

Intra-Operative Redosing of Antimicrobials

Background¹

The provision of antimicrobial surgical prophylaxis has been shown to decrease the rate of surgical site infections (SSI) for numerous procedures. Antimicrobials should be provided to provide adequate tissue levels at the time of initial incision and throughout the duration of the surgery. Intra-operative redosing may be required to ensure adequate serum and tissue concentrations of the antimicrobial if the duration of the procedure exceeds two half-lives of the drug or if there is excessive blood loss (>1500 mL) during the procedure. Redosing of antimicrobials is recommended to occur at intervals of 1-2 times the half-life of the drug. Redosing intervals should be measured from the time of administration of the preoperative dose, not from the beginning of the procedure.

Op-Time Redosing Alerts

A new process has been developed to automate and improve the process for perioperative antimicrobial redosing. Redosing reminders will appear to the anesthesia provider during cases as a pop-up alert. Alerts will fire based on the recommended redosing interval outlined in surgical prophylaxis protocol (**Table 1**). The alert will appear 20 minutes before the next dose is due, using the most recent documented administration as the start time. The anesthesiologist must acknowledge the alert by selecting one of the two options. If reordering of the antimicrobial is appropriate “Jump to Meds” should be clicked. The medications that are currently ordered will appear and the appropriate antimicrobial can be reorder with appropriate documentation. If “Snooze” is selected, the alert will re-fire in 20 minutes and will continue to do so until the antimicrobial is documented as administered.

Antimicrobial Redosing Intervals

The table below outlines the recommended redosing intervals that have been incorporated into the build for op-time redosing alerts. Please refer to the Antimicrobial Surgical Prophylaxis Protocol on the ASP website for more information. In patients with renal dysfunction decisions on redosing should be jointly made by anesthesia and pharmacy based upon type of procedure, case length, blood loss, and degree of renal dysfunction.

Table 1. Intra-Operative Redosing Guidance

Antimicrobial	Half-life with Normal Renal Function (h)	Half-life with End-stage Renal Disease (h)	Recommended Redosing Interval in Individuals with NORMAL Renal Function*
Ampicillin/sulbactam	0.8-1.3	unavailable	2 hours
Aztreonam	1.3-2.4	6-8	4 hours
Cefazolin	1.2-2.5	40-70	4 hours
Cefepime	2		4 hours
Cefoxitin	0.5-1.1	6.5-23	2 hours
Clindamycin	2-4	3-5	6 hours
Meropenem	1-1.5		4 hours
Metronidazole	6-8	7-21; no change	8 hours
Piperacillin/tazobactam	0.7-1.2		2 hours
Trimethoprim/sulfamethoxazole	8-12	20-30	12 hours

References:

1. Bratzler DW, Dellinger EP, Olsen KM, et al; American Society of Health-System Pharmacists; Infectious Disease Society of America; Surgical Infection Society; Society for Healthcare Epidemiology of America. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health Syst Pharm.* 2013 Feb 1;70(3):195-283.