Not for publication or presentation

MINUTES AND OVERVIEW PLAN
CIBMTR WORKING COMMITTEE FOR INFECTION AND IMMUNE RECONSTITUTION
Houston, TX
Wednesday, February 20, 2019, 12:15 – 2:15 pm

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1. Introduction

a. Welcome and introduction

Dr. Marcie Riches moderated the introduction of the working committee followed by which all the attending co-chairs and the statisticians were introduced. She welcomed Dr. Roy Chemaly as the new chair for INWC starting March 1st 2019, and thanked Dr. Caroline Lindemans for her excellent service to the INWC in the past 5 years. She also thanks Dr. Jan Styczynski, EBMT working party chair for his help.

Dr. Riches reviewed the goal of the working committee is to publish high impact studies in a timely manner. The expectations of the meeting are to review the status of ongoing studies and timelines and for members to assess and select proposals that will have a high impact on the field. Each proposal presentation was limited to 3 minutes to allow for adequate time for 7 minutes discussion.

The working committee members were asked to vote on a level of scientific impact score, 1 is the highest impact and 9 is the lowest impact score for the new proposals based on the feasibility and impact on the transplant community. Due to limited statistical hours and on-going work in the INWC, two proposals will be accepted this year.

Dr. Riches mentioned the working committee's membership is open to any individual willing to take an active role in study development and completion. She emphasized the rules of Authorship: 1. substantial and timely contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2. drafting the article or revising it critically for important intellectual content; 3. final approval of the version to be published. All three conditions must be met. The studies that are closest to submission will receive highest priority.

She reminded the working committee members that the infection data are collected only on CRF level forms.

b. Minutes and Overview Plan from February 2018 meeting
The minutes and overview plan from the 2018 Tandem meeting held in Salt Lake City, Utah were reviewed and approved by committee members.

2. Accrual summary

Due to the full agenda, the accrual summary of registration and research cases between 1995 and 2016 were not presented to the committee but were available as part of the Working Committee attachments.

3. Studies published/submitted/Preliminary results

Dr. Marcie Riches note 3 papers have been published this year from INWC and a fourth submitted. She also reviewed that 2 studies the studies with results are in draft manuscript versions with expected circulation to the writing committee in the next several weeks.

a. **IN07-01/IN11-01(a)** Ustun C, Young J-H, Papanicolau GA, Kim S, Ahn KW, Chen M, Abdel-Azim H, Aljurf M, Beitinjaneh A, Brown V, Cerny J, Chhabra S, Kharfan-Dabaja MA, Dahi PB, Daly A, Dandoy CE, Dvorak CC, Freytes CO, Hashmi S, Lazarus H, Ljungman P, Nishihori T, Page K, Pingali SRK, Saad A, Savani BN, Weisdorf D, Williams K, Wirk B, Auletta JJ, Lindemans CA, Komanduri K, Riches M. **Bacterial blood stream infections (BSIs), particularly post-engraftment BSIs, are associated with increased mortality after allogeneic hematopoietic cell transplantation.**. *Bone Marrow Transplant*. 2018 Dec 13. doi: 10.1038/s41409-018-0401-4. [Epub ahead of print] PubMed PMID: 30546070. **Published.**

b. **IN07-01/IN11-01(b)** Genovefa A Papanicolaou, Celalettin Ustun, Jo-Anne H Young, Min Chen, Soyoung Kim, Kwang Woo Ahn, Krishna Komanduri, Caroline Lindemans, Jeffery J Auletta, Marcie L Riches, **CIBMTR® Infection and Immune Reconstitution Working Committee; Bloodstream infection (BSI) due to Vancomycin-Resistant Enterococcus (VRE) is associated with increased mortality after hematopoietic cell transplantation for acute leukemia and myelodysplastic syndrome: A multicenter, retrospective cohort study**, *Clin Infect Dis*. 2019 Jan 14. doi: 10.1093/cid/ciz031. [Epub ahead of print] PubMed PMID: 30649224. **Published.**

