

# PhysioNet Q&A; Summary – PDF Submission Ready

[PhysioNet / CITI Training Flow \[Link\]](#)

[NOTE Data + AKI MIMIC-IV Linkage \[Link\]](#)

## 1. PhysioNet / CITI Training

User completed 'Data or Specimens Only Research' course with HIPAA module to access PhysioNet data.

Quiz completed; certificate & training report obtained.

Submission status: Awaiting review.

Topics: IRB, Belmont Report, Privacy, Research Ethics, COI.

## 2. Research Idea & Design Discussion

Initial idea: causal inference between drug administration (IV fluids) and clinical outcomes.

Due to data access delay, alternative analysis considered: vital signs-centered variables.

Study design flow:

- Exposure: target vitals (MAP  $\geq 65$ mmHg, HR  $\leq 100$ bpm, Shock Index)
- Outcome: 28-day mortality, ICU-LOS, AKI, lactate clearance
- Covariates: fixed (age, sex, admission type), time-varying (lactate, creatinine, vasopressor, sedation)
- Causal methods: MSM + IPTW, TMLE, G-formula, mediation, CATE
- Sensitivity: thresholds, missing data handling, negative control
- ETL: resampling, outlier removal, target detection, variability calculation.

## 3. AI Agent Paper Preparation

Use above design & data for AI agent paper.

Submission evidence: Q&A; flow, study design plan, CITI certificate & report.

## 4. Q&A; Flow Summary

- CITI Training: course selection, CE credit, institutional email, HIPAA included, quizzes answered.
- Research design: alternative variables considered while awaiting approval, vital vs fluids, target achievement, variability, Shock Index, IPTW/MSM, TMLE, mediation, CATE, ETL & analysis windows, sensitivity.

## 5. PhysioNet Drug Causal Candidates

DataSet | Features | Drug Info | Outcome | Pros | Cons

MIMIC-IV Clinical | ICU EHR 2008-2019 | Prescription timing/dose | Mortality, vitals, labs, complications | Large sample, time-series | ICU bias

eICU | Multi-hospital ICU EHR | Prescription/dose | Mortality, complications, labs | Multi-hospital | ICU only

MIMIC-IV-ED | ER patients | Partial drug record | Admission/Discharge, mortality | Acute response | Long-term follow-up limited

MIMIC-IV + Note | Text included | Structured + unstructured drug info | ADR, side effects | Detect adverse events | NLP needed

MIMIC-IV + Waveform | Vital & ECG signals | Pre/post drug effect | HR/BP changes | Immediate drug effect | Large size, preprocessing needed

HiRID | Swiss ICU data | Prescription/dose | Vitals, mortality | External validation | Different variable definitions

## 6. Data Selection Guidance

Research goal: Acute → Waveform/ED, Long-term → MIMIC-IV Clinical, External validity → eICU/HiRID.

Drug scope: ICU only vs general.

Causal methods: longitudinal/time-varying → MIMIC-IV/eICU, static → mostly any.

Data access: some require DUA.

Summary: any dataset with Treatment-Outcome-Confounders sufficient.