



# Factors Associated with Early vs. Late AKI in Burn Patients

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## Introduction

- ❖ Acute kidney injury (AKI) in burn patients is known to increase morbidity and mortality, with significant improvement after the initiation of renal replacement therapy (RRT).
- ❖ Our primary objective is to characterize the sub-population of burn patients with early ( $\leq 48$  hours post-injury) versus late ( $>48$  hours post injury) onset of AKI.
- ❖ We hypothesize that patients with early onset AKI versus late onset AKI have different causalities, risk factors, and outcomes.

## Methods

- ❖ A retrospective review was conducted on all patients admitted to a verified burn center requiring RRT for AKI from 2015 – 2019.
- ❖ Patients were stratified by age, gender, % total body surface area (TBSA), race, time of onset of AKI, timing of RRT initiation, hospital length of stay (LOS), pre-admission co-morbidities, admission toxicology, and mortality.

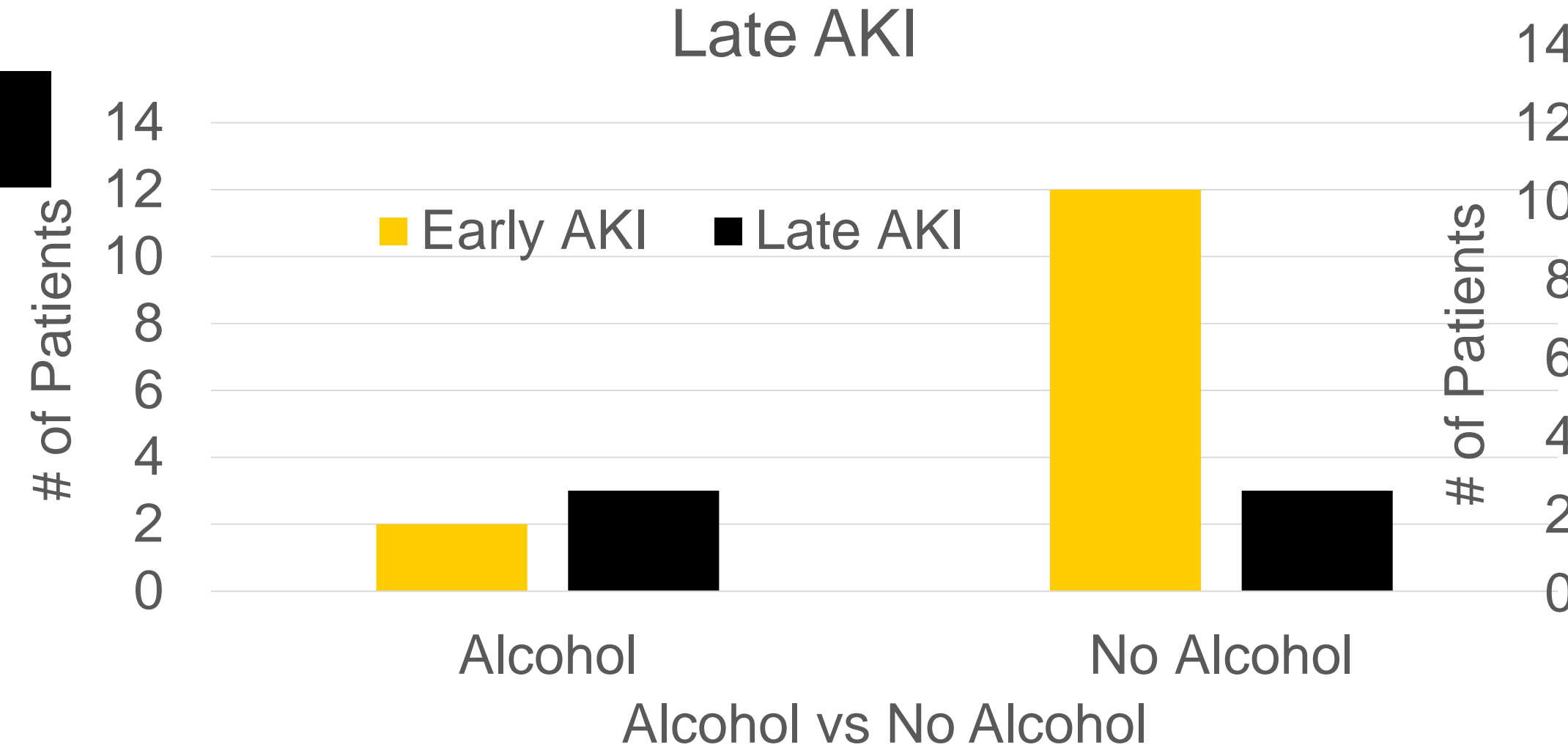
