Conclusion. A longer duration of Px is predicted to lead to higher overall costs but increased life expectancy for CMV D+/R− mismatch Ltx patients. Px duration > 1 year for these patients may be economically reasonable.

Disclosures. **C. J. Clancy**, Merck: Grant Investigator, Research grant; Astellas: Grant Investigator, Research grant. **M. H. Nguyen**, Merck: Grant Investigator, Research grant; Astellas: Grant Investigator, Research grant.

1572. Conjugate Pneumococcal Vaccination Reduces Invasive Pneumococcal Disease Post Haemotopoietic Stem Cell Transplant

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Background. Immunosuppressed patients, especially haematopoietic stem cell transplant (HSCT) recipients, are particularly vulnerable to invasive pneumococcal disease (IPD). However, uptake of pneumococcal vaccination tends to be lower in the immunosuppressed, partly due to concerns of vaccine effectiveness. Our institution introduced protocolised 10- or 13-valent conjugate pneumococcal vaccination (PCV) to all allogeneic and autologous HSCT recipients in 2010 to replace routine 23-valent polysaccharide vaccine (PPV23).

Methods. We conducted a retrospective single-centre observational study of all HSCT recipients from 2004 to 2015 to assess the impact of PCV introduction on IPD incidence. All HSCT recipients were reviewed for microbiological evidence of IPD following HSCT. The pre-2010 group of HSCT recipients who did not receive PCV, were compared with the post-2010 group of HSCT recipients who did receive PCV. Enrolment and compliance with the post-HSCT vaccination protocol was assessed.

Results. Of the 917 HSCT screened for IPD, 14 episodes of IPD occurred in 12 patients between 2004 and 2016. Twelve episodes occurred in the pre-2010 group, 40% of serotyped isolates would have been covered by PCV. Two episodes occurred in the post-2010 group, neither isolate serotype was covered by PCV. There was >90% enrolment and vaccination protocol completion for surviving HSCT recipients. Overall IPD rate reduced significantly from 31.9/1,000 transplants pre-2010, to 3.7/1,000 transplants post-2010 group ($P < 0.05$). Specific reductions occurred in the autologous transplant group from 26.2 to 2.8/1,000 transplants ($P < 0.05$) and the allogeneic transplant group from 45.5 to 5.3/1,000 transplants ($P < 0.05$).

Conclusion. Introduction of PCV resulted in a significant reduction in IPD among our high-risk cohort, demonstrating clinical effectiveness of PCV in HSCT recipients and confirming immunogenicity data. To our knowledge, this is the first study to demonstrate the clinical effectiveness of PCV in this group, highlighting the importance of this vaccination to prevent infectious complications following allogeneic and autologous HSCT. The clinical effectiveness of PCV vaccine is enhanced by the high quality of our post-HSCT vaccination program.

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

1573. Discrepancies Between Premortem and Postmortem Diagnoses of Infectious Diseases Found on Autopsy in Hematopoietic Cell Transplantation Recipients at a High-Volume Academic Transplant Center

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Background. Hematopoietic cell transplantation (HCT) is a potentially curative treatment option for patients with hematologic malignancies and other diseases but carries a significant risk of infection-related morbidity and mortality. Many of these infections are difficult to diagnose and treat. It is not infrequent that HCT recipients die from infection despite extensive investigations and broad-spectrum antimicrobial therapy. Autopsy is the gold standard for establishing the cause of death but rates of performing autopsies are decreasing despite their immense value. We present the most recent case series of infectious diseases found on autopsy in HCT recipients at our high-volume academic transplant center.

Methods. We retrospectively reviewed the medical charts and autopsy records of 131 HCT recipients who underwent autopsy between January 1, 2000 and December 31, 2016. The premortem clinical diagnoses as documented by the clinical teams were compared with autopsy findings. Discrepancies were identified and classified according to the Goldman Criteria (NEJM 1983; 308:1000–5).