c. **IN13-01** Bacterial and fungal infections in patients undergoing allogeneic hematopoietic cell transplantation following non- myeloablative and myeloablative regimens (C Ustun). **Manuscript.**

d. **IN14-01** Post allogeneic hematopoietic transplant Epstein Barr Virus related Lymphoproliferative disorder following conditioning with Antithymocyte globulin or Alemtuzumab (S Naik/ C Bachier/ P Shaughnessy/ P Hari/ R Kamble). **Submitted.**

e. **IN16-01** Maheen Z. Abidi, Parameswaran Hari, Min Chen, Soyoung Kim, Minoo Battiwala, Parastoo Bahrami Dahi, Miguel Angel Diaz, Robert Peter Gale, Siddhartha Ganguly, Usama Gergis, Jaime Green, Gerhard Hildebrandt, Joshua A. Hill, Krishna Komanduri, Hillard Lazarus, David Marks, Taiga Nishihori, Richard Olsson, Sachiko Seo, Celalettin Ustun , Jean Yared, Dwight Yin, John Wingard, Baldeep Mona Wirk, Jeffrey Auletta, Caroline Lindemans, Marcie Riches, **Virus detection in the cerebrospinal fluid of hematopoietic stem cell transplant recipients is associated with poor patient outcomes: a CIBMTR contemporary longitudinal study.** *Bone Marrow Transplant*. 2019 Jan 29. doi: 10.1038/s41409-019-0457-9. [Epub ahead of print] PubMed PMID: 30696997. **Published**

f. **IN16-02** Determination of the burden of mucosal barrier injury-laboratory confirmed bloodstream infections (MBI-LCBI) in the first 100 days after stem cell transplant (C Dandoy/ P Daniels) **Manuscript.**

4. Studies in progress

Dr. Miguel-Angel Perales introduced the ongoing studies.

a. **IN17-01** Incidence and impact of cytomegalovirus and other viral infections, on post-transplant outcomes following HLA-haploidentical hematopoietic cell transplantation compared to other donor sources. (Rizwan Romee/ Anurag Singh/ Randy Allison Taplitz) **Protocol development**

Dr. Anurag Singh updated the study.

Objectives of the study are: compare CMV and key viral infections in PTCy haplos, PTCy non-haplos and non PTCy allo-HCTs; assess impact of CMV D/R serostatus on: CMV viremia, disease and key transplant outcomes (OS, Relapse, NRM, aGvHD, cGvHD etc); assess incidence of CMV viremia and disease on: key transplant outcomes (OS, Relapse, NRM, GvHD etc); describe potential risk factors for the development of non-CMV viral infections across these donor types

Patients inclusion criteria are First allo-HCT for AML, ALL and MDS, age ≥ 2 years, and HCT between 2008-2016. Excluded Ex-vivo T-cell depletion, CD34 selection, Non PTCy haplo-HCT, mismatched unrelated donor transplants, umbilical cord blood transplants, lack of donor/recipient CMV serostatus.

Dr. Perales pointed out the matched unrelated donor are also removed from the current population based upon discussions of overlap with GS1801.

b. **IN18-01** Comparison of early (by day 100) infections after haploidentical HSCT between patients receiving cyclophosphamide-based or other GVHD prophylaxis (Celalettin Ustun/Genovefa Papanicolaou) **Protocol development**

Dr. Celalettin Ustun updated the study.

Allogeneic hematopoietic cell transplant (HCT) outcomes differ between fully matched related donor transplants (MRD) and Haploidentical (HaploHCT) transplant with further differences associated with the use of post-transplant cyclophosphamide (PTCy). The study aims are: Determine the incidence and infection density of bacterial infections and fungal infections occurring within 100 days after HCT; Assess the impact of bacterial and fungal infections by day 100 on 1 year transplant outcomes(relapse, non-relapse mortality (NRM), disease free survival (DFS), overall Survival (OS) and Chronic GVHD.

