

# Hemodialysis Session Length Has a Dose Relationship With Hazard Rates of Cause-Specific Hospitalization and Mortality

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# Disclosures

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# Introduction

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- **Prior research has shown that reduced hemodialysis session length is associated with increased mortality and morbidity.<sup>1,2</sup>**
- **Little is known about its association with cause-specific events.**

1. Weiner DE, Tighiouart H, Amin MG, Stark PC, MacLeod B, Griffith JL, Salem DN, Levey AS, Sarnak MJ. Chronic kidney disease as a risk factor for cardiovascular disease and all-cause mortality: A pooled analysis of community-based studies. *J Am Soc Nephrol* 15: 1307–1315, 2004.
2. Lowrie EG, Li Z, Ofsthun N, Lazarus JM. Measurement of dialyzer clearance, dialysis time, and body size: death risk relationships among patients. *Kidney Int* 66: 2077-84, 2004.

# Objective

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**To estimate the association between duration of hemodialysis and rates of cardiovascular events and death.**

# Methods

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- **Sources:**
  - **Electronic medical records (01 Jan 2007–31 Dec 2008) of patients incident to in-center hemodialysis at a large dialysis organization**
  - **United States Renal Data Systems (USRDS) claims data**
- **Patients were those who remained on in-center hemodialysis for  $\geq 181$  days and had Medicare or Medicaid as their primary insurer**

# Methods

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- **Exposure Assessment Period: Dialysis session length assessed over dialysis days 91-180**
- **Dialysis session length categories were:**
  - $\leq 179$  minutes
  - 180-194 minutes
  - 195-209 minutes
  - 210-224 minutes
  - 225-239 minutes
  - $\geq 240$  minutes

# Outcomes

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- **All-cause mortality**
- **Cardiovascular mortality**
- **Myocardial infarction**
- **Hospitalization for heart failure and/or fluid overload**
- **Post-dialysis fluid-related hospitalization**
- **Composite endpoint for hospitalization from heart failure/fluid overload or cardiovascular mortality**
- **Atrial fibrillation**

# Results

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- **N = 39,497 patients**
- **All-cause mortality and cardiovascular mortality were greatest for patients receiving sessions of mean length < 180 min**
- **All-cause mortality was lowest for those receiving mean sessions  $\geq$  240 min**