Results. A total of 4,072 patients received 4,395 transplants between January 1, 2000 and December 31, 2016. Of the 1,937 patients who died, 131 (7%) had an autopsy performed. Of these 131 patients, 24 (18%) patients had a total of 29 infections that were identified only postmortem; 4 (3%) patients had >1 such infection. Of these 29 infections, 15 (52%) were viral, 9 (31%) were fungal, 3 (10%) were bacterial, and 2 (7%) were parasitic; no mycobacterial infections were found. According to the Goldman Criteria, 22 (76%) had class I discrepancies ("major diagnoses for which detection before death would in all probability have led to a change in management that might have resulted in cure or prolonged survival"). Illustrative cases of each infection type will be presented to highlight the challenges of infection management in HCT.

Conclusion. Autopsies of HCT recipients frequently identify clinically significant infections which were not suspected pre-mortem. Our study reinforces the educational value of the autopsy, which is underutilized but can be employed to help prevent future similar infectious complications and improve patient outcomes.

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

1574. Cancer Chemotherapy May Induce Acquisition of Antibiotic Resistance Genes in Antibiotic-Naïve Cancer Patients

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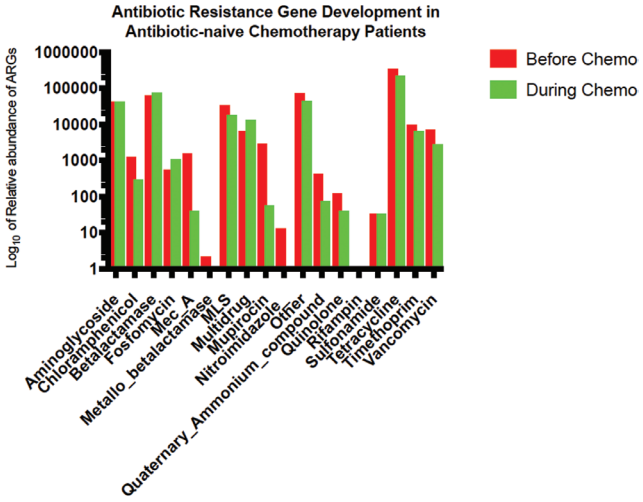
Background. The human gut serves as a critical reservoir for bacteria and plasmids that encode antibiotic resistance genes (ARGs). Antibiotic exposure contributes to the acquisition of such ARGs; consequently efforts to curtail development of antibiotic resistance focus on minimizing exposure through antibiotic stewardship programs. Cancer chemotherapy (CC) drugs often possess potent antimicrobial properties; however, their contribution to the development of gut ARGs has not been well documented. We sought to evaluate the contribution of CC agents to the development of gut microbial ARGs using metagenomic sequencing.

Methods. We collected stool samples pre- and post-initiation of chemotherapy in *antibiotic-naïve* patients receiving antineoplastic agents for cancer treatment. Antineoplastic agents included fludarabine, busulfan, cyclophosphomide, mesna and melphalan for induction chemotherapy or conditioning during stem cell transplantation. We performed metagenomic shotgun sequencing on these samples and compared the relative abundance of ARGs pre- and post- treatment initiation. Three thousand and twenty-one ARGs were categorized into 15 functional pharmaceutical classes (by agents used for patient care or environmental cleaning). For group comparisons *t*-test and/or two-way ANOVA was performed.



Results. Seven patients provided pre- and post samples. Overall there was a trend toward reduction/eradication of ARGs in 10 of 15 of antibiotic resistance gene classes. For the rifampin class no ARGs were noted in either pre- or post-samples. For four of the ARG classes (aminoglycoside, β-lactamase, fosfomycin, multidrug efflux pumps), there was an acquisition or trend toward an increase in ARG abundance.

