

patients may be transported via ambulance locally, or by aircraft over long distances. However, potential risks of nosocomial infectious complications associated with transfers has not been reported. We evaluated the impact of transfers on nosocomial infections for patients who received ECMO at Brooke Army Medical Center (BAMC).

Methods

All patients who received ECMO for ≥48 hours at BAMC between May 2012 and October 2019 were included. Chart review was performed to determine transport status, infectious complications while on ECMO, and antimicrobial susceptibility of isolated organisms. Statistical analyses were performed using Chi-squared, Fisher's exact, or Mann-Whitney U tests as appropriate. Factors associated with nosocomial infections were evaluated by multivariate logistic regression.

Results

Compared to patients who were cannulated locally (n=33), patients who underwent cannulation at referral facility and inter-hospital transfer (n=76) had no difference in infections per 1000 ECMO days (33.1 vs. 30.5, p=0.74) or in infections with multidrug resistant organisms (MDRO) (50% vs. 55%, p=1). Of transferred patients, those transferred by aircraft (n=11) had no difference in infection rate (22.4 vs. 31.8 per 1000 ECMO days, p= 0.39) or MDRO incidence (52% vs 75%, p=0.61) compared to those only transferred by ambulance (n=65). Multivariate analysis showed the greatest risk factor for nosocomial infection was time on ECMO (OR 12.2 for longest tertile time on ECMO vs. shortest tertile, p=0.0001); transport was not significantly associated with infection (OR 2.1, p=0.06).

Conclusion

This study did not find a significant difference in nosocomial infection rate or recovery of MDROs between transported and non-transported patients on ECMO, regardless of transport modality. This study suggests that transportation is not the primary driver of nosocomial infections in this cohort.

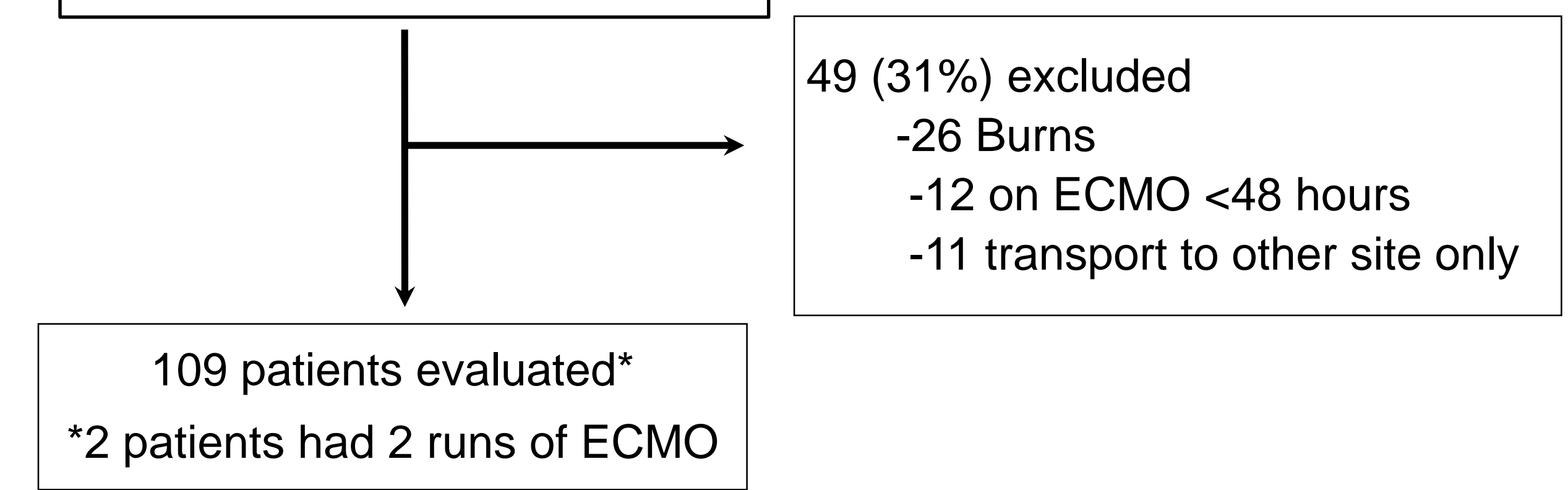
Introduction

- ECMO is a form of life support for reversible pulmonary and cardiac failure with increased use over the past 10 years.
- Patients on ECMO have increased rates of hospital acquired infections that are associated with longer hospital stays and longer ECMO courses.
- Transport is associated with infection with multidrug resistant organisms (MDRO) in military literature.
- No data has been published on infection rates for patients on ECMO related to transfer.
- We hypothesized that transport will lead to more infections and more MDROs with longer transports having a dose-dependent effect and cause higher infectious rates.