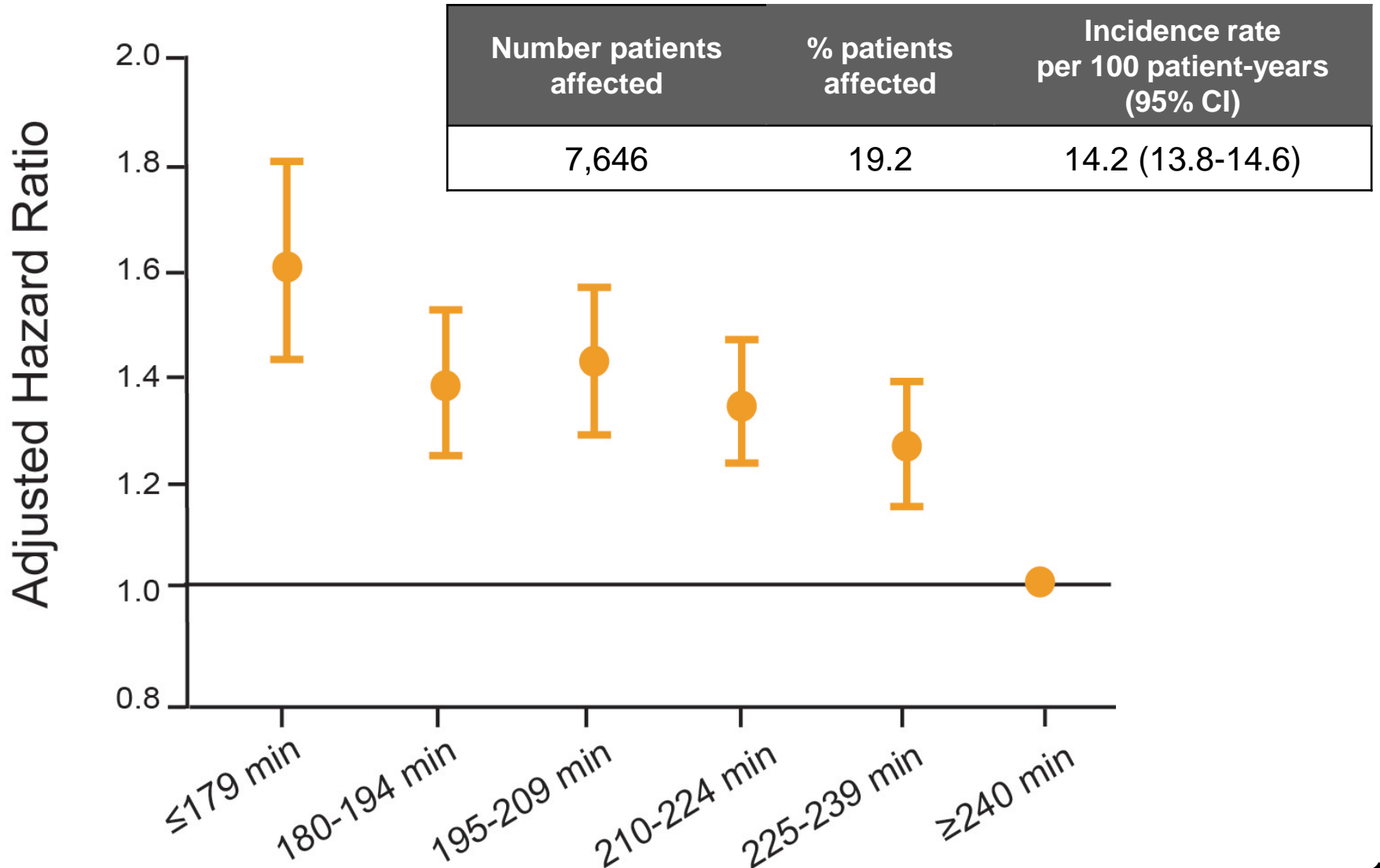


# Results

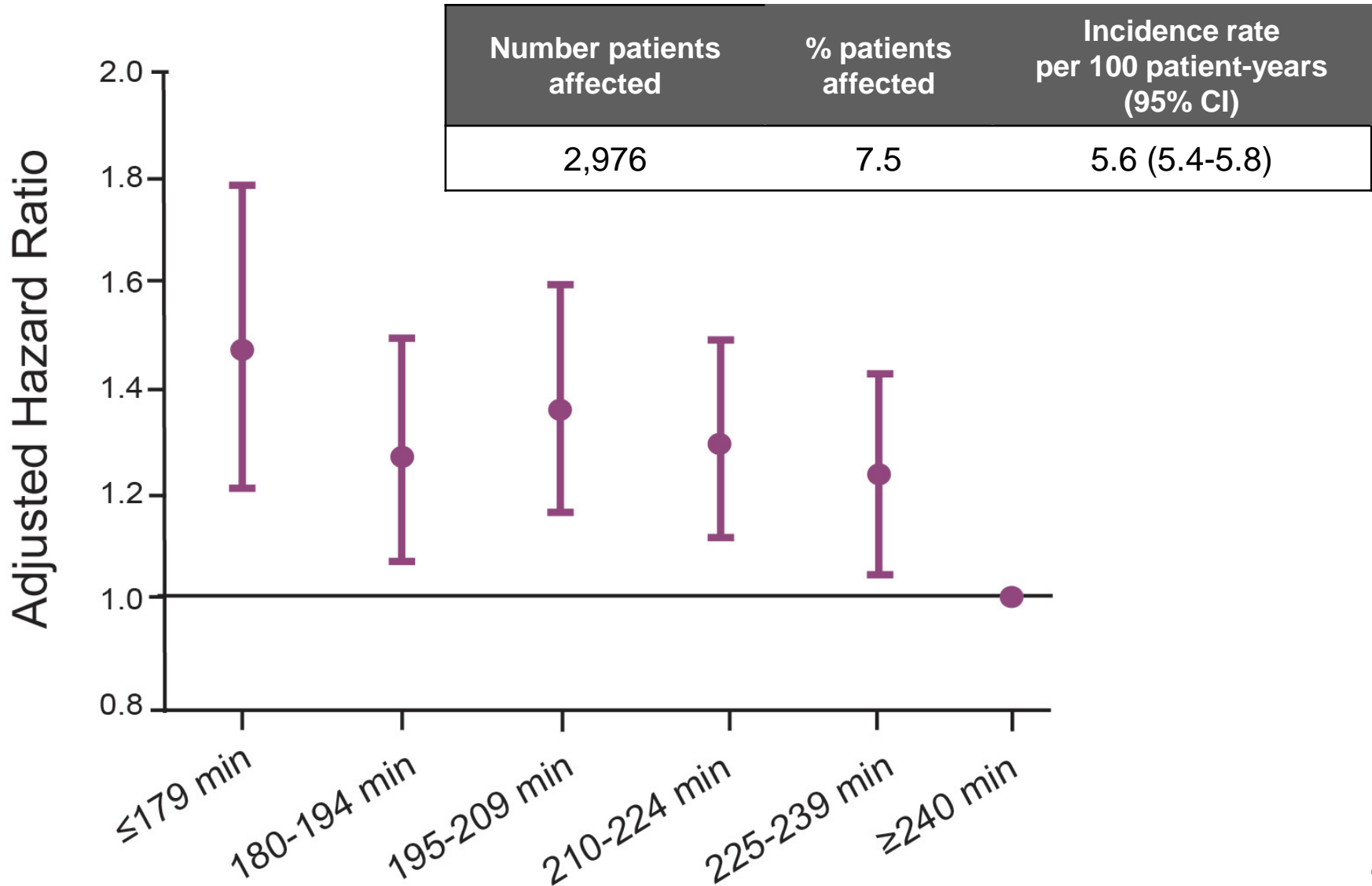
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- **A dose effect was observed with**
  - Heart failure/fluid overload composite
  - Hospitalization for heart failure
  - Hospitalization for myocardial infarction
- **Significant associations were not measured with**
  - Post-dialysis fluid-related hospitalizations
  - Atrial fibrillation

