lack of epidemiological risk factors and negative radiographic findings. The proportion of LTC who completed each step in the cascade of care for LTBI was determined.

**Results.** Of 102 LTC, 100 met inclusion criteria. Two were excluded due to past LTBI treatment. Of 100 LTC, 95 completed a pre-TID evaluation. For 94 (98.9%), there was intention to screen. Of those intended for screening, 91 (95.8%) successfully completed screening; 6 (6.6%) patients screened positive and 85 (93.4%) screened negative. All 6 LTC who tested positive were recommended for treatment. Five of 6 (83.3%) agreed to treatment, 3/6 (50.0%) started treatment, and all 3 completed treatment. Reasons for non-treatment included: refusal until completion of HCV treatment or hepatologist approval or patient refusal. Treatment regimens included rifampin ($n=2$) and isoniazid ($n=2$).

**Conclusion.** The prevalence of LTBI in our LTC cohort was low. Nonetheless, TID played a role in the successful completion of LTBI screening and identifying those appropriate for treatment in this vulnerable patient population. Barriers to successful LTBI screening and treatment completion are contingent on effective care coordination and addressing competing co-morbidities.

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1392. Tuberculosis Disease in Recipients of Organ-Transplantation, California 2010–2017
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**Session.** 154. Transplant ID: Mycobacterial Infections
Friday, October 4, 2019: 12:15 PM

**Background.** Tuberculosis (TB) disease in persons who have received organ transplantation causes high morbidity, but the epidemiology and clinical features of this problem remain poorly described.

**Methods.** Using California TB registry data from 2010–2017, we describe clinical features of all TB cases occurring in patients who previously received solid-organ transplantation. We compared TB cases with and without transplant, and examined mortality controlling for age.

**Results.** During 8 years of observation, the California TB Registry recorded 116 cases of post-transplant TB. A majority of patients with post-transplant TB were >45 years old (84%), nonwhite (90%), and born outside the United States (84%). Of 116 cases, 48 (41%) had pulmonary disease, while 68 (59%) had extrapulmonary disease. Common sources were lung (36%) and lymph node (13%). Most infectious outcome occurred in a case of cryptogenic organizing pneumonia discovered pre-HSCT and biopsies were prompted mostly by symptoms (13%). The diagnosis was made by histopathology in the majority of cases. Twelve patients received first-line anti-TB treatment. Overall mortality was 30.8%, directly attributable to TB in 2. Of the HSCT group, 2 were women; median age was 22 years, 2 allo- and 1 autologous transplant. One patient had been treated for latent TB before transplantation. Two developed disseminated disease. Two patients presented within 6 months after the transplant, and the other within a year. Mortality was 100%, attributable to the infection in two patients.

**Conclusion.** In regions with intermediate to a high prevalence of TB; post-transplant TB could result from reactivation or post-transplant exposure. Most cases occur within the first year post-transplant; clinical symptoms are nonspecific, which lead to a delay in diagnosis. Morbidity and mortality remain high.

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1394. Clinicopathologic Features of Infectious and Noninfectious Tissue Granulomas in Transplant Patients
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**Session.** 154. Transplant ID: Mycobacterial Infections
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**Background.** There is a paucity of literature about the implications of granulomatous disease in hematopoietic stem cell transplantation (HSCT) and solid-organ transplant (SOT) patients. Given the broad range of infectious and noninfectious etiologies as well as the heightened risk for severe infection, it is important to characterize the clinicopathologic features of granulomas in this population and to develop a framework to guide further evaluation.

**Methods.** We performed chart reviews of 1,280 transplant recipients (791 SOT and 489 HSCT) at Yale-New Haven Hospital from 2009 to 2019 to identify patients with granulomas in pathologic specimens obtained post-transplantation. Data on histopathology, microbiology, indication for biopsy, patient characteristics, and clinical presentation were recorded. Mortality and morbidity were noted at 1, 3, and 12 months after granuloma diagnosis.