Comments:

The population for IN18-01 will be the same population used for IN17-01

- Consider looking at infection and immune reconstitution events beyond day 100, consider subset analysis if there are too much missing
- Consider examining GVHD treatments at time of infection. The INWC leadership noted that these data are not fully available
- Consider examining the impact of multi-drug resistance. The INWC leadership noted that these data are not available except for VRE
- Examine center effects

Dr. Krishna Komanduri mentioned, the registry data has limitations. While we would like to see more details, this is a transplant rather than an infection registry.

c. **IN18-02** The Incidence, and impact of Clostridium difficile infection within 100 days on Transplant outcomes after allogeneic stem cell transplant (Muthalagu Ramanathan/ Bipin Savani/ Celalettin Ustun) **Protocol development**
Dr. Muthalagu Ramanathan updated the study.
The study aims are: Determine Incidence of CDI (Clostridium Difficile infection) following Allogeneic HCT; Determine Impact of CDI on transplant outcomes (Acute GVHD, Chronic GVHD, TRM, Overall Survival); Identify pre-transplant risk factors for development of CDI after allogeneic HCT.
Eligible population: All patients age 2 years and older receiving first allogeneic HCT for AML, ALL, or MDS in 2010 to 2017. Fully HLA matched 8/8 related or unrelated donor. Cases will be patients reported with CDI by day 100 and controls will be all patients from the same centers with cases.
    - Dr. Ramanathan requested the addition of mismatched cord blood transplants to the study population and the working committee concurred.

There are 834 cases and 7253 controls identified in 148 transplant Centers (11.5%). Patient, donor and disease related characteristics seem comparable between cases and controls. Transplant related characteristics seem comparable in terms of time to transplant, HLA matching, GVHD prophylaxis, year of transplant, systemic antibacterial use etc.
Limitations:

- Prophylactic antibiotic use is not captured in CIBMTR database prior to March 2017
- CIBMTR does not capture any diagnostic information for CDI, hence all data is based on Center's reporting
- Not all CDI causes clinical symptoms and definition of CDI is center specific
- Above center specific effects has been partially overcome by using controls from only centers that have cases;
- History of CDI prior to HCT, severity of CDI or the treatment administered is not captured in the CIBMTR database.

5. Future/proposed studies

Dr. Caroline Lindemans reported that 14 proposals were received this year and 8 will be presented.

a. **PROP 1810-10** Retrospective study of the impact of mammalian target of rapamycin inhibitors (mTORi) in the incidence of herpesvirus-associated complications after allogeneic hematopoietic cell transplantation (HCT)(J Kanakry)

Dr. Jennifer Kanakry presented the proposal.
The Hypothesis of the proposal is: HCT approaches containing mTORi may be associated with lower incidence of herpesvirus-associated infection/diseases in the first year post-HCT.

Eligible population: Patients undergoing first allo HCT for any disease between January 2008 and December 2017 are included. Patients with UCB graft recipients, ex vivo T-cell depleted grafts, approaches that included planned post-HCT donor lymphocyte infusions are excluded.

The endpoints are comparing outcomes at mTORi-containing regimens vs non-mTORi containing regimens. The outcomes are: CMV infection, CMV disease, Pre-emptive treatment for EBV, EBV-PTLD, HHV6 encephalitis, NRM, OS and GVHD rates at 1 year.
Discussions:

- Limited to CMV at first year after transplant since the data stronger.
- There are no data on pre-emptive therapy for EBV
- Consider center effect, limit case and controls are from same centers may help.
- Sirolimus is associated with better control of CMV because it less the immunosuppression but will it affect GVHD as well. How to examine?
- Consider duration of sirolimus

b. **PROP 1811-18** The burden of infectious complications and the kinetics of engraftment and immune reconstitution in high-risk MDS vs de-novo acute myeloid leukemia in adults (A Ali/ K Larkin)