## Results

- ❖ Early versus late AKI patients have the same median age (57).
- ❖ Patients with larger TBSA tend to develop early AKI (median 51%) versus late AKI (median 21%).
- ❖ Half of the patients developing late AKI presented with a positive alcohol toxicology screen, while the majority of patients with early AKI tested negative.
- ❖ The mortality rate in early AKI was higher than that of patients with late AKI (57% vs 17%).
- ❖ Only 14% of early AKI patients required dialysis at discharge while 33% of late AKI patients required dialysis at discharge.
- ❖ The majority of patients started on early RRT did not develop sepsis, while the majority of patients started on late RRT did develop sepsis.

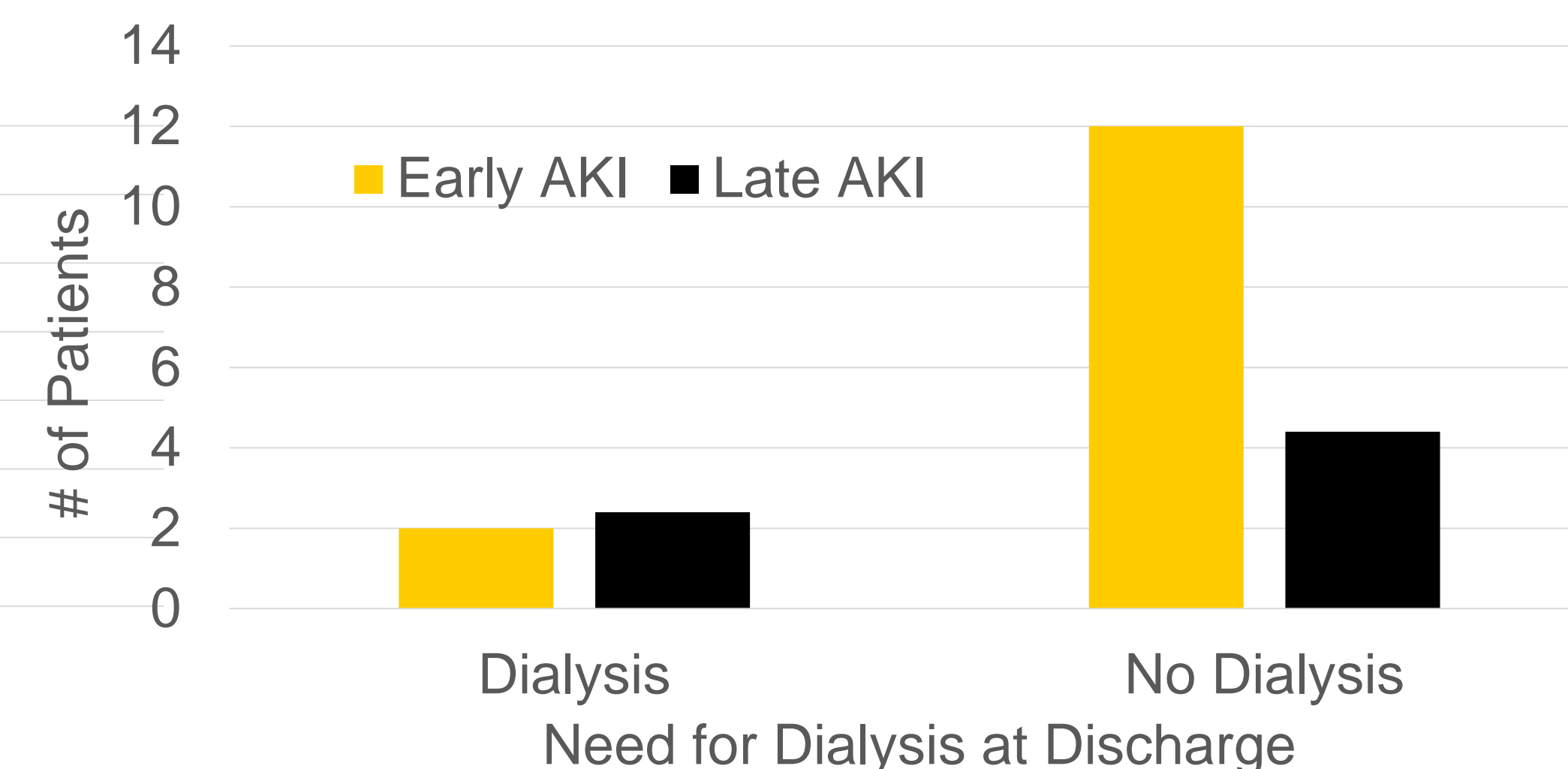
## Results

		Early AKI	Late AKI
Median Age		57	57
Gender N (%)	M	12 (86)	5 (83)
	F	2 (14)	1 (17)
Median %TBSA		51	21
Alcohol N (%)	+	2 (14)	3 (50)
	-	12 (86)	3 (50)
Mortality N (%)	+	8 (57)	1 (17)
	-	6 (43)	5 (83)
Dialysis at Discharge N (%)	+	2 (14)	2 (33)
	-	12 (86)	4 (67)