**Results.** We identified 28 patients with granulomas (9 SOT; 19 HSCT); an incidence of 2.2%. None had explicit risk factors for MTB. Most granulomas (93%) were non-necrotizing. Common sources were lung ($n=9$) and lymph node ($n=5$). Most were found post-transplant ($n=19$) and biopsies were prompted mostly by symptoms ($n=13$) or incidental imaging findings ($n=9$). Most granulomas were not associated with an infectious process ($n=20$). Among infectious granulomas, bacterial soft-tissue infection ($n=2$), bartonellosis ($n=2$), and fungal infection (1 Cryptococcus and 1 Blastomyces) were most common. MTB PCR was negative in 4 specimens. Among granulomas discovered in SOT patients, 44% were infectious compared with 21% in HSCT recipients. Most infectious granulomas were found in symptomatic patients (75%). One granuloma-related adverse outcome occurred in a case of cryptocogenic organizing pneumonia discovered pre-HSCT that worsened with tapering of immunosuppression post-HSCT.

**Conclusion.** Granulomas were uncommon in a large transplant population. Most were deemed noninfectious and their presence alone was not associated with adverse outcomes post-transplant or with increased immunosuppression. Granulomas were more likely to be infectious in SOT recipients and those with symptoms. Symptoms should guide the extent of microbiologic evaluation and reflexive MTB PCR testing is not warranted if risk factors are absent.
Table 2. Major & Minor cranial imaging findings meeting criteria for neuroimaging prior to lumbar puncture by guidelines and impact on management in 111 adults with bacterial meningitis.

| Criterion                      | IDSA guidelines n (%) | ESCMID guidelines n (%) | UK guidelines n (%) | Swedish guidelines n (%) |
|--------------------------------|-----------------------|-------------------------|---------------------|--------------------------|
| Met criteria                   | 98 (88.3)             | 55 (49.5)               | 58 (52.3)           | 22 (19.8)                |
| Minor brain CT findings (n=38) | 32 (84.2)             | 14 (36.8)               | 15 (39.5)           | 5 (13.2)                 |
| Major brain CT findings (n=17) | 17 (100)              | 13 (76.5)               | 14 (82.4)           | 4 (23.5)                 |
| Major brain CT findings that changed management | 6 (100) | 4 (66.7) | 5 (83.3) | 1 (16.7) |

IDSA, Infectious Disease Society of America; ESCMID, European Society for Clinical Microbiology and Infectious Diseases; UK, United Kingdom; CT, computerized tomography.

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1396. Risk Factors for Brain Abscess: A Nationwide Population-based Nested Case-Control Study

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Background. Knowledge of risk factors for brain abscess is limited and relies on single-center cohorts without control groups. We accessed nationwide medical registries to conduct a population-based nested case-control study of risk factors for brain abscess. We applied risk set sampling for selection of population controls (1:10) individually matched by age, sex, and area of residence. Conditional logistic regression was used to compute adjusted odds ratios (aOR) with 95% confidence intervals (CIs). Next, population attributable fractions were calculated.

Results. We identified 1,384 brain abscess patients in Denmark from 1982 through 2016 and 13,839 matched population controls. The median age was 50 years (interquartile range 33–63) and 37% were female. Cases often had a Charlson comorbidity score>2 (16%) compared with controls (3%). Adjusted ORs were: head trauma 2.15 (1.72–2.70), neurosurgery 19.3 (14.3–26.0), dental infection 4.61 (3.39–6.26) or surgery 2.57 (1.71–3.84), ear-nose-throat infection 3.81 (3.11–4.67) or surgery 2.85 (2.21–3.70), congenital heart disease 15.6 (9.57–25.4), diabetes mellitus 1.74 (1.33–2.29), alcohol abuse 2.22 (1.58–3.11), liver disease 2.37 (1.53–3.68), kidney disease 2.04 (1.30–3.20), and lung abscess or bronchiectasis 8.15 (3.59–18.5). The aORs were 4.12 (3.37–5.04) and 8.77 (5.66–13.6) for solid and hematological cancer, 12.0 (6.13–23.7) for HIV, and 5.71 (4.22–7.75) for immuno-modulating treatments. Risks were twice as high when risk factors were observed within 5 years before brain abscess. Population attributable fractions showed that neurosurgery (12%), solid cancer (11%), ear-nose-throat infections (7%) and immuno-modulating treatments (5%) were substantial contributors to occurrence of brain abscess.

Conclusion. Important risk factors included neurosurgery, cancer, ear-nose-throat infections and immuno-modulating treatments.