Dr. Alaa Ali presented the proposal.
The hypothesis are : High-risk MDS has a higher burden of infectious complications following allo-HCT compared to de-novo AML, due to older age, iron overload and pre-transplant neutropenia; engraftment and immune reconstitution (IR) follows a delayed and/or imbalanced course following allo-HCT compared to de-novo AML, due to longer time to neutrophils and platelets engraftment, competent microenvironment is required for both innate immunity and T cell reconstitution. It is an important topic since it will impact on surveillance and prophylactic programs.
The endpoints for the proposal will be Incidence rate of infections: viral, bacterial and fungal. Infection-related mortality; time to neutrophils and platelet engraftment; rate of graft failure; rate of delayed humoral IR (low immunoglobulin levels); rate of delayed adaptive immunity (T and B cells); rate of delayed innate immunity (monocytes, NK cells).
Discussion:

- Consider select patients from the same center, since different centers prefer different prophylaxis. Additionally, the choice of prophylaxis in individual patients may be altered by the prolonged neutropenia in MDS patients prior to HCT
- Consider add neutrophil counts at time of conditioning and time to engraftment as factors
- Consider adding HCT CI to analysis

c. **PROP 1811-42** Infection with Atypical Nontuberculous Mycobacteria (NTM) after Hematopoietic Stem Cell Transplantation (HSCT) (D Melendez/J Holter-Chakrabarty/ K Williams/ S Schmidt/ S Vesely)
Dr. Caroline Lindemans mentioned this proposal was originally proposed in 2010 and only 22 cases at that time. If the study moving forward, the original group will be invited to join the study.
Dr. Paolo Melendez presented the proposal.
The hypothesis is patients that develop NTM infections have worse outcomes (decreased disease-free survival and higher mortality) than patients that do not develop NTM infections in the first 2 years post-HSCT.
The primary aim is to compare the transplant-related outcomes in patients that develop NTM infections vs. those who do not, in the first 2 years post-HSCT

Patient selection: Cases are patients with NTM infection in the first 2 years post-transplant. Controls are patients with no NTM infection within the same centers as cases. The plan proposed involves matching cases and controls by underlying disease and status, transplant intensity, graft source, and transplant date (within 3-5 years).
Outcomes are: overall survival, transplant related mortality and disease-free survival.
Discussion:

- The background data demonstrate more death in MTB group than in non-MTB group
- Why are the number of cases increasing every year since 2010? The reason maybe the PCR is widely used.
- Consider look at potential confounders such as lung problem, immune constitution issue.
- Methods of diagnosis is important however the forms do not collect. If we have to request additional data from the center that will be too much work.
- Consider a subset analysis of patients with and without bronchiolitis obliterans
- Consider a subset analysis of those with non-MTB reported as a bloodstream infection vs a pulmonary infection.

d. **PROP1811-59** Immune recovery predicts post-transplant outcomes (Miguel-Angel Perales)
Dr. Miguel-Angel Perales presented the proposal.
The study aims are: assess outcomes in adult patients who undergo allo-HCT based on day 100 immune recovery of CD4 count; general outcomes to be examined include: NRM, acute GVHD (II-IV and III-IV), chronic GVHD, relapse/progression, PFS/DFS and OS; descriptive analysis of immune recovery post HCT including T, B and NK cells.
Scientific Impact of CIBMTR Immune Reconstitution study: this is the 1st multicenter analysis of immune reconstitution labs; largest dataset to date; confirm and expand single center studies results; proof of principle that CIBMTR can also analyze immune reconstitution
Discussions:

- Recommend examining other correlations (CD3, CD8) in addition to CD4 on HCT outcomes
- Consider examining the effect of ATG and/or alemtuzumab on immune recovery. This will need to include date/timing of ATG

