, after at least 3 linezolid doses, at 2, 4, and 6 hours after the dose and as a trough before the next dose. Linezolid serum concentrations were determined by HPLC. Non-compartmental methods in Phoenix-WinNonlin (Version 6.4) were used to estimate individual PK parameters. The PK parameters were used to determine the concentration-time profile assuming one-compartment kinetics. Target attainment was defined as achieving a 24-hour area under the curve (AUC0–24) minimum inhibitory concentration (MIC) ≥100 or time above the MIC ≥85%.

Results. Eleven patients were included in the study. The median BMI was 45.7 (34.6–72.7) and median total body weight was 141.3 kg (99.9–188). Necrotizing fasciitis was the most common SSTI type at 45.5%. Four patients received linezolid 600 mg every 8 hours, 3 patients of which were ≥150 kg. Two patients received renal replacement therapy at the time levels were drawn. Based on non-compartmental analysis, the mean AUC0–24 was 208.1 hr·mg/L (± 85.3). All but one patient, who grew E. faecalis with a MIC of 2, met PK/PD targets based on AUC/MIC ≥100. All patients achieved concentrations above MIC for 100% of the dosing interval.

Conclusion. All patients achieved PK/PD targets with linezolid doses received. This study validates current institutional dosing guidelines for patients with severe SSTIs.

Figure 1. AUC0–24/MIC at steady state and trough after first dose for each patient in the study. Patients known to have a MIC of 2 are represented as the blue triangle.

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451. High Rates of Hospitalization due to Skin and Soft-Tissue Infections in a Southwest American Indian Population
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