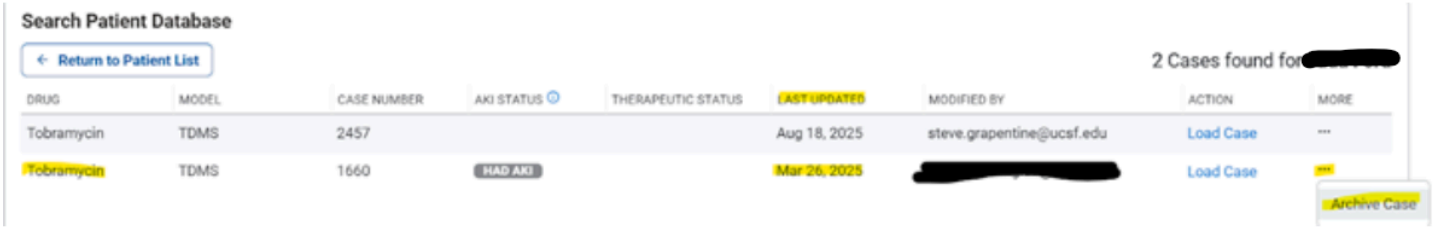
Bayesian TDM Job Aid: Aminoglycosides & Vancomycin (Pediatric)

https://app.precisepk.com/login

Searching for a Patient

- If the case is older than 2 weeks, select “Create New Case” and archive the older one.
- If the case is less than 2 weeks old, select “View Cases” and update the existing information.

Archiving an Older Case



Entering Patient Information

- Enter all pertinent patient information, including serum creatinine (Scr).

Drug Monitoring

Enter the required information in the **Drug Monitoring** tab.

Aminoglycosides

- Default targets: focus on **peak levels**.

Suggested PrecisePK peak targets (defaulted):

- Amikacin: 40 mg/mL
- Gentamicin: 25 mg/mL
- Tobramycin: 25 mg/mL
- **AUC targeting is not recommended** for aminoglycosides in pediatric patients at this time.
- Do **not set a specific trough target**:

    - Troughs are typically close to 0 mg/mL
    - Entering a trough target may cause PrecisePK to suggest unnecessarily high doses

Vancomycin

- Default target: focus on **AUC-based monitoring (24-hour AUC)**.

Suggested PrecisePK $AUC_{0–24}$ target (defaulted):

- Vancomycin: 450 mg·h/L

For any **aminoglycoside level** reported as below the lower limit of quantification (LLOQ), enter **one-half of the LLOQ** as the numeric value.

- *Example:* if the result is "< 0.5 mcg/mL," enter **0.25 mcg/mL**

When entering **dose history**:

- **Aminoglycosides:** include only the **three most recent doses** prior to a level measurement
    - Bayesian modeling gives the most weight to recent data
    - Most doses older than ~3 days are not clinically relevant, since aminoglycoside concentrations generally fall to ~0 mg/mL between doses
- **Vancomycin:** include **all doses within the current dosing regimen leading up to the level(s)** (typically the last several doses)
    - Do **not** include doses from prior regimens or >48 hours before the level unless clinically relevant
    - Ensure dose timing and infusion durations are entered precisely

⚠️ Safety Note

- Always confirm you are working in the correct aminoglycoside drug module (Amikacin, Gentamicin, Tobramycin, or Vancomycin).

- Verifying the correct drug module before entering data helps prevent dosing errors and supports patient safety.

Steady State Tab

- Enter all patient-specific information, ensuring the **infusion duration is accurate**:
    - Aminoglycosides: typically **30 minutes**
    - Vancomycin: typically **1 hour** (may extend to **2 hours** for **vancomycin infusion reactions**)

Aminoglycosides

- PrecisePK will calculate and display **extrapolated peak and trough values**:

    - The **extrapolated peak** = concentration **30 minutes after the infusion ends**
    - This is the value used for **peak targeting**

Vancomycin

- PrecisePK will calculate and display **$AUC_{0–24}$** and predicted concentrations:
    - Use **$AUC_{0–24}$** for dosing decisions rather than peak/trough targets
    - Accurate **infusion duration and level timing** are critical for reliable AUC estimates

When to Repeat Levels

Aminoglycosides

- If the patient is within the target range and renal function remains stable, repeat **trough monitoring ~once per week**
- For **trough-only monitoring**, the goal is to confirm drug clearance
    - This value does **not** need to be entered into PrecisePK
- If resuming two post-dose levels after a period of trough-only monitoring:
    - Enter only the **three most recent doses** prior to those levels
    - Do **not** back-enter older doses

Vancomycin

- If the patient is within the target range (**$AUC_{0–24}$**) and renal function remains stable, repeat levels **~1–2 times per week**
- Use levels to reassess **$AUC_{0–24}$**, not trough-only monitoring
- When entering new levels after a prior assessment:
    - Include **recent doses from the current regimen only**
    - Do **not** back-enter outdated or prior-regimen doses

Additional Information

For step-by-step guidance on using PrecisePK, refer to the **PrecisePK online tutorials and training materials**

These resources include:

- Platform navigation
- Entering patient data and dose history
- Interpreting Bayesian outputs (e.g., AUC, predicted levels)

A **video tutorial section** is also available for quick, practical demonstrations of key workflows

Access the training materials here