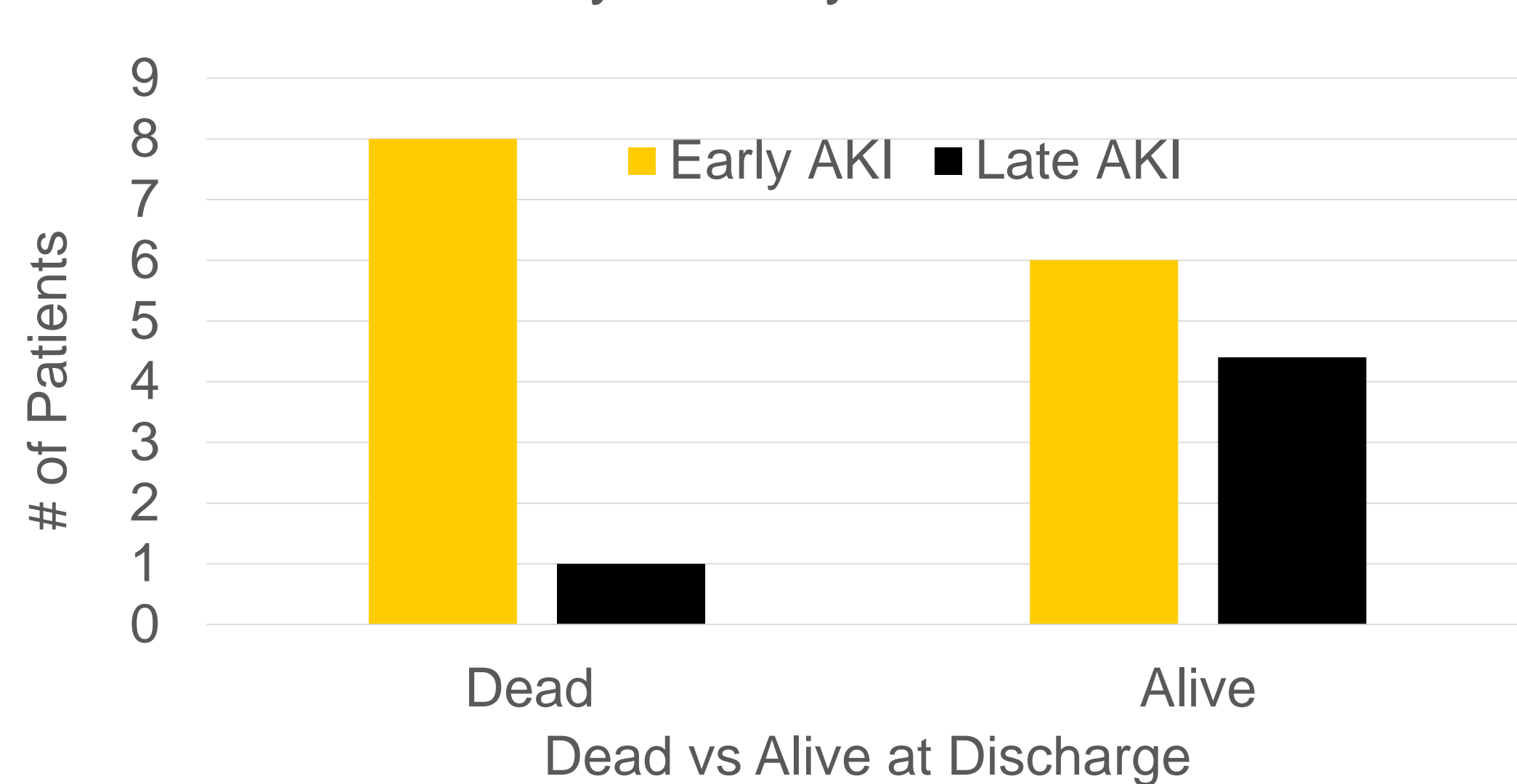
Alcohol Positivity on Admission in Early vs Late AKI