- How to analyze? Would this be analyzed as a landmark analysis only for patients alive at day 100?
- Recommend examining dose of steroids. These data are unavailable.cluding pediatric population

*****After the meeting, leadership was reminded that a similar study was proposed several years ago by Dr. Paul Szsbolcs and Dr. Jan Storek.*

e. **PROP1811-77** Impact of seasons on outcomes of allogenic hematopoietic cell transplantation (HCT) in North America (P Teira)
Dr. Pierre Teira presented the proposal.
Dr. Caroline Lindemans mentioned a similar study was proposed in 2015 and if this proceeds that proposer would be invited as co-I.
Hypothesis: seasons may have an impact on outcomes of HCT due to seasonal epidemic infections and seasonal variations in the human circadian rhythms.
Specific aim is to assess the impact of the season where the HCT is done on cumulative incidence of Relapse, aGVHD, cGVHD, NRM, EFS and OS in HSCT in North America.
Patient eligibility population is all patients receiving a first HSCT, in USA (except Hawaii) and Canada, between 2005 and 2015, for any disease, from any donor, with any conditioning intensity and reported to the CIBMTR are included.
Discussions:
   - Consider analysis regionally due to different durations of season based upon location in N. America
   - Consider using the seasons for comparison as the flu season by each region
   - It is a complicated question. NIAID funded the TransNet Fungal Infection Consortia to examine fungal infections within 23 transplant centers. Looked at climate, precipitation etc., analyzed all factors however, could not find any trend and have not published.
   - Recommended that comparisons occur for specific pathogens (ex. Mold, respiratory viruses, etc)

f. **PROP1811-82** Impact of antibacterial prophylaxis on outcomes after allogeneic hematopoietic stem cell transplant (C Dandoy/ P Alonso)
PROP1811-150 Clinical Impact of Pre-Engraftment Antibacterial Prophylaxis in Adult Patients Undergoing Allogeneic Hematopoietic Cell Transplantation in the Current Era (Z El Boghdadly)
Dr. Zeinab Boghdadly presented the proposal.
Hypothesis: prophylactic antibiotic use is associated with decreased blood stream infection (BSI) prior to engraftment, but increased rates of acute GVHD, post-engraftment BSI, and non-relapse mortality in allogeneic transplant recipients
Specific aims are: compare incidence and timing of BSIs in patients who receive and do not receive antibiotic prophylaxis; determine the incidence of acute GVHD in patients who receive and do not receive antibiotic prophylaxis; compare OS (overall survival) and NRM (non-relapse mortality) between patients who receive antibacterial prophylaxis and those who do not; compare above outcomes between antibiotic sub-classifications.
Study Population/Design: all patients (pediatric and adult) undergoing first allogenic HCT reported (Form 2100,Q407) from January 2017 onward
Primary Outcomes: Pre-engraftment BSI, Acute GVHD 2-4, OS and NRM at 100 days and at 1 year
Secondary Outcomes: Acute GI GVHD 2-4 by day100, Infection type (BSI, CDI, septic shock, fungal, viral) by day100, Cause of Death (infection vs non-infectious)

Scientific Impact/Strengths: large global multicenter cohort; Contemporary; revisit the efficacy of antibiotic prophylaxis in the modern era; effects of early microbiota disruption on GVHD; address conflicting mortality benefits of prophylaxis; implications on current clinical practice guidelines.
Discussions:

- Unable to examine the microbiota data within CIBMTR. However, there is a prospective trial within the BMT CTN that will have detailed examination of antimicrobial administration and microbiota data
- Consider including anti-fungal and anti-viral prophylaxis
- Consider limiting the analysis to quinolones vs no antibacterial prophylaxis
- Consider subset cohorts, such as acute leukemia
- Consider reasons for no antibiotic prophylaxis, center effect or other reasons.

