

Efficacy of Routine Ciprofloxacin Prophylaxis Prior to Endoscopic Retrograde Cholangiopancreatography (ERCP) and Percutaneous Transhepatic Biliary (PTB) Procedures Post-Liver Transplant



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Background

- While antibiotic prophylaxis is recommended for post-liver transplant endoscopic retrograde cholangiopancreatography (ERCP) or percutaneous transhepatic biliary (PTB) procedures, such as tube checks, changes, and drainages, there is no standard selection of antimicrobial agents or duration of use.^{1,2}

Objective

- The objective of this study was to evaluate the efficacy of implementing routine ciprofloxacin prophylaxis for post-liver transplant patients undergoing ERCP or PTB procedures.

Methods

Study Design

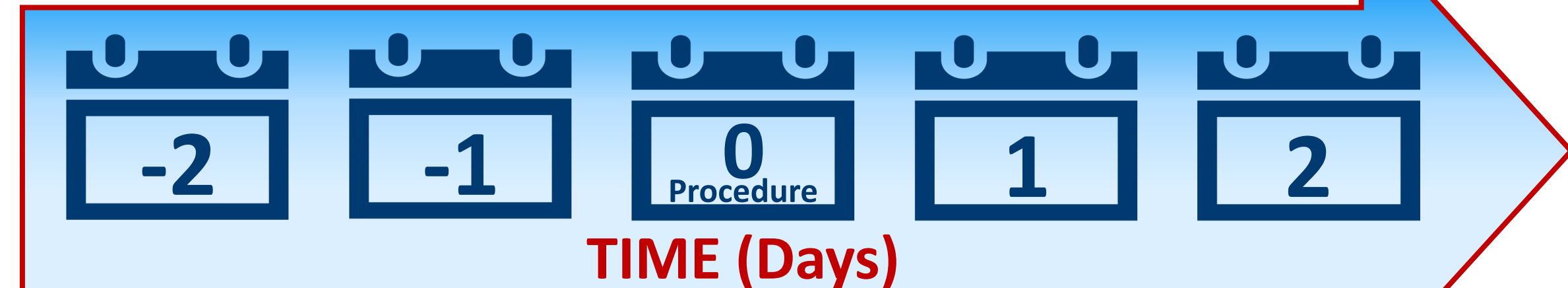
- Retrospective, quality services review at Yale New Haven Hospital, a large academic medical center
- Statistically evaluated using chi-squared tests

Cohort 2 Interventions

- Planned Procedure Patients

Figure 1: Planned Procedure Cohort 2 Methods

Ciprofloxacin 500 mg by mouth every 12 hours



For 5 days, starting 2 days prior to procedure & continued for 2 days after procedure

- Spontaneous Procedure Patients

- Ciprofloxacin 400 mg intravenously once, pre-procedure

Inclusion Criteria

- Cohort 1 – Pre-Implementation:

- Post-liver transplant patients that underwent both planned and spontaneous ERCP or PTB procedures between January 2018 and December 2019

- Cohort 2 – Post-Implementation:

- Post-liver transplant patients that received ciprofloxacin before undergoing planned or spontaneous ERCP or PTB procedures between January 2021 and August 2023

Primary Outcome

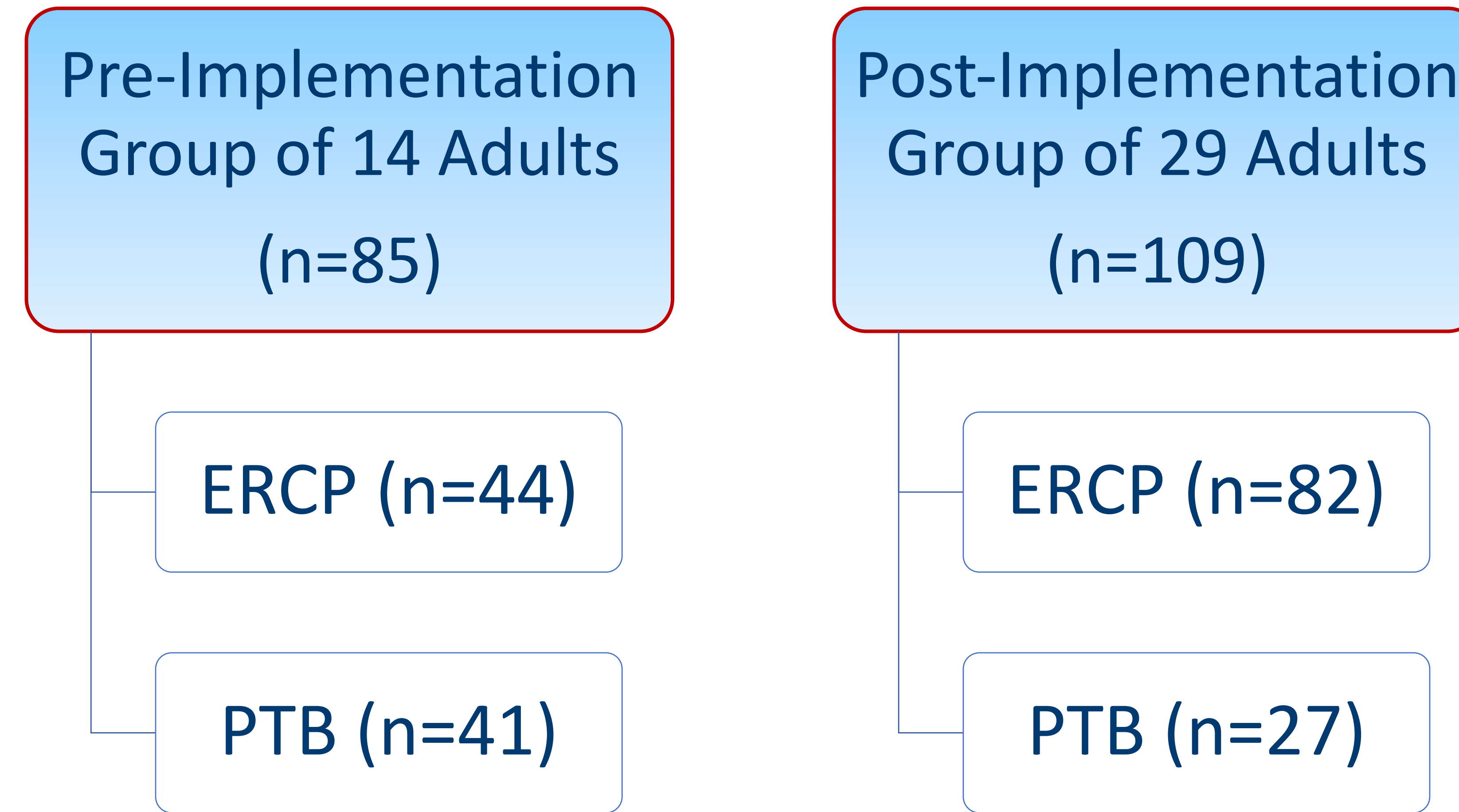
- Number of readmissions for suspected infection within 30 days of procedure

