

Urinary Tract Infection and Asymptomatic Bacteriuria in Renal Transplant Recipients: A Single Centre Experience

Jessie Yoon, B.Sc.(Pharm.); Trana Hussaini, PharmD; Nilufar Partovi, PharmD, FCSHP; Tim T.Y. Lau, PharmD, FCSHP; R. Jean Shapiro, MD, FRCPC
Pharmaceutical Sciences and Division of Nephrology and Renal Transplantation, Vancouver General Hospital, Vancouver, BC, Canada

Background

- Urinary tract infection (UTI) is the most common infection in renal transplant recipients (RTR) and may be associated with serious complications, such as acute pyelonephritis, urosepsis, graft loss and chronic rejection.
- Clinical significance of asymptomatic bacteriuria (AB) in the immunocompromised is unclear.
- There are limited studies identifying risk factors for UTI/AB and their recurrence with conflicting results.
- Repeated exposure to antibiotics poses a therapeutic challenge due to emergence of resistant pathogens.

Objectives

- Primary: To characterize incidence, risk factors, microbiology and outcomes for UTI/AB
- Secondary: To evaluate risk factors and microbiology for recurrent UTI/AB and to assess development of resistance with recurrent antibiotic use for UTI/AB

Methods

- Design: Single centre, cross-sectional, retrospective cohort
- Inclusion Criteria: All consecutive RTRs at Vancouver General Hospital Solid Organ Transplant (VGH SOT) Outpatient Clinic transplanted between July 2010 and June 2013
- Exclusion Criteria: Graft dysfunction requiring dialysis
- Statistical Analysis: Univariate analysis to identify risk factors for UTI/AB and recurrent UTI/AB

Results

Median age at transplant (range)	55 (19-79)
Female gender (%)	50 (36)
Caucasian race (%)	74 (54)
Diabetes mellitus (DM) (%)	46 (34)
Self-catheterization (%)	7 (5)
Urological abnormalities (%)	49 (36)
Etiology of end stage renal disease	
DM-associated nephropathy (%)	38 (28)
Glomerular disease (%)	30 (22)
IgA nephropathy (%)	14 (10)
Polycystic kidneys (%)	17 (12)
Other (%)	38 (28)

Table 2: Transplant Characteristics N=137 (%)

Prior kidney transplant	9 (7)
Living donor	65 (47)
Induction immunosuppressant	
Basiliximab	100 (73)
Antithymocyte globulin	34 (25)
None	3 (2)
Delayed graft function*	26 (19)
Prolonged use of catheter > 7days	13 (9)
Placement of J stent	125 (91)
Acute rejection	6 (4)
PCP prophylaxis	60 (44)

*Requiring hemodialysis post-transplant

Figure 1: Incidence of UTI/AB Episodes (N=137)

