# Oral Vancomycin for Clostridium difficile Prophylaxis in Allogenic Hematopoietic Cell Transplant

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## BACKGROUND

- Neutropenia and antibiotic use put patients at risk for *Clostridium difficile* infection (CDI) following allogenic hematopoietic cell transplant (alloHCT)
- Factors that increase the risk of CDI in patients include hospitalization, older age, exposure to antibiotics, immunosuppression, source of stem cells, and type of conditioning regimen
- CDI following alloHCT has been associated with acute graft versus host disease (GVHD), a significant cause of morbidity and mortality in this population
- A single center study looking at vancomycin prophylaxis in alloHCT patients was conducted in 145 patients at the University of Pennsylvania
  - They found that vancomycin was highly effective at reducing the incidence of CDI in alloHCT patients and was not associated with a higher risk of acute GVHD at day 180 post-transplant
- Effective strategies to reduce the risk of CDI in alloHCT patients are needed due to the incidence and potential detrimental effects of infection

## OBJECTIVES

- Evaluate if prophylactic oral vancomycin reduces the incidence of CDI in alloHCT recipients and add to the current literature on this topic
- **Primary outcome**
  - Incidence of CDI in patients with oral vancomycin prophylaxis compared to those who did not receive prophylaxis during hospital admission for alloHCT
- **Secondary outcomes**
  - Incidence of grade 2-4 GVHD
  - Incidence of vancomycin resistant enterococcus (VRE)
  - Incidence of blood stream infections
  - Length if Stay
  - Event Free Survival

## METHODS

**Study Design:** Single center retrospective chart review

**Time Frame:** May 2017 through January 2019

**Inclusion Criteria:** All patients who underwent alloHCT at TUKHS aged ≥ 18 years and were admitted on day 0 to the hospital

**Exclusion Criteria:**

- Active CDI at Day 0
- Underwent autoHCT
- Post implementation group: no vancomycin on Day 0 and/or not continued for ≥ 7 days

**Interventions:**

- CDI prophylaxis was implemented in all alloHCT patients starting in March 2018
  - Oral vancomycin 125 mg twice daily starting on the day of inpatient admission for alloHCT and continued until discharge
- Compared 200 consecutive adults (100 alloHCT patients pre-implementation vs 100 alloHCT patients post-implementation)

**Data Collected:**

- Sex
- Disease Type
- Degree of HLA Match
- GVHD Prophylaxis
- Age
- Donor Source
- Conditioning Intensity
- CIBMTR 1-Year Survival Score
- Incidence of CDI
- Incidence of VRE
- Incidence of GVHD
- Antibiotic Exposure

## RESULTS

**Baseline Characteristics and Disease Demographics**

52 years

65% Male

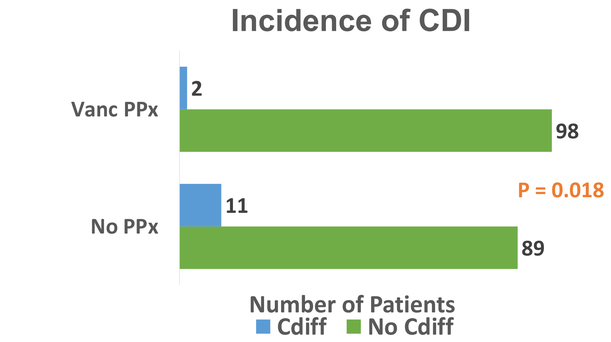
39.5% AML
24.5% MDS/MPN

Average CIBMTR 1 Year survival: 69.5%

63% Peripheral Blood graft source no prophylaxis group
62% Bone Marrow graft source prophylaxis group
P=0.001

See other comparative baseline characteristics using QR code

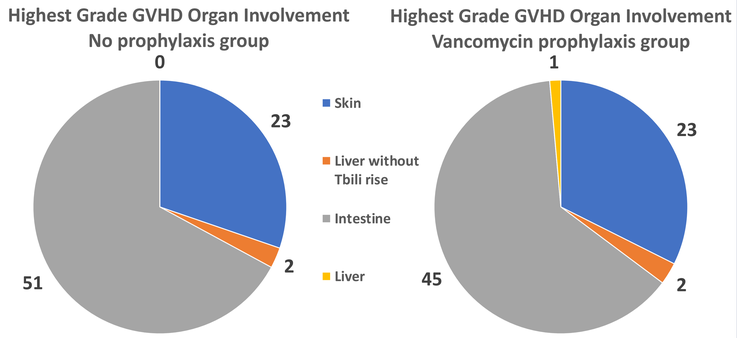
**Primary Outcome**




**Secondary Outcomes**

**Clinical Outcomes**

| Characteristic | Oral Vancomycin prophylaxis (N=100) | No Prophylaxis (N=100) | P value |
|---|---|---|---|
| **Incidence of aGVHD grade 2-4** | 38 | 36 | 0.77 |
| **Length of Hospital Stay, average days (SD)** | 26.5 (14.1) | 25.6 (11.2) | 0.825 |
| **Incidence of VRE, n** | 11 | 12 | |
| **Incidence of Bloodstream infection, n** | 13 | 9 | 0.366 |
| **Event Free Survival at one year** | 59% | 68% | 0.29 |




## DISCUSSION

- Oral vancomycin is effective at preventing *C.difficile* infections in patients that underwent an alloHCT
- Gut flora and GVHD
  - No association between oral vancomycin prophylaxis and aGVHD at 100 days post-alloHCT as well as relapse or death at one year
  - No increase in VRE colonization
- Type of graft source
  - Donor source changed significantly between the pre-intervention group and post intervention group, with 63% and 38% receiving a peripheral blood stem cell transplantation (PBSCT), respectively (p=0.001).
  - We do not expect this to negatively affect the results of this study given that hematological recovery is more rapid and graft rejection less frequent after PBSCT compared to bone marrow transplantation (BM HSCT). Patients receiving a BM HSCT have an increased the risk of CDI due to prolonged neutropenia, and therefore prolonged antibiotic use for prophylaxis or treatment, as compared to PBSCT.
  - However, this could potentially confound our GVHD results since our prophylaxis group has more BM HSCT

## CONCLUSION

- Oral vancomycin is effective in preventing CDI in alloHCT recipients without increasing the risk of GVHD or disease relapse
- Has remained our ongoing standard of practice

## LIMITATIONS

- Single center retrospective study
- Descriptive statistics
- Data collected largely dependent on appropriate provider documentation and patient follow-up
- Change in room cleaning practice
  - Similar rates of CDI were documented before and after this change and does not alter the results (6 cases vs 5 cases in the pre-intervention group).
- Did not collect VRE colonization vs. invasive VRE infection.
- Potential for increased gram-negative infections through selective pressure and gut dysbiosis

## FUTURE DIRECTIONS

- Larger sample size
- Use of chronic C.diff prophylaxis for autoHCT patients
- Fidaxomicin vs. oral vancomycin for prophylaxis

## CONTACT INFORMATION

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Authors have no disclosures to report

Scan QR code for complete baseline characteristics and results.
References available upon request.