Rate of Adverse Events and Medication Errors in Patients Following Up in an Outpatient Lung Transplant Clinic for Post-Transplant Care

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BACKGROUND

- Organ transplant has become an increasingly adopted treatment strategy for end-stage organ dysfunction to improve survival[1]
- Managing transplant pharmacotherapy to prevent adverse events and rejection has become an important aspect for ensuring successful graft function[2-4]
- Limited data is available evaluating the impact of a pharmacist on a lung transplant service, especially in the outpatient setting[4,6]
- Currently, a pharmacist is not routinely involved in managing medications for post lung transplant recipients in the outpatient clinic at our institution

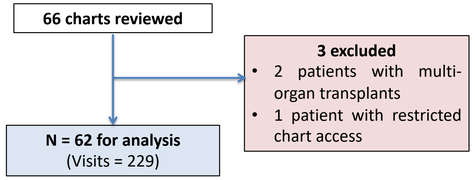
OBJECTIVE

- To evaluate the number of medication errors that were missed during follow-up visits in the clinic, as well as adverse drug events, rejection cases, and hospitalizations prior to pharmacist intervention.

METHODOLOGY

- Site: Outpatient lung transplant clinic at a 665-bed regional, teaching hospital which performs about 25 lung transplants annually
- Inclusion criteria: Post lung transplant recipients ≥ 18 years of age, with at least one clinic visit from April 1, 2019 to September 30, 2019
- Exclusion criteria: Patients with either a history of a previous transplant other than a lung transplant or a multi-organ transplant
- Study description:
  - IRB-approved, retrospective chart review to obtain data on patients treated in the outpatient lung transplant clinic without routine pharmacist involvement. Data such as demographics, laboratory results, mediation regimen, adverse events, incidence of rejection, and incidence of hospitalizations were collected.
  - A list of common medication errors, or DTPs, was created prior to the start of the study including categories such as therapy duplication, drug-drug interactions, incorrect dose or frequency, medications without valid indication, absence of indicated medications, missing lab values, and ADEs requiring modification of drug therapy.
  - ADEs recorded included neutropenia, leukopenia, thrombocytopenia, nephrotoxicity, neurotoxicity, hepatotoxicity, hyperkalemia, hypokalemia, hypomagnesemia, and visual disturbances.
- Study outcomes:
  - Primary: Incidence of ADEs (composite)
  - Secondary: Number of missed DTPs identified, cases of rejection cases, and incidence of hospitalizations
  - Safety: Number of individual ADEs
- Statistics: Outcomes were analyzed using descriptive statistics

METHODOLOGY



RESULTS

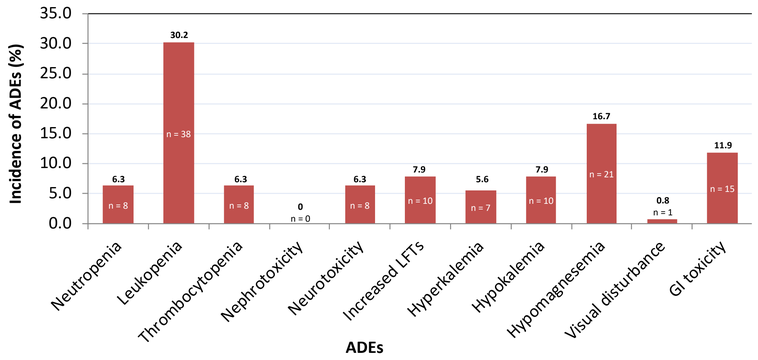
Table 1: Baseline Characteristics (N = 62)

Sex (male), n (%)		41 (66.1)
Age (years), median (IQR)		62 (56 – 67)
BMI (kg/m^2), median (IQR)		26 (22.4 – 28.6)
CMV risk status (D/R), n (%) *(4 patients with unknown status)*	High (+/-)	12 (19.4)
	Standard (-/+ or +/+)	39 (62.9)
	Low (-/-)	7 (11.3)
Lung transplant type, n (%)	Single	15 (24.2)
	Double	47 (75.8)
Number of visits per patient, median (IQR)		3.5 (2 - 5)