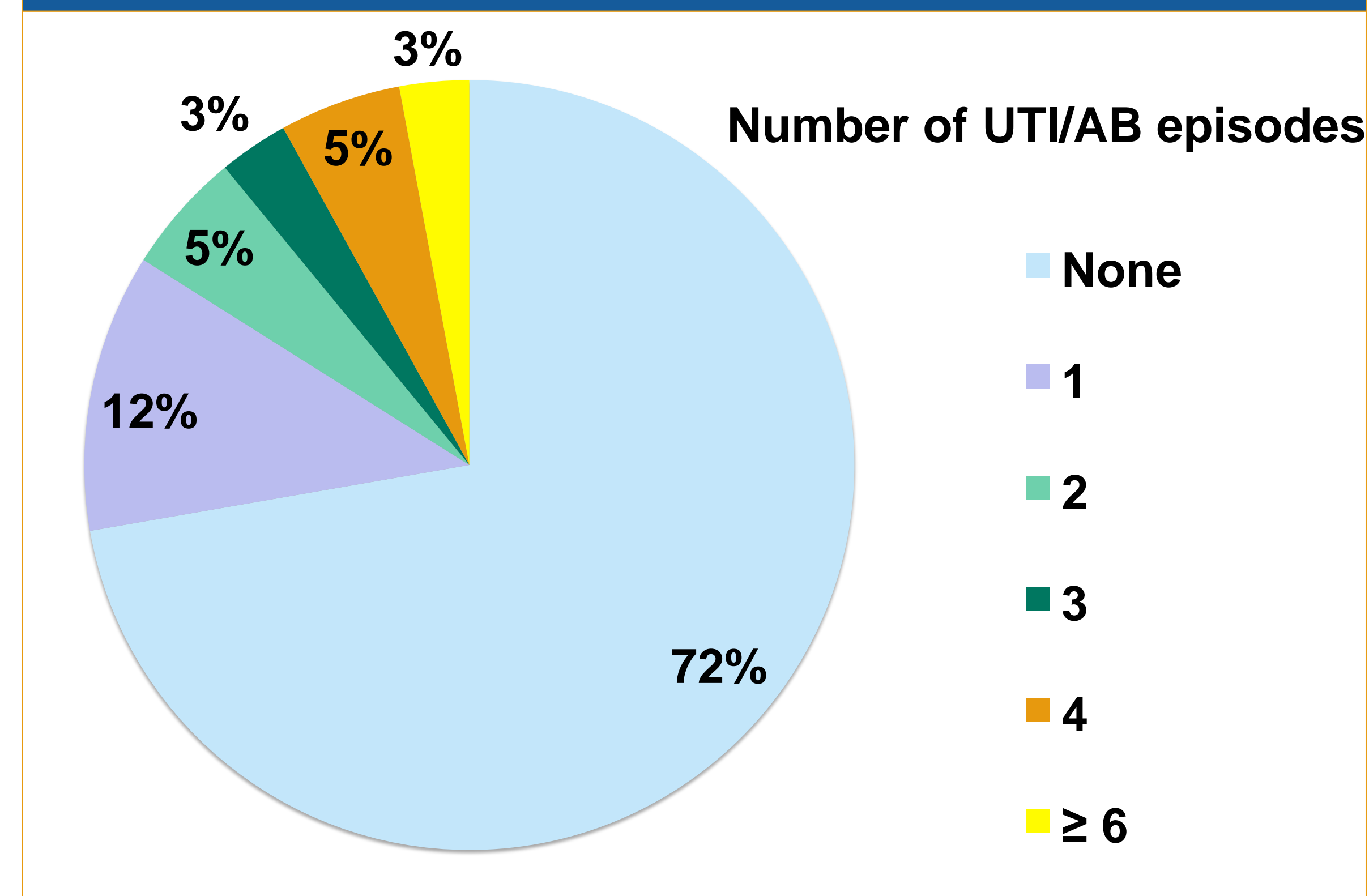
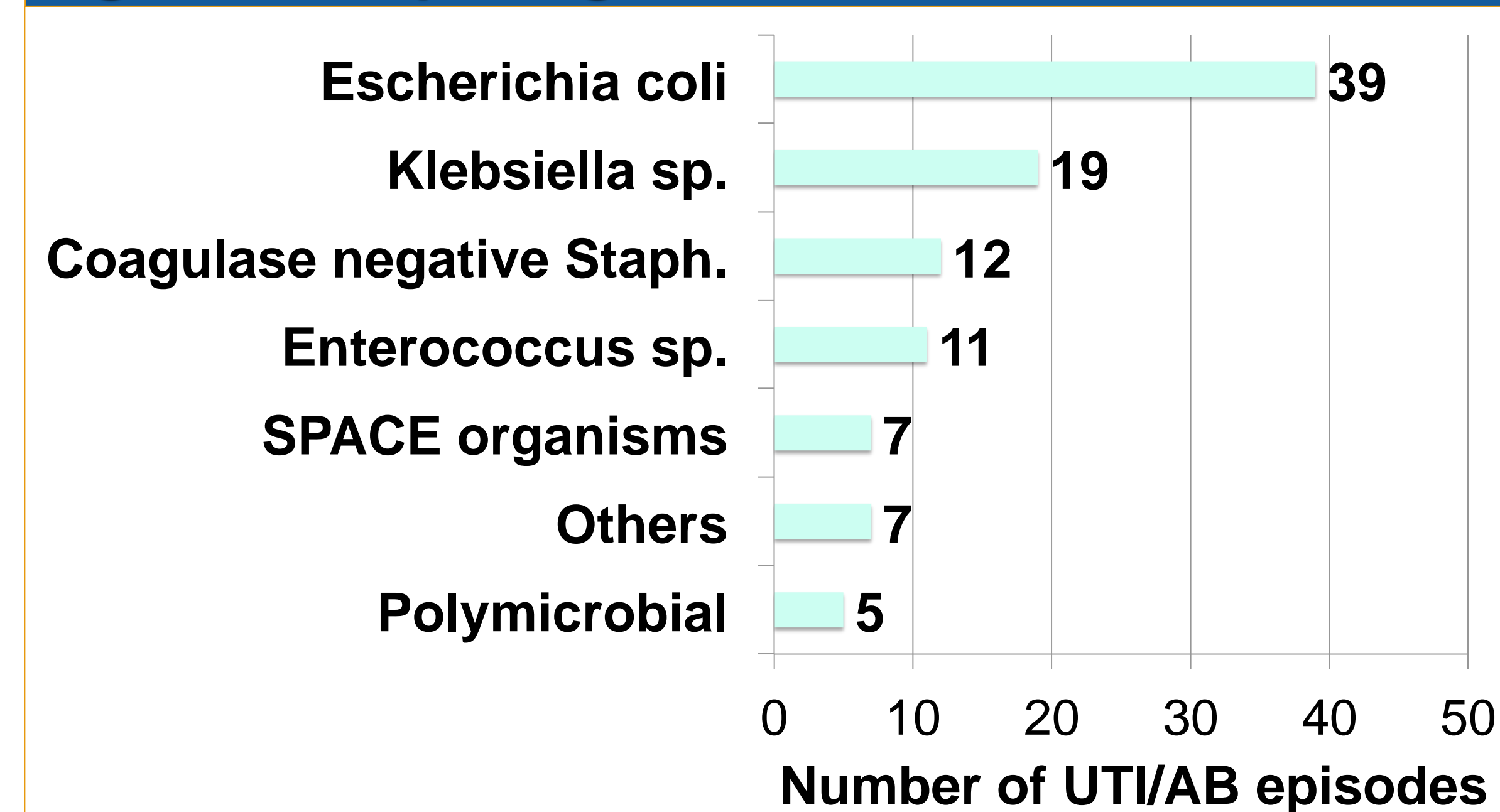