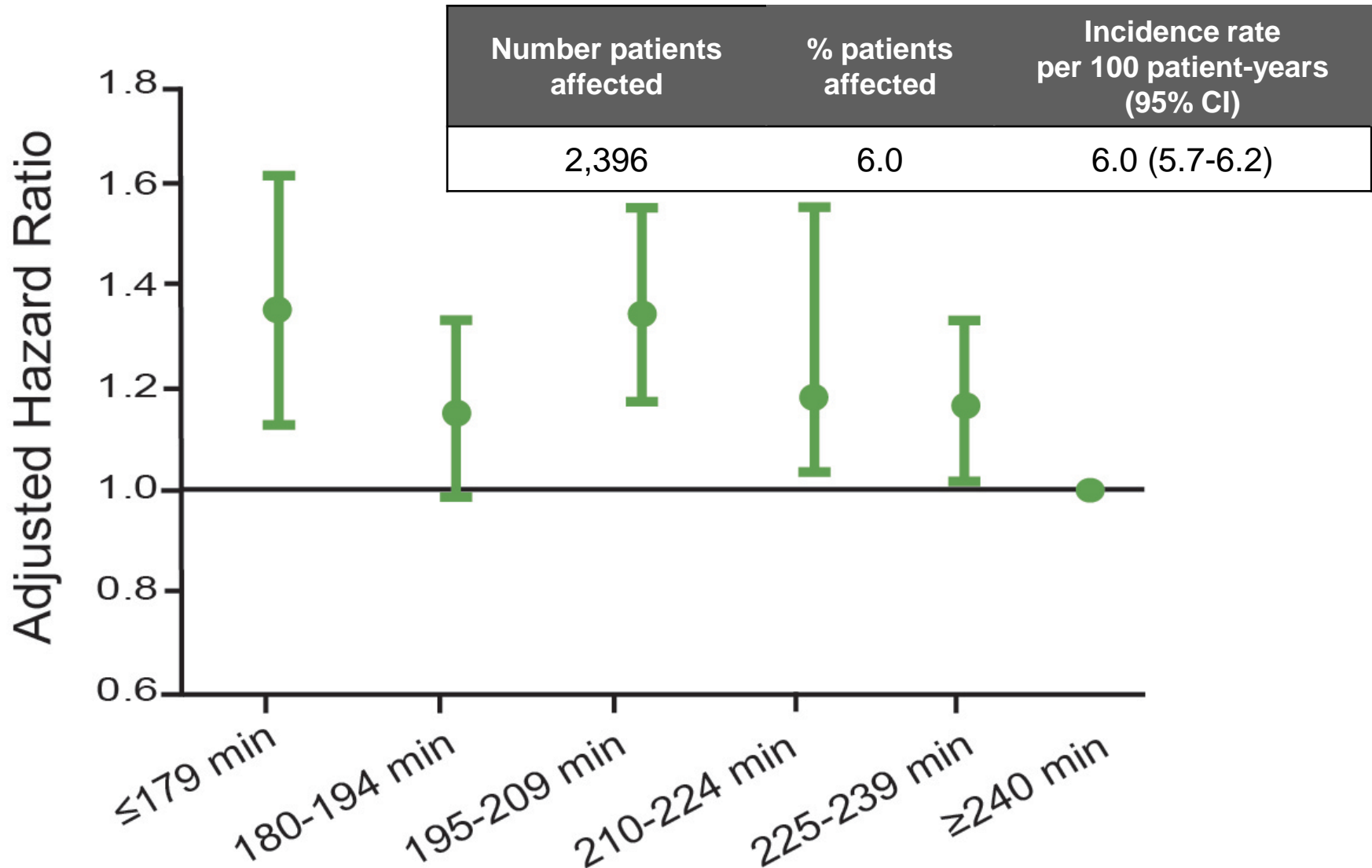
# All-Cause Mortality



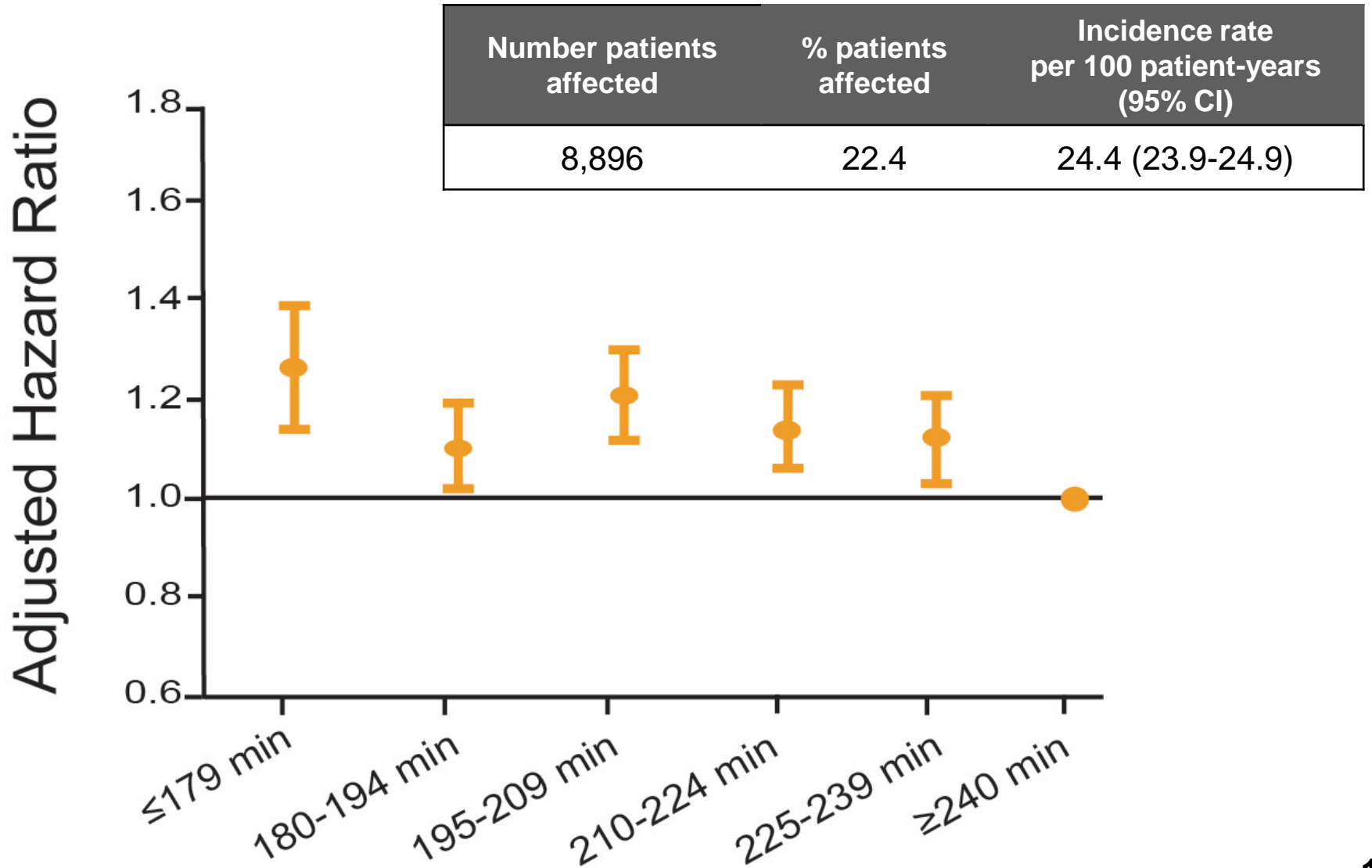
# Cardiovascular Mortality



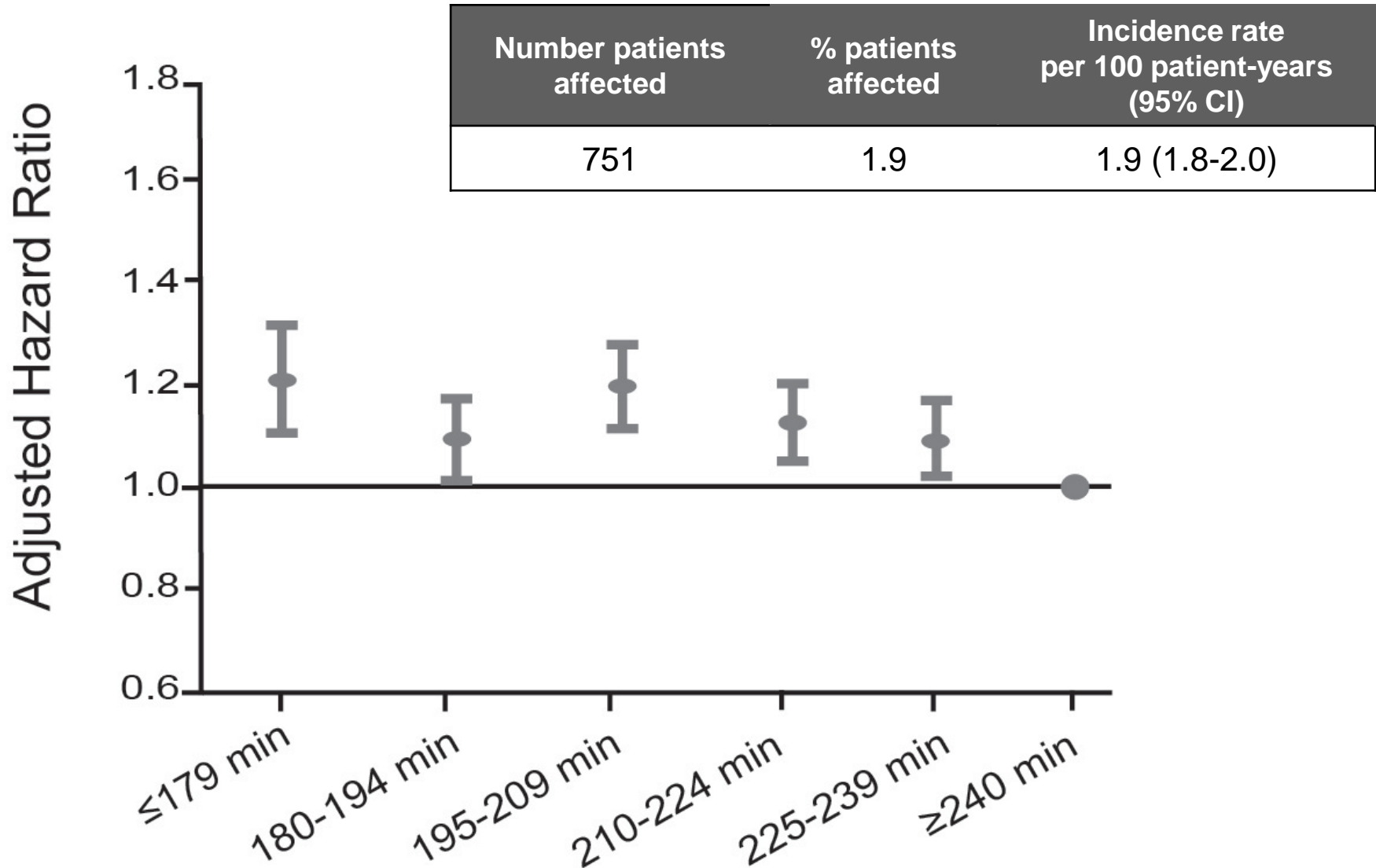
