

TDM Is Not Only for Safety, but for Ensuring Effectiveness

Medical history

A 64-year-old male was hospitalized for myeloma. He began treatment with anticancer drugs and was scheduled to begin treatment with anticancer drugs and autologous stem cell transplantation.

Clinical course

Day 1 High dose cyclophosphamide (HD-CY) therapy started.

Day 15 The patient's neutrophils were $0 \times 10^2/\mu\text{L}$ and he had a fever of 39°C. Blood, sputum, and urine cultures were collected. Treatment with 2g of intravenous cefepime two times per day started.

Day 18 He continued to have a fever of 38°C. Methicillin-resistant *Staphylococcus epidermidis* (MRSE) was detected in his blood culture. He received 400 mg of teicoplanin every twelve hours two times, and was then placed on 400 mg of teicoplanin once per day.

Day 20 The patient continued to have a fever of 38°C. The physician consulted the pharmacist in charge of therapeutic drug monitoring (TDM). An increased dose of 600 mg three times followed by 500 mg once daily and a blood level measurement on Day 23 were recommended.

Day 22 The patient's general state improved. His fever fell to 36°C and he had increased food intake.

Day 23 His pre-dose blood level was 20 µg/mL, so it was recommended he stay on 500 mg of teicoplanin once per day.

Day 30 The patient's white blood cell count recovered, he recovered from neutropenia, and antimicrobial therapy was stopped.

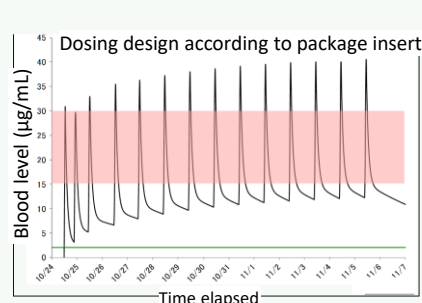
Making effective use of TDM to ensure appropriate anti-MRSA antimicrobial usage

- In addition to safety, TDM also contributes to effectiveness.
- It is recommended that TDM is used during teicoplanin and vancomycin therapy to optimize dosages.
- When blood levels are unavailable, initial dosing designs can be recommended according to population parameters.

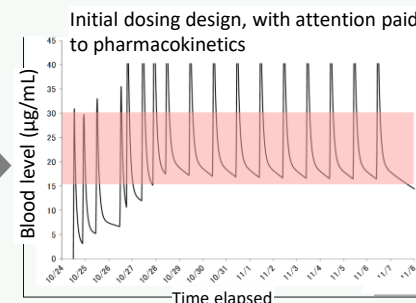
Characteristics of teicoplanin therapy

- Intravenous teicoplanin is an effective antimicrobial for MRSE and MRSA.
- When administering intravenous teicoplanin, it can be difficult to reach an effective blood level with dosages on the package insert.
- It is possible to reach the desired blood level quickly using TDM.

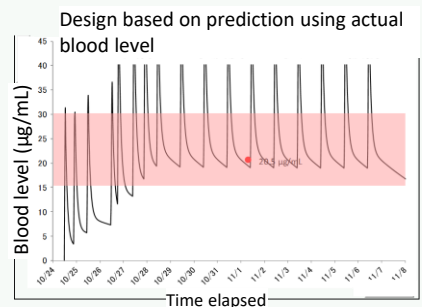
Dosing design and blood level changes in this case study



Blood levels not in effective range



Doses were added and the dosage was increased while paying attention to pharmacokinetics to reach and maintain effective levels



Actual blood level was within effective range at 20 µg/mL. Continuation of dosage was recommended. The patient's fever went down and his condition stabilized.

