Simulation Data Description

Overview of Requirements

1. **Simulation Parameters:**
   - **Subjects:** 3000
   - **Dosing:** 1000 mg every 12 hours for 14 days (total 28 doses)
   - **Random Variables:**
     - Sex: Binomial distribution
     - Age: Normal distribution
     - Weight: Normal distribution
     - Creatinine: Normal distribution
2. **Data 1 (Ground Truth):**
   - Columns: `ID`, `TIME`, `TAD`, `AMT`, `DV`, `SEX`, `AGE`, `WT`, `Cr`
   - DV values: At 0.1-hour intervals from 0 to 372 hours
3. **Data 2 (Observation Data):**
   - Columns: Same as Ground Truth
   - DV values: Only at 72, 144, 216, and 288 hours

1. Age

- **Mean**: 55 years
- **Standard Deviation (SD)**: 20 years
- **Range**: 18–90 years
  - Vancomycin is commonly used in adults, including older adults, due to its effectiveness in treating serious bacterial infections.

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2. Weight

- **Mean**: 70 kg

- **Standard Deviation (SD)**: 15 kg
- **Range**: 40–120 kg
    - Weight distribution should cover a wide range to accommodate both underweight and obese individuals, as vancomycin dosing is weight-based.

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3. Serum Creatinine (as a marker of kidney function)

- **Mean**: 1.0 mg/dL
- **Standard Deviation (SD)**: 0.3 mg/dL
- **Range**: 0.6–2.5 mg/dL
    - Normal kidney function is usually associated with serum creatinine levels around 0.6–1.3 mg/dL, but patients requiring vancomycin often have varying degrees of kidney function. Including higher creatinine levels reflects individuals with renal impairment.