Conclusion. Cancer chemotherapy agents may be contributory to the acquisition of aminoglycoside, β-lactamase, fosfomycin, multi-drug efflux pump resistance genes in cancer patients. Of note, these genes confer resistance to some of the most important therapeutic or environment cleaning compounds utilized during clinical care. Further studies are warranted and ongoing to confirm these findings and overcome sample size limitations.

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1575. Clinical Validation of a Novel ELISpot-based *in vitro* Diagnostic Assay to Monitor CMV-Specific Cell-Mediated Immunity in SOT and HSCT Immunocompromised Patients

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Background. Impaired cytomegalovirus (CMV)-specific cell-mediated immunity (CMV-CMI) is a major cause of uncontrolled CMV reactivation and associated complications in both solid-organ transplantation (SOT) and hematopoietic stem cell transplantation (HSCT). Reliably assessing CMV-CMI is desirable to individually adjust antiviral and immunosuppressive therapy. We demonstrate here the suitability of a novel IFN-γ ELISpot assay (T-Track® CMV), based on the stimulation of PBMC with pp65 and IE-1 CMV proteins, to monitor CMV-CMI in SOT and HSCT patients.

Methods. Two independent prospective, longitudinal, observational, multicenter studies were conducted: in 86 intermediate-risk (D−/R+, D+/R+) renal transplant recipients (completed), and in 175 intermediate- or high-risk (D+/R+, D+/R−, D−/R+) HSCT recipients (ongoing). In both studies, patients underwent pre-emptive antiviral therapy. CMV-CMI, CMV load and clinical complications were monitored over ~6 months post-transplantation.

Results. In the kidney transplantation setting, 95% and 88–92% of IFN-γ ELISpot test results were positive pre- and post-transplantation, respectively. CMV-specific response was reduced following immunosuppressive therapy and increased in patients with graft rejection, indicating the ability of the assay to monitor the patients' immunosuppressive state. Interestingly, median pp65-specific response was 9-fold higher in patients with self-clearing viral load compared with antivirally-treated patients prior to first detection of CMV (MWU; $P < 0.001$), suggesting that reactivity to pp65 is a potential immunocompetence marker. In HSCT patients, interim data analysis indicates that pp65-specific CMI measured after resolution of a primary CMV reactivation (requiring antiviral treatment) is a fair predictor of occurrence of recurrent CMV reactivation. Out of 71 patients (25 D+/R+, 3 D+/R−, 43 D−/R+) who experienced a primary CMV reactivation, 27 encountered a recurrent CMV reactivation. Interestingly, 39/44 (89%) patients free of recurrent reactivation had a positive pp65-specific test result following primary CMV reactivation.

Conclusion. Altogether, this novel IFN-γ ELISpot assay is a highly sensitive immune-monitoring tool with a potential use for the risk assessment of CMV-related clinical complications after SOT and HSCT.

Disclosures. **All authors**, Lophius Biosciences: Investigator, Research support.

1576. Risk of Clinical Tuberculosis (TB) Among Patients with Latent TB Infection (LTBI) Who Undergo Allogeneic Hematopoietic-Cell Transplantation (HCT)

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Background. *Mycobacterium tuberculosis* is a leading cause of morbidity and mortality worldwide. The risk of developing active TB in persons with hematological malignancies is higher than the general population. However, the magnitude and timing of this risk has not been determined in non-endemic settings after HCT. The purpose of this study was to evaluate treatment practices and active TB rates in a cohort of HCT recipients.

Methods. A retrospective cohort study was performed of all adult patients who underwent HCT at Dana-Farber Cancer Institute between January 2010 and January 2015. Baseline characteristics and laboratory parameters were collected. LTBI diagnostic tests included purified protein derivative (PPD) and interferon-gamma release assays (IGRA). Baseline chest radiography, history of BCG vaccination, and previous LTBI therapy were documented. Institutional guidance recommends that LTBI treatment begins upon discharge or by Day +28 after HCT, whichever is first. Patients were followed until April 2018 for development of active TB.