Figure 2: Uropathogens



N=100 UTI/AB episodes in 38 RTR

Table 3: Risk Factors for UTI/AB

Variables	No UTI/AB N=99	≥ 1 UTI/AB N=38	p-value
Mean age at transplant (S.D.)	53.9 (12.3)	50.9 (14.3)	0.226
Female gender (%)	26 (26)	24 (63)	< 0.0001
Prolonged use of catheter (%)	3 (3)	10 (26)	< 0.0001
DM (%)	37 (37)	9 (24)	0.129
PCP prophylaxis (%)	44 (44)	16 (42)	0.805
Self-catheterization (%)	0 (0)	7 (18)	< 0.0001
Delayed graft function (%)	19 (19)	7 (18)	0.918
Induction immunosuppression (%)			
Basiliximab	73 (74)	27 (71)	0.882
Antithymocyte globulin	24 (24)	10 (26)	

*None of the risk factors for recurrent UTI/AB were statistically significant

Table 4: Outcomes

Treatment Outcome	N=100 episodes
Treatment success	89
Progression to pyelonephritis/urosepsis	5
Re-infection/Relapse	N=100 episodes
Re-infection	51
Relapse	12
Resistance and Recurrence	N=38 RTR
Development of resistance in subsequent UTI/AB (%)	10 (26)
ESBL and/or VRE (%)	3 (8)
Recurrence*	18 (47)

*2 or more UTIs/AB over 6 months, or 3 or more UTIs/AB over a year

Limitations

- Retrospective, cohort review; small sample size
- Unable to differentiate between UTI and asymptomatic bacteriuria due to incomplete documentation of signs and symptoms

Conclusion

- Female gender, prolonged use of Foley catheter, and self-catheterization are independent risk factors associated with development of UTI/AB in renal transplant recipients at VGH SOT Outpatient Clinic.

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