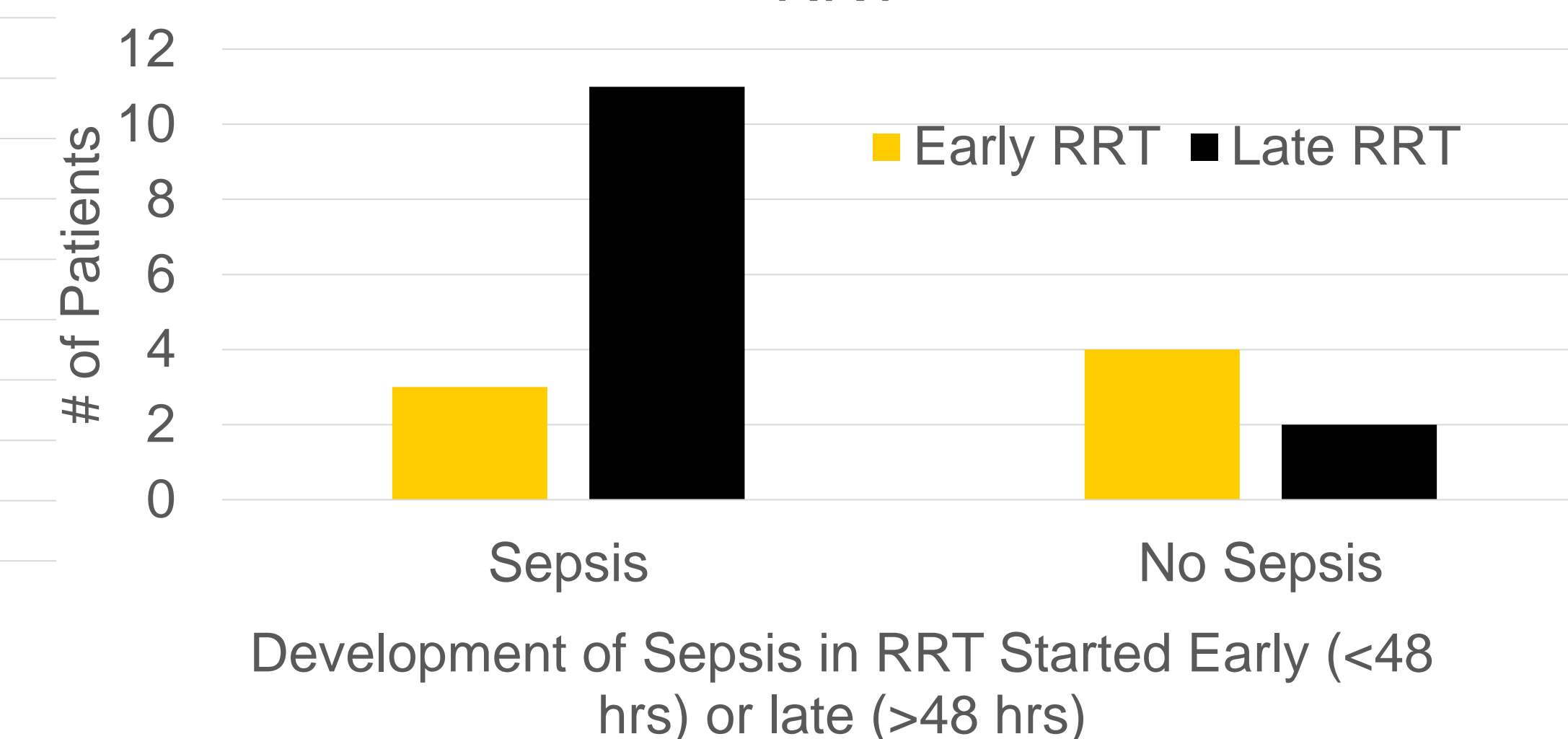
Dialysis at Discharge in Early vs Late AKI



Mortality in Early vs Late AKI



Development of Sepsis in Early vs Late RRT



## Case Example



- ❖ 45 yo M, 84% TBSA burns in work related injury
- ❖ Developed AKI <48 hrs from admission
- ❖ Hospitalized 340 days, discharged on dialysis
- ❖ Kidney recipient from living, non-related donor 2 years later

## Conclusions

- ❖ Positivity for alcohol on admission may be a negative predictor for development of early AKI.
- ❖ Larger TBSA may predict early AKI.
- ❖ Mortality is higher for patients with early AKI; however, the need for dialysis at discharge is higher in patients with late AKI.
- ❖ Our data further suggest that early initiation of RRT is negatively correlated with the development of sepsis.

## Applicability to Practice

- ❖ A deeper understanding of associations and causality of early vs late onset AKI in burn patients will help guide further management and improve outcomes.
- ❖ An ability to predict long term outcomes may help guide management in terms of early transplant listing, etc.