Results. In a cohort of 1,288 HCT recipients, 44 (3.4%) had evidence of LTBI, with 43 positive PPD tests and one positive IGRA. Median age was 55 years (range 19–72); 24/44 (54.5%) were male and 28/44 (63.6%) were non-US-born. Nine (20%) patients were treated for LTBI before HCT. Of the remaining 35 patients, 11 (25%) were treated within 3 months of HCT, three (6.8%) initiated treatment later than 3 months post HCT, and 21 (47.7%) did not receive treatment for reasons including death ($n = 14$, median survival 1.5 years from HCT) and treatment refusal ($n = 4$). Three patients were lost to follow-up. Among patients who initiated treatment, isoniazid ($n = 10$) and levofloxacin ($n = 4$) were used for a median of 145 days (range 7–326). There were no cases of active TB in the whole HCT cohort during the study period, which included a combined 139 person-years of follow-up in 44 patients with LTBI, of which 68 person-years were contributed by untreated individuals.

Conclusion. These data suggest that TB reactivation does not usually occur very early after HCT. LTBI therapy could be deferred in the immediate post-transplant setting and initiated once patients are clinically stable with a lower risk of synergistic hepatotoxicity.

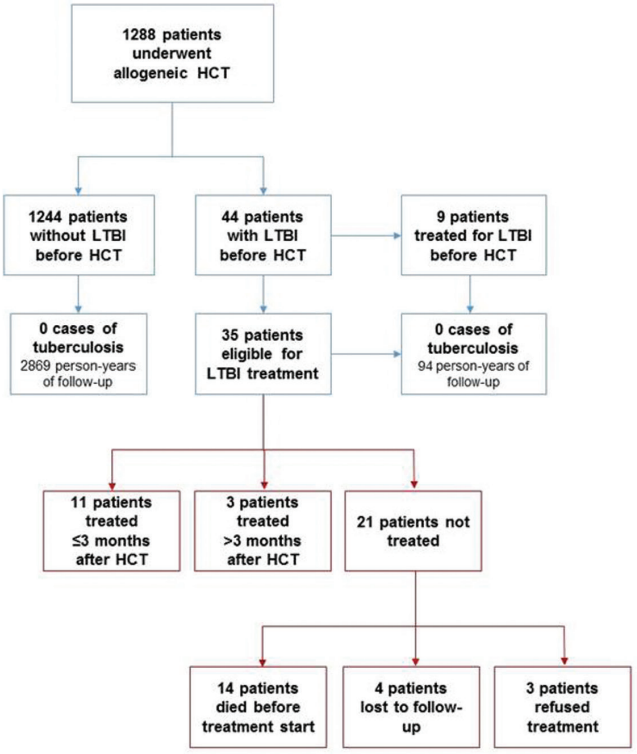

Figure 1. Study Population Outcomes.
Summary of latent tuberculosis infection (LTBI) outcomes of all patients who received allogeneic hematopoietic-cell transplants (HCT) at Dana-Farber Cancer Center from January 2010 to January 2015.

Disclosures. **S. P. Hammond**, Merck: Investigator, Research support

1577. Evaluation of a Routine Screening Program with Tuberculin Skin Testing on Rates of Detection of Latent Tuberculosis Infection and Prevention of Active Tuberculosis in Patients with Multiple Myeloma at a Canadian Cancer Center

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Background. Due to chemotherapy induced T-cell dysfunction, patients being treated for multiple myeloma (MM) are at high risk for reactivation of LTBI; however, the optimal screening strategy in this patient population has not been well described. The objective of this study was to assess the number of patients treated for LTBI both before and after the introduction of a consistent tuberculosis skin test (TST) screening program for patients with MM at our cancer center.

Methods. We carried out a retrospective observational study of adult patients treated at our cancer hospital for MM with autologous hematopoietic stem cell transplantation and who also had a TST results available from January 1, 2013–December