g. **PROP1811-139** Impact of Early Post-Transplant Infections on Relapse Risk Following Autologous Stem Cell Transplantation for Multiple Myeloma. (C D'Angelo /A Hall)
Dr. Christopher D'Angelo presented the proposal.
Hypothesis is Melphalan requires gram positive gut bacteria to achieve optimal efficacy and infections requiring gram-positive antibiotics in the early post-transplant setting may disrupt required gut bacteria leading to reduced efficacy and increased risk of early relapse
The aims are: to test for an association between early infection and early relapse post-autologous transplant in adults with multiple myeloma 2009-2016; perform a multivariable regression analysis to control for potential confounders that may also increase risk of early relapse; to determine the impact of early-infection on the rate of complete response to autologous transplant.
The outcome is early infection (composite of gram-positive bacteremia and c. difficile colitis)
Discussions:

- Consider including all infections to see a clear reason for relapse
- Consider the alternate hypothesis that relapse may be due to poorer immune reconstitution leading to earlier relapse
- How is it that Melphalan at time of conditioning is related to infection later and impacted HCT outcomes? Is this due to altered immune stimulation/recovery or lower Melphalan exposure?
- Suggestion: limit patients to those proceeding to HCT within 6-12 months after myeloma diagnosis

Dropped proposed studies

a. **PROP 1811-30** To study the correlation between JC viral load, JC Viral antibody index and development of progressive multifocal leukoencephalopathy in multiple sclerosis patients following autologous stem cell transplant. *Dropped due to feasibility-the data was not been collected*.
b. **PROP 1811-43** Impact of Epstein Barr virus (EBV) infection on outcomes of allogenic hematopoietic cell transplantation (HCT) for hematologic malignancies*. Dropped due to feasibility.*
c. **PROP 1811-50** Outcomes of HIV+ Patients undergoing autologous hematopoietic cell transplantation (Auto-HCT) for Multiple Myeloma. *Dropped due to feasibility*
d. **PROP 1811-147** Comparative analysis of infectious complications occurring in stem cell transplants using alternative donor source. *Dropped due to overlap with a recently published and 2 on-going studies focused in specific infections following Haplo-identical transplant*

f. **PROP 1811-154** Does rising Human Herpes virus (HHV) 6 titers post Allogenic Stem cell transplant predict reactivation of CMV?. *Dropped due to feasibility*

g. **PROP 1811-155** Post-transplant CMV reactivation in the era of letermovir*. Dropped due to feasibility*

6. Other Business

a. Statistical method

Dr. Krishna Komanduri mentioned that besides the limitation of the data, there are always challenges on analyzing infection data.

Dr. Soyoung Kim presented Dynamic Landmark study.

Dr. Kim explained time-independent variable vs. time-dependent variable.
Examples of time-independent variables are: gender, KPS, race.
Examples of time-dependent variables are: Acute GVHD, infections.
An infection is a time-dependent variable and Infection status of a patient changes over time,
so, it is challenging to graphically display outcomes of interest such as KM/CIF.

To solve this problem, landmark study is commonly used.
The traditional landmark study is selecting one reasonable landmark time point. Infection status determined by using only infection information available up to the landmark time point, which makes infection time-independent.

The infection effect might depend on choosing landmark point. It is of interest to see the trend of infections across different landmark points. Dynamic landmark study allows to have several landmark time points, then, we can estimate survival probabilities or cumulative incidence rates for infections across several landmark time points.

Dr. Kim presented several graphical curves demonstrating the loss of patients based upon development of GVHD vs development of infection vs death. The impact over the first 3 months post-transplant are most pronounced in bacterial blood stream infections compared to viral or fungal infections. Dr. Kim and the statistical center are proceeding with a manuscript to highlight these limitations in the comparisons of our typical cumulative incidence curves following HCT when comparing across groups.