Secondary Outcomes

- Number of readmissions with confirmed reinfection related to the procedure
- Adherence to oral ciprofloxacin prophylaxis, as demonstrated by ciprofloxacin dispense history fill rates within 30 days prior to a planned procedure
- Number of patients adherent to oral ciprofloxacin prophylaxis following care coordinator reminder

Results

Figure 2: Differentiation of Patients by Implementation Time and Procedure



Average time from transplant to procedure was 3.7 years

Figure 3: Antibiotic Regimen Relating to Post-Implementation Outcomes

ERCP vs PTB Post-Implementation Characteristics				
	ERCP (n=82)		IR Tube Check (n=27)	
	n	%	n	%
Number of patients readmitted overall	9	10.9%	8	29.6%
Number of readmissions for suspected infection	2	2.4%	0	
Number of readmissions with confirmed infection	0		0	
PO ciprofloxacin alone at time of procedure	35	42.7%	24	88.9%
IV ciprofloxacin alone at time of procedure	7	8.5%	1	3.7%
Combination of IV and PO ciprofloxacin at time of procedure	27	32.9%	1	3.7%
Combination of PO ciprofloxacin with another IV antibiotic at time of procedure	1 (+daptomycin)	1.2%	0	
No antibiotics	10	8.2%	1	3.7%

Table 1: Outcomes

Primary Outcome							
Number of readmissions for suspected infection within 30 days of procedure							
Pre-Implementation Group				Post-Implementation Group			
ERCP (n=44) n, %	5 (11%)	PTB (n=41) n, %	5 (12%)	ERCP (n=82) n, %	2 (2.4%)	PTB (n=27) n, %	0 (0%)
p=0.001							
Secondary Outcomes							
Number of readmissions with confirmed infection related to the procedure							
Pre-Implementation Group				Post-Implementation Group			
ERCP (n=5) n, %	3 (11%)	PTB (n=5) n, %	5 (12%)	ERCP (n=2) n, %	0 (0%)	PTB (n=0) n, %	0 (0%)
Post-Implementation Group							
Adherence to oral ciprofloxacin prophylaxis, as demonstrated by ciprofloxacin dispense history fill rates within 30 days prior to a planned procedure							
ERCP (n=82) n, %	31 (41.9%)			PTB (n=27) n, %	20 (76.9%)		
Number of patients adherent to oral ciprofloxacin prophylaxis following care coordinator reminder							
ERCP (n=82) n, %	54 (73%)			PTB (n=27) n, %	20 (76.9%)		

Discussion

- Prophylactic ciprofloxacin use resulted in a reduced number of readmissions with suspected infection related to the ERCP or PTB procedure, with zero reports of confirmed infection related to the procedure post-prophylaxis implementation compared to the pre-implementation review.
- Adherence to oral ciprofloxacin was better in those successfully contacted by a care coordinator pre-procedure, reinforcing the vital role of care coordinators on the transplant care team continuum.

Conclusions

This retrospective quality services review suggests that prophylactic use of ciprofloxacin might improve clinical outcomes through reduced readmission rates for suspected procedure-related infection and provides a reference for further implementation of prophylactic antibiotic standardization to reduce infectious readmission rates in post-liver transplant patients undergoing ERCP or PTB procedures.

References

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Disclosures

All the presenting authors have no relevant financial relationship to disclose.