# Myocardial Infarction Risk



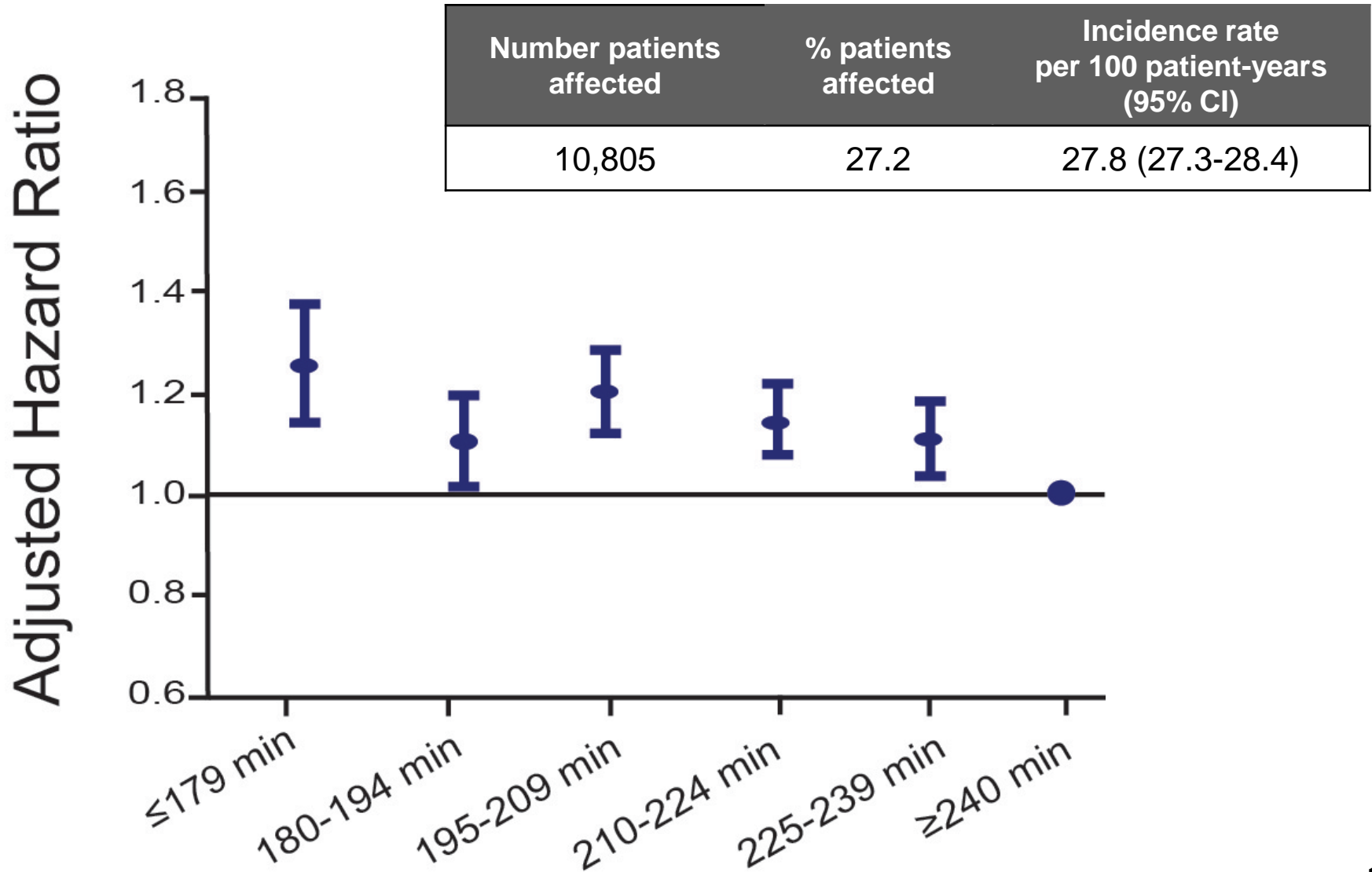
# Heart Failure Risk



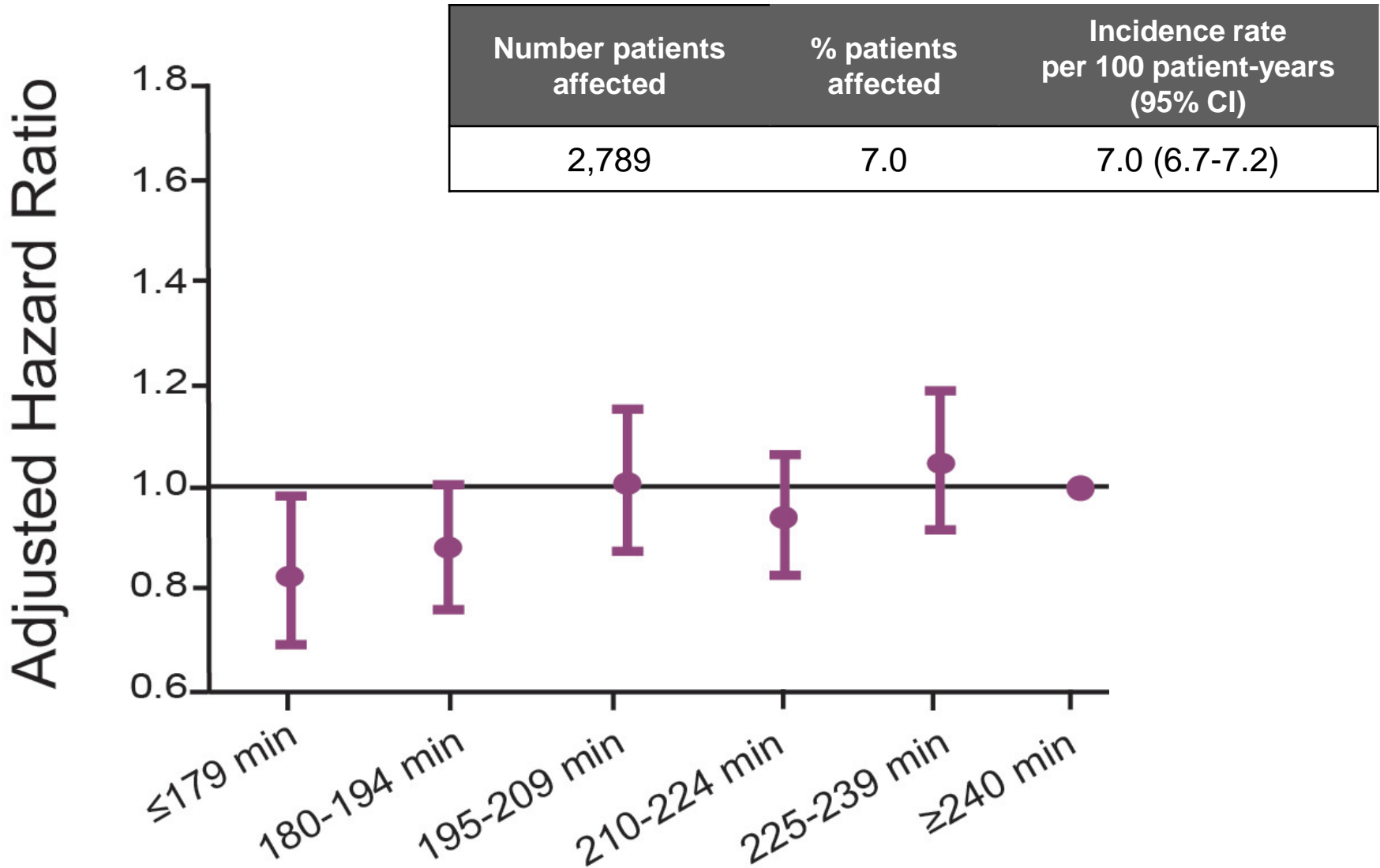
# Post-Dialysis Complications



# Composite Endpoint



# Atrial Fibrillation Risk





# Conclusion

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- **These findings represent additional evidence that in the context of thrice-weekly in-center hemodialysis, longer treatments are associated with improved patient health and survival.**
- **Randomized trials are needed to test causality.**

# Questions and Answers