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Relation of Catheterization to Mortality— An Example Study

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An example study

- Indwelling arterial catheters (IAC)
 - Hemodynamic monitoring
 - Blood gas analysis



An example study

- Indwelling arterial catheters (IAC)
 - Hemodynamic monitoring
 - Blood gas analysis
- Risks
 - Bloodstream infections
 - Vascular complications
- Is it associated with mortality?



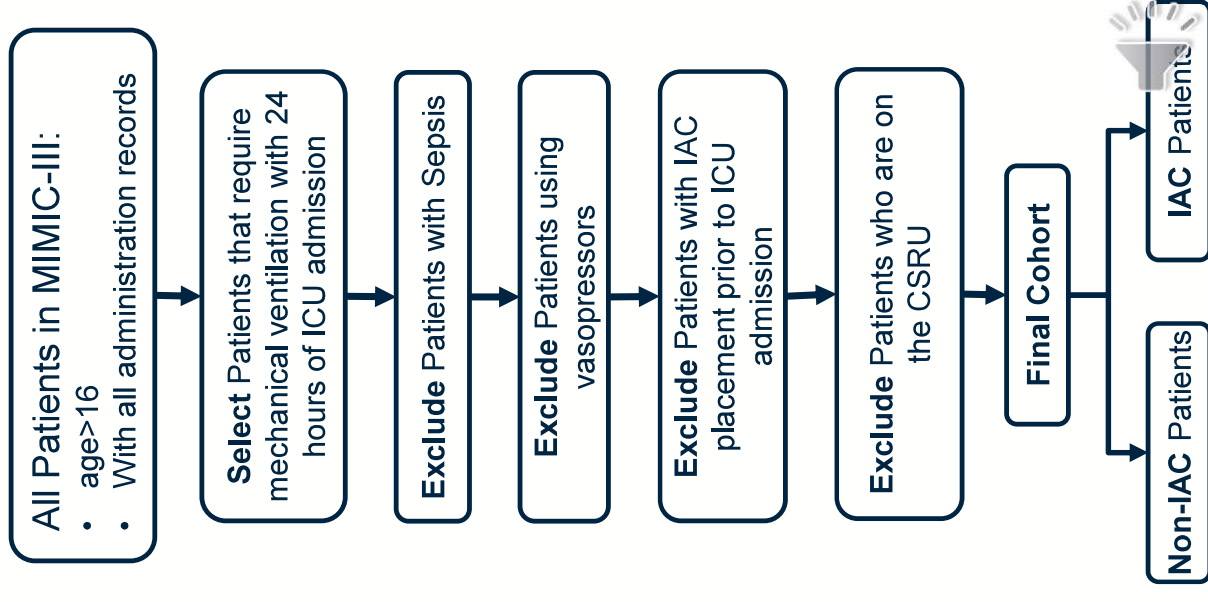
An example study

- Indwelling arterial catheters (IAC)
 - Hemodynamic monitoring
 - Blood gas analysis
- Risks
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- Is it associated with mortality?
 - Patient selection criteria
 - Clinical variables selection criteria



