

# Thrombocytopenia Can be Avoided By Monitoring Linezolid Blood Levels – Enabling Long-Term Linezolid Use for the Successful Treatment of Refractory Pyogenic Spondylodiscitis

**Medical history** A male in his 50s (height 172 cm, weight 78 kg, S-cr 0.34 mg/dL) was hospitalized with fever and a diagnosis of **pyogenic spondylodiscitis**.

**Day 1** During incisional drainage, **Methicillin-resistant Staphylococcus epidermidis (MRSE)** was detected in the incision. Treatment with **600 mg of intravenous linezolid (LZD) two times per day** started. (LZD MIC ≤ 1).

**Day 138** Patient was placed on a continuous rotation of MRSA antibiotics due to LZD-induced thrombocytopenia, but no improvement was observed. Patient switched to LZD with **reduced** dosage of 600 mg once per day.

**Day 148** LZD blood concentration was measured due to thrombocytopenic tendency and found an AUC<sub>24</sub> of 299.7 µg·h/mL, which was high despite the dosage reduction.  
 - Average AUC<sub>24</sub> for a healthy adult on twice daily 600 mg: 220 µg·h/mL  
 - When AUC<sub>24</sub> ≥ 280 µg·h/mL, risk of thrombocytopenia is 50%  
 Pea F et al. J. Antimicrob. Chemother. 2012, 67: 2034-42.

→ Intravenous LZD dosage was **reduced** to 400 mg once daily.  
 → Patient was then switched to oral medication at the same dosage.

**Day 184** → Oral LZD was **reduced** to 300mg.

**Day 188** An LZD blood concentration test showed AUC<sub>24</sub> was 127.2 µg·h/mL, within effective range (AUC<sub>24</sub>/MIC ≥ 100), so the **same dosage was continued**.

**Day 203** The patient was transferred to another hospital with no thrombocytopenia with the same LZD dosage.

- When LZD is administered for 14 days or longer, thrombocytopenia risk increases.
- The LZD package insert states no dosage adjustments are required for patients with impaired renal function.
- However, some reports suggest dosages should be adjusted for patients with impaired renal function. Matsumoto K et al. Int. J. Antimicrob. Agents 2014, 44:242-7.
- In this case study, LZD blood concentration was high despite normal renal function. Dosage adjustment made it possible to avoid thrombocytopenia, continue long-term LZD administration, and provide successful treatment.

**Beware of thrombocytopenia when administering LZD.**  
 When long-term administration is necessary, it is possible to avoid thrombocytopenia with proactive therapeutic drug monitoring (TDM)