Methods

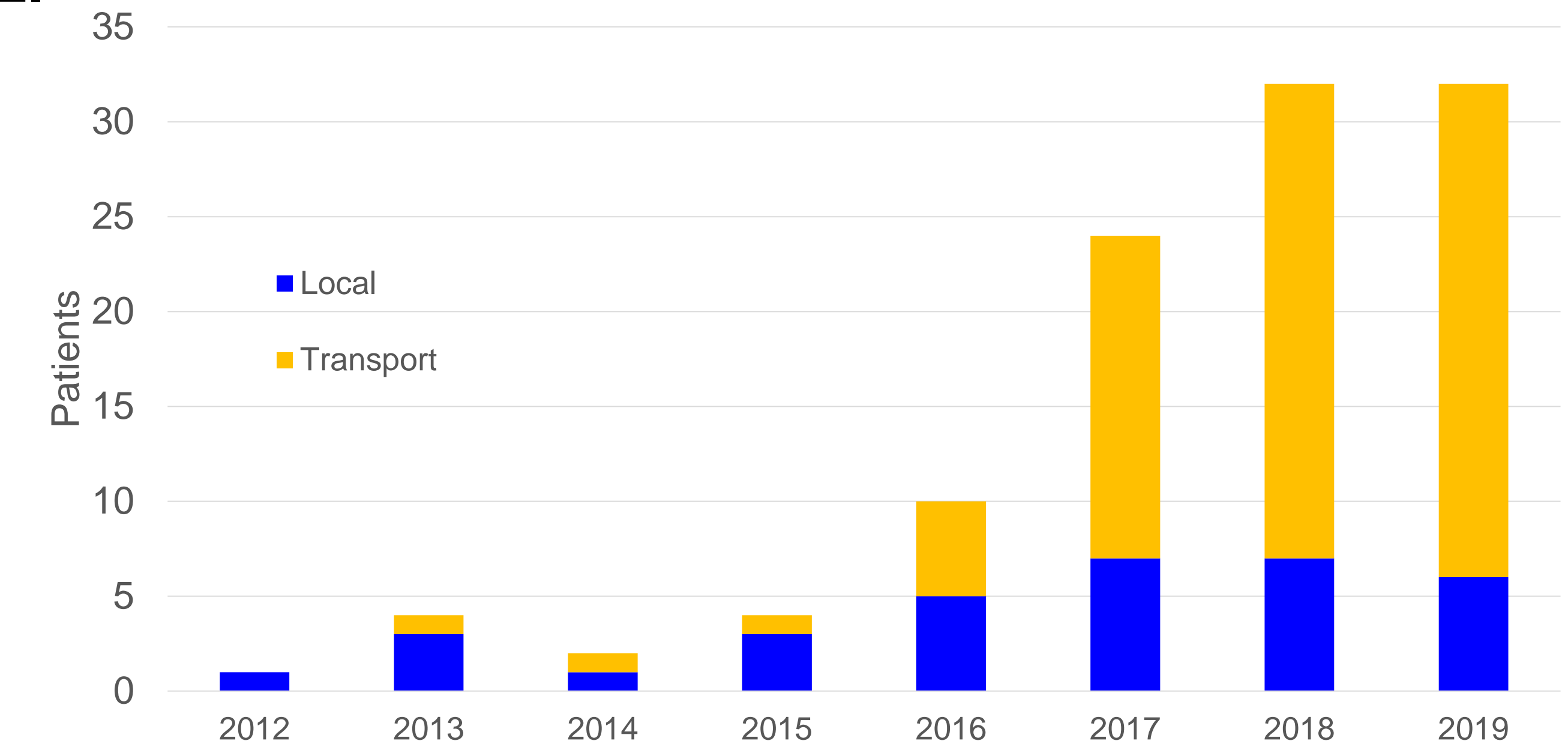
- Single center retrospective review of patients on ECMO for greater than 48 hours at BAMC and USAISR from 9/1/12-10/31/19
- Burn patients were excluded as they have a known increased risk of infection and none were transported
- Data on demographics, ECMO characteristics, and infectious complications were collected.
- Presence/absence of infection was determined by treatment team's assessment at the time of patient care.
- Statistical analysis performed with Pearson's Chi Squared, Fisher's Exact Test and Mann-Whitney U Tests.

between Sep 2012 – Oct 2019



Flow diagram showing patients at ECMO center meeting inclusion criteria. Both patients that required re-cannulation were treated for analysis as a single ECMO course.

Figure 2.



Bar graph showing number of patients and their cannulation location at ECMO center (local) or at another facility and transported to ECMO center (transport). Note 2019 only has data through October.

Table 1.

	Local Cannulation (n=33)	Interhospital Transport (n=76)	P-value
Male	25 (75%)	54 (71%)	0.61
Median age	43 (33-59)	39 (30-51.5)	0.11
Pre-ECMO Hospital Days	4 (0-12)	4 (2-9.25)	0.53
Median time on ECMO (hr)	161 (93-326)	262.5 (119.25-569.25)	0.04
Survived to discharge	20 (61%)	60 (79%)	0.05
Admission Diagnosis			0.01
Cardiac Diagnosis	5 (15%)	8 (11%)	
Medical Diagnosis	16 (48%)	58 (76%)	
Surgical Diagnosis	12 (36%)	10 (13%)	
Any Infection	9 (27%)	33 (44%)	0.1
Multiple infections	2 (6%)	8 (11%)	0.72
Total Infections/1000 ECMO days	33.1	30.5	0.74
Days to Pos Blood Culture	6 (3-9)	20 (7-22)	0.23
Days to Respiratory Infection	2 (1-4.5)	4 (1-17.5)	0.25
Any MDRO	4/8 (50%)	17/31 (55%)	1

Demographic and infection information for all patients on ECMO shown and organized by transport status. Interquartile range or percentage of patients in that column shown in parentheses.

Multivariate a
infection risk.

Table 3

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