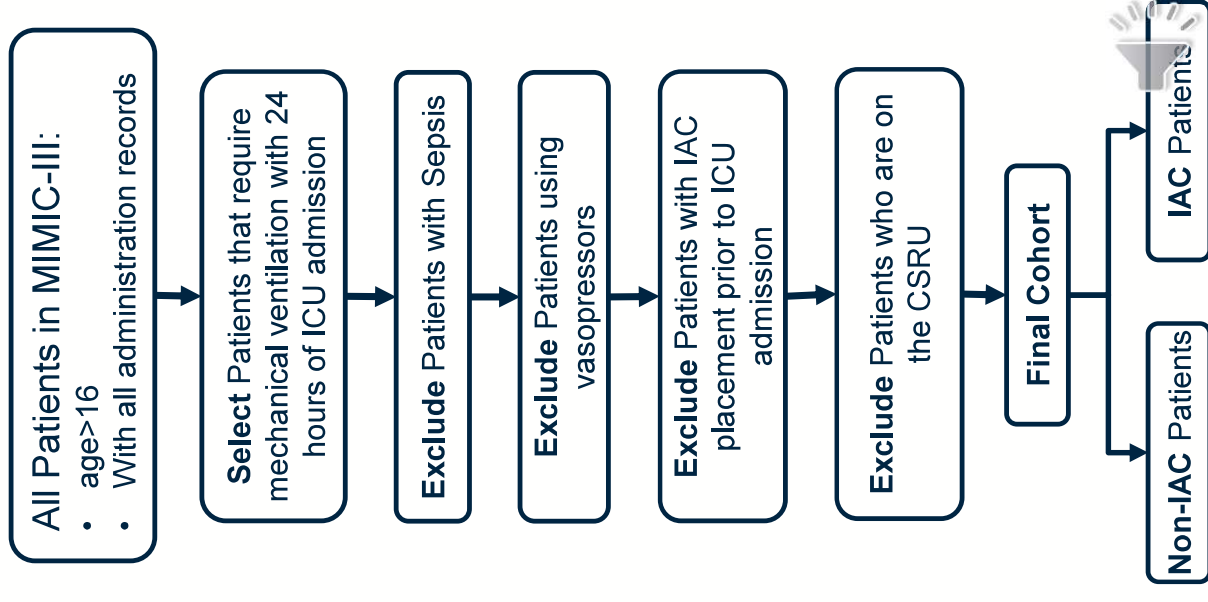
IAC Relation to Mortality

- Patient Selection Criteria
 - Require mechanical ventilation
 - Exclude confounding factors
 - Exclude patients using vasopressors
 - Exclude patients with IAC prior to ICU admission
 - Exclude patients with sepsis
 - Exclude Patients on CSRU
 - Control Group: Non-IAC patients



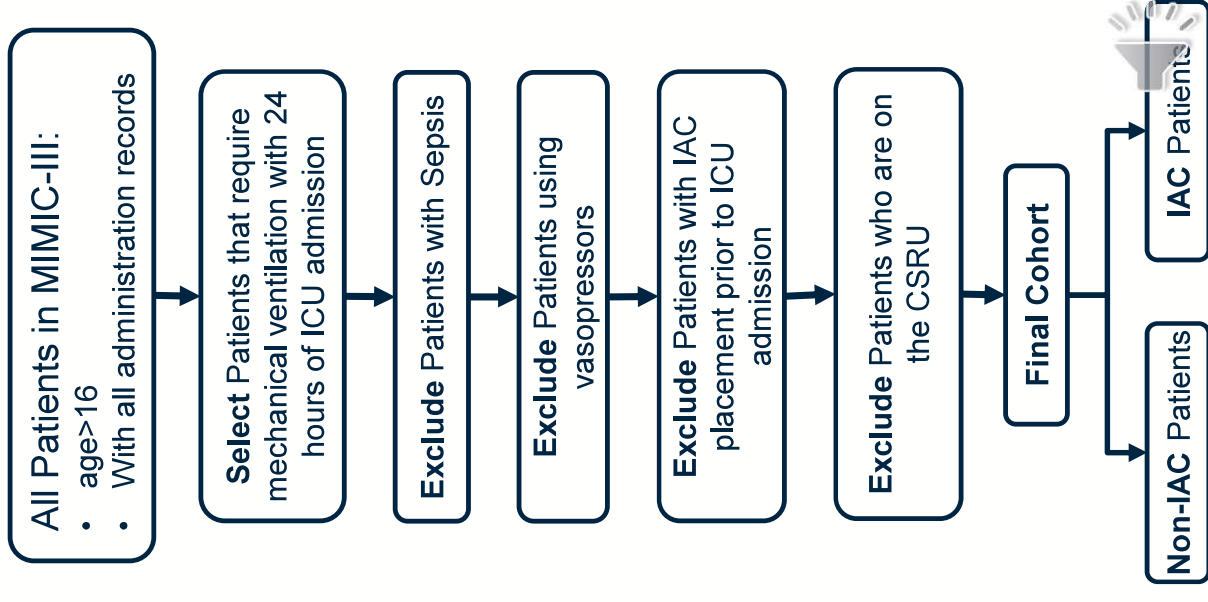
IAC Relation to Mortality

- Outcomes
 - 28-day mortality (Primary Outcome)
 - Length of Stay (Secondary Outcome)