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Working Committee Overview Plan for 2019-2020							
Study number and title	**Current status**	**Goal with date**	**Total hours to complete**	**Total hours to goal**	**Hours allocated to 6/30/2019**	**Hours allocated 7/1/2019-6/30/2020**	**Total Hours allocated**
IN 13-01 Bacterial and fungal infections in patients undergoing allogeneic hematopoietic cell transplantation following nonmyeloablative and myeloablative regimens	Manuscript Preparation	Submission - May 2019	20	**20**	10	10	**20**
IN 14-01 Post allogeneic hematopoietic transplant Epstein Barr Virus related Lymphoproliferative disorder following conditioning with Antithymocyte globulin or Alemtuzumab	Submitted	Published – July 2019	0	**0**	0	0	**0**
IN16-02 Determination of the burden of mucosal barrier injury-laboratory confirmed bloodstream infections in the first 100 days after stem cell transplant	Manuscript Preparation	Published - June 2020	20	**20**	10	10	**20**
IN17-01 Incidence and Outcomes of individuals with and without viral infections in recipients of haploidentical versus other allogeneic hematopoietic stem cell transplantation for patients with hematologic malignancies	Data file Preparation	Published - June 2020	180	**180**	110	70	**180**
IN18-01 Comparison of Early (d100) Infections after Haplo HCT between patients receiving Cy-based vs other GVHD prophylaxis	Protocol development	Manuscript - June 2020	220	**150**	30	120	**150**
IN18-02 Study the Incidence, and impact of C diff infection within 100 days on Transplant outcomes after allogeneic stem cell transplant	Protocol Pending	Manuscript - June 2020	280	**210**	30	180	**210**
IN19-01 Immune recovery predicts post-transplant outcomes	Protocol Pending	Data file Preparation-June 2020	330	**100**	0	100	**100**
IN19-02 Impact of antibacterial prophylaxis on outcomes after allogeneic hematopoietic stem cell transplant	Protocol Pending	Data file Preparation-June 2020	330	**100**	0	100	**100**

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Work Assignments for Working Committee Leadership (March 2019)	
Caroline Lindemans	**IN13-01** Bacterial and fungal infections in patients undergoing allogeneic hematopoietic cell transplantation following non- myeloablative and myeloablative regimens.
Jeffery Auletta	**IN14-01** Post allogeneic hematopoietic transplant Epstein Barr Virus related lymphoproliferative disorder following conditioning with antithymocyte globulin or alemtuzumab (R Kamble/ P Hari/S Naik /C Bachier/P Shaughnessy)
Krishna Komanduri	**IN16-02** Determination of the burden of mucosal barrier injury-laboratory confirmed bloodstream infections in the first 100 days after stem cell transplant (Christopher Dandoy/ Paulina Daniels)
Krishna Komanduri	**IN17-01** Incidence and Outcomes of individuals with and without viral infections in recipients of haploidentical versus other allogeneic hematopoietic stem cell transplantation for patients with hematologic malignancies(Rizwan Romee/ Ephraim Fuchs/ Asad Bashey/ Stefan Ciurea/ Anurag Singh/ Siddhartha Ganguly/ Randy Allison Taplitz/ Carolyn Mulroney/ Richard Maziarz). (PROP 1611-02/1611-117/1611-134)
Miguel-Angel Perales	**IN18-01** Comparison of Early (d100) Infections after Haplo HCT between patients receiving Cy-based vs other GVHD prophylaxis (Genovefa Papanicolaou/Celalettin Ustun)
Roy Chemaly	**IN18-02** Study the Incidence, and impact of C diff infection within 100 days on Transplant outcomes after allogeneic stem cell transplant (Muthalagu Ramanathan/ Bipin Savani)
Miguel Perales and Krishna Komanduri	**IN19-01** Immune recovery predicts post-transplant outcomes (Miguel-Angel Perales) (PROP1811-59)
Roy Chemaly	**IN19-0202** Impact of antibacterial prophylaxis on outcomes after allogeneic hematopoietic stem cell transplant (C Dandoy/ P Alonso/ Z El Boghdadly) (PROP1811-82 / PROP1811-150)