Stanford Children's Health | Lucile Packard Children's Hospital Stanford

Guidelines for Vancomycin Use in Obstetric Patients

Approved: 11/16/2023 (P&T)
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INDICATIONS

Vancomycin is appropriate for obstetric patients in the following scenarios:

1. Intrapartum prophylaxis (at least 4 hours prior to delivery) for Group B Streptococcus (GBS) colonized patient with a severe penicillin allergy AND isolate is resistant to clindamycin or the susceptibility is unknown (per 2022 antibiogram, 100% of GBS was penicillin susceptible; 50% clindamycin susceptible):
   a. May also give for Preterm Premature Rupture of Membranes (PPROM) under same conditions
2. Chorioamnionitis / Intraamniotic infection in a patient with: severe penicillin allergy with GBS colonization and isolate is resistant to clindamycin or susceptibility is unknown OR known methicillin-resistant *Staphylococcus aureus* (MRSA) colonization OR Enterococcus coverage
3. Perioperative prophylaxis for cesarean delivery if colonized with MRSA (in combination with other perioperative antibiotics)
4. Suspected (concern for sepsis)/Documented infection caused by resistant gram-positive bacteria, e.g., MRSA, methicillin-resistant coagulase-negative staphylococcus

Vancomycin is NOT recommended for the following scenarios:

1. Routine GBS prophylaxis; antibiotic of choice is ampicillin
2. Perioperative prophylaxis without allergy or presence of resistant bacteria; antibiotic of choice is cefazolin)

INITIAL DOSING (based on actual body weight)

- **GBS (with indications listed above, including PPROM and chorioamnionitis):** Vancomycin 20 mg/kg (max 2 gm) load, followed by 1 g IV every 12 hours
- Perioperative prophylaxis for **MRSA colonized patient with cesarean delivery: Vancomycin 15 mg/kg (max 2 gm) as a single dose** in combination with cefazolin unless severe penicillin allergy, then in combination with other perioperative antibiotics
- **Sepsis or chorioamnionitis or endometritis with concern for MRSA:** Initiate vancomycin 20 mg/kg (max 2 gm) every 12 hours; evaluate AUC-target, model-informed precision dosing through InsightRX and clinical judgement

GOAL VANCOMYCIN EXPOSURE – AUC_{24} vs trough level

- For GBS, ACOG recommends **trough target >10 mcg/mL at steady state** (tr_{ss} = serum concentration drawn at end of dosing interval **after the third dose) based on MRSA** targets**; a trough target >10 mcg/mL has never been shown to be needed for GBS and there are no reports of vancomycin resistance to GBS.** The vancomycin MIC_{90} = 1 mg/L for GBS.
- **AUC_{24} of 400–600 mg*hr/L** is the best predictor of positive outcomes for **invasive MRSA** infection
- Due to limited population PK models (popPK) for vancomycin in obstetric patients, tr_{ss} and AUC_{24} predictions may not be as accurate using model-based Bayesian forecasting via **InsightRX®. Consider model fit and predictions carefully.**
- tr_{ss} >15-20 mcg/mL and AUC_{24} > 800 mg*hr/L are associated with **acute kidney injury (AKI)**.

Indication	Suggested target	Considerations
GBS	tr_{ss} 5 – 15 mcg/mL	No TDM needed if vancomycin course is < 48 hours and normal renal function
MRSA colonized	AUC_{24} 400 – 600 mg*hr/L	tr_{ss} < 10 mcg/mL may achieve the AUC_{24} goal If concern about model fit/predictions, consider tr_{ss} 10 – 20 mcg/mL
Serious MRSA infection		

THERAPEUTIC DRUG MONITORING (TDM)

- If the patient is stable with normal renal function (serum creatinine, SCr < 1.2), only perform TDM if the anticipated duration of vancomycin therapy is > 48 hours or if use is post-partum.
- If unstable, abnormal renal function (SCr ≥ 1.2), critically ill patient, or worsening renal function, perform TDM sooner (i.e., after first or second dose).
- TDM should be a trough concentration, tr_{ss} (i.e., 30 minutes before the next scheduled dose) to limit concern for obstetric patients' poor representation in the popPK models available in InsightRX®.

DOSE ADJUSTMENT BASED ON TDM

- **Use InsightRX® to inform model-based dose adjustments in conjunction with clinical judgement.**
  - Re-evaluate indication during review (e.g., new target, no longer indicated).
- Review 'Model Fit' indicator in InsightRX®.
  - 'Intermediate' or 'Poor' fits should prompt review of data accuracy and caution interpreting predictions.
  - Additional TDM will be helpful if poor fit; consider getting two concentrations within the same dosing interval.
- Reassess kidney function, toxicity, and risks.

FOLLOW UP MONITORING

- Renal function (e.g., SCr, BUN, urine output) should be monitored every 24 - 48 hours until stable vancomycin dosing is achieved.
- Consider rechecking vancomycin TDM and/or SCr within 24 hours of the following:
  - Change in vancomycin dose
  - Change in renal function/urine output or dialysis mode
  - Addition of nephrotoxic medication, including aminoglycosides (refer to NINJA)
  - Surgical procedure or major event (e.g., ischemic event, cesarean section)
  - 'Poor' model fit within InsightRX®
- If vancomycin is continued post-partum, due to fluid shifts and acute changes in PK, perform vancomycin TDM along with SCr for close monitoring.
- Recheck SCr every day after 3 days of vancomycin while inpatient, per NINJA protocol.
- Frequency of monitoring should be based on clinical judgment, however monitoring of vancomycin serum concentration in stable patients should be at least once weekly.

REFERENCES

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