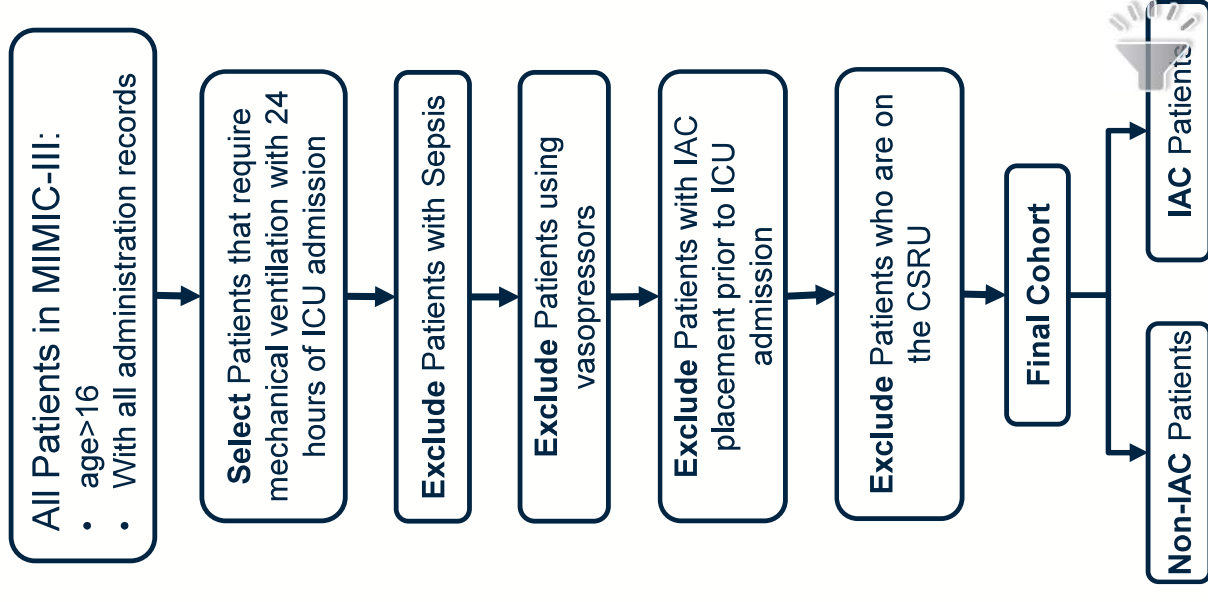
IAC Relation to Mortality

- Outcomes
 - 28-day mortality (Primary Outcome)
 - Length of Stay (Secondary Outcome)
- Model
 - Patients Demographics
 - Comorbidities
 - Vital signs
 - Laboratory Results