Table 2: Outcomes (N = 62)

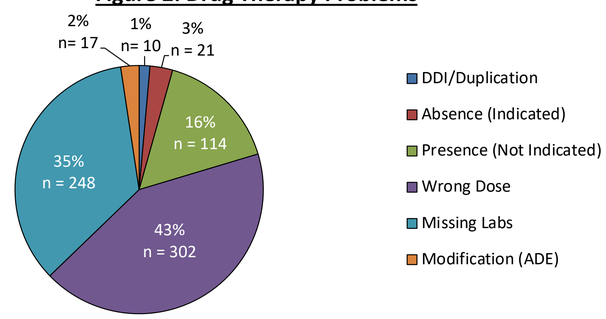
Number of ADEs	126
Number of ADEs/patient, median (IQR)	2 (0 – 4)
Missed DTPs identified, n	712
Number of DTPs/patient, median (IQR)	9 (3.75 - 17)
Number of DTPs/visit, median (IQR)	2.4 (1.6 – 3.8)
Cases of rejection	11
Number of hospitalizations	62

Figure 1: Adverse Drug Events



RESULTS

Figure 2: Drug Therapy Problems



DISCUSSION

- In this retrospective analysis, the median number of DTPs identified during each visit was 2.4
- The most common ADEs were mycophenolate-associated toxicity
- The majority of DTPs identified were dosing-related issues and medications without clear indications
- A limitation of this study is that 39% of patients likely had some degree of nephrotoxicity but was not accurately captured due to the criteria defined in the protocol

CONCLUSION

- Medication management without a pharmacist's presence in the outpatient clinic was associated with 712 missed DTPs
- Data from this evaluation will be compared with the results obtained from an ongoing prospective study with active pharmacist intervention in the clinic to evaluate the impact of a pharmacist in reducing ADEs associated with potential DTPs

REFERENCES

1. Data Reports. Organ Procurement and Transplantation Network. https://optn.transplant.hrsa.gov/data/view-data-reports/. Accessed July 16, 2019.
2. Harrison JJ, Wang J, Cervenko J, et al. Pilot study of a pharmaceutical care intervention in an outpatient lung transplant clinic. *Clin Transplant*. 2012; 26(2):E149-E157. doi:10.1111/j.1399-0012.2012.01623.x.
3. Staino C, Lewin JJ, Nesbit TW, Sullivan B, Ensor CR. Survey of transplant-related pharmacy services at large comprehensive transplant centers in the United States. *Prog Transplant*. 2013; 23(1):23-27. doi:10.7182/pit2013519.
4. Sam S, Guérin A, Rieutord A, Belaiche S, Bussières J-F. Roles and impacts of the transplant pharmacist: A systematic review. *Can J Hosp Pharm*. 2018; 71(5):324-337. doi:10.4212/cjhp.v71i5.2843.
5. Alloway RR, Dupuis R, Gabardi S, et al. Evolution of the role of the transplant pharmacist on the multidisciplinary transplant team. *Am J Transplant*. 2011; 11(8):1576-1583. doi:10.1111/j.1600-6143.2011.03601.x.
6. Martin JE, Zavala EY. The expanding role of the transplant pharmacist in the multidisciplinary practice of transplantation. *Clin Transplant*. 2004; 18(s12):50-54. doi:10.1111/j.1399-0012.2004.00218.x.

Disclosure of Relevant Financial Relationships
Authors of this presentation disclose the following relationships with commercial interests related to the subject of this poster:
Sunny Sheth: Nothing to disclose Soonali Maniar: Nothing to disclose Rouel Guiang: Nothing to disclose Dana Serao: Nothing to disclose