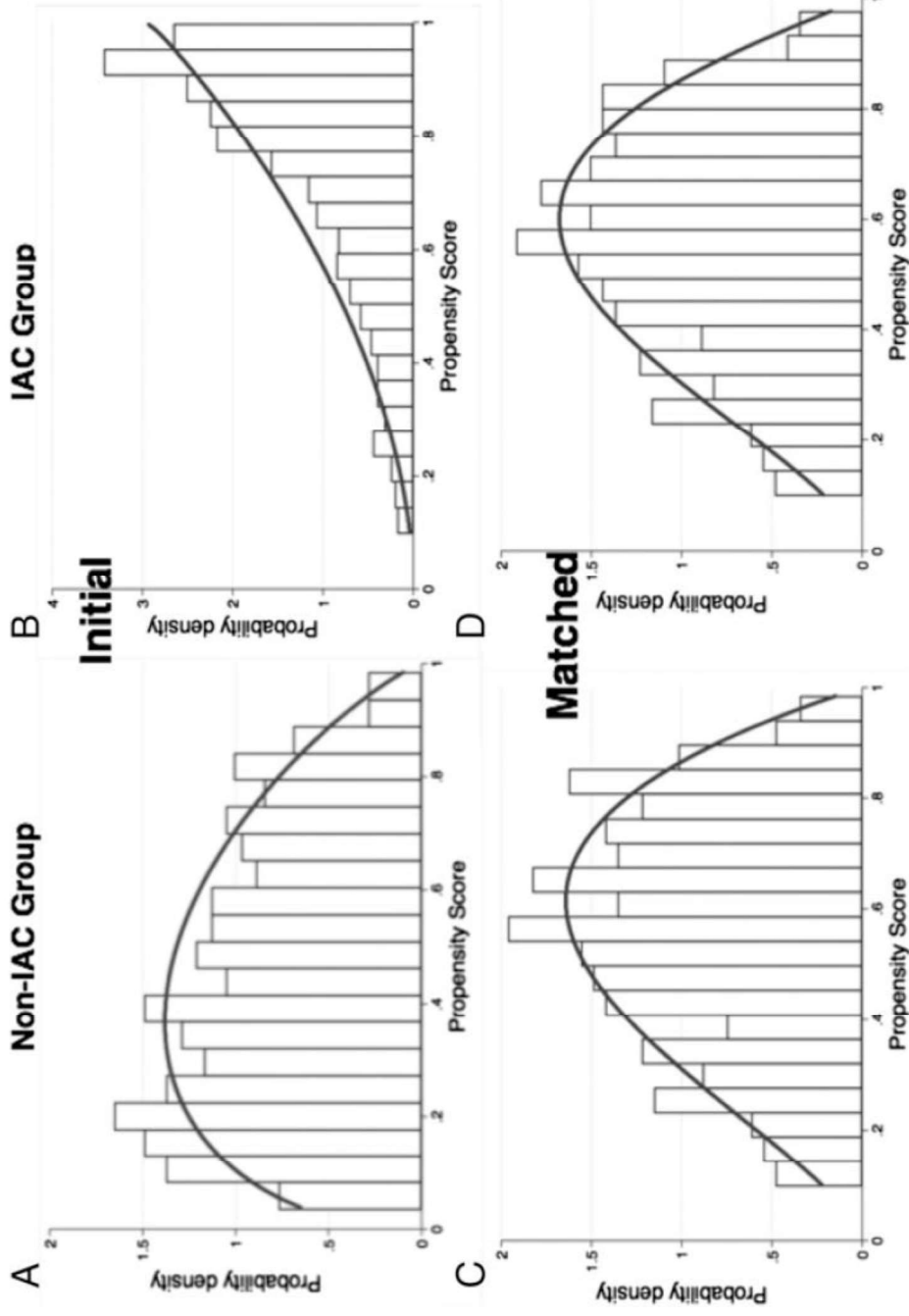
IAC Relation to Mortality

- Primary Outcome
 - 28-day mortality
 - Blood gas analysis
- Model
 - Patients Demographics
 - Comorbidities
 - Vital signs
 - Laboratory Results
- Propensity for IAC placement
 - McNemar test



Differences

- No significant differences in 28-days mortality
- Lower likelihood of discharge from ICU within 28-days



Hsu et al. The Association Between Indwelling Arterial Catheters and Mortality in Hemodynamically Stable Patients With Respiratory Failure A Propensity Score Analysis, Chest, 2015.



Summary

- An example of a clinical study that uses MIMIC to understand the relationships between an intervention and mortality
- Flowchart of patient selection criteria
- Outcomes definitions
- Model development



References

- Johnson et al. The MIMIC Code Repository: enabling reproducibility in critical care research, Journal of the American Medical Informatics Association, 2018.
- Hsu et al. The Association Between Indwelling Arterial Catheters and Mortality in Hemodynamically Stable Patients With Respiratory Failure A Propensity Score Analysis, Chest, 2015.