

Therapeutic Drug Level Monitoring – Tips for nursing

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The pharmacy department has seen an increase in drug levels being drawn inappropriately from the patient's line in cases when a peripheral stick is required. Levels that are drawn incorrectly can cause unnecessary and inappropriate changes to patients' medication doses or frequency and result in increased lab draws. This is a quick refresher on the importance of drawing drug levels correctly. Examples of medications requiring therapeutic drug level monitoring include vancomycin, tobramycin, gentamicin, enoxaparin, cyclosporine, and heparin.

Vancomycin, Tobramycin, gentamicin, cyclosporine and heparin are a few examples of medications that routinely require therapeutic drug level monitoring. It is important to recognize that if an IV medication's drug level is drawn from the same line through which the drug is being administered, there is a greater likelihood that the level drawn will be falsely elevated (meaning it will report much higher than it actually is in the blood). The higher level is due to residual medication in the tubing. This can occur when the line is not thoroughly flushed prior to drawing the level and sometimes even with appropriate flushing. For example, IV cyclosporine adheres to IV tubing and therefore levels drawn from a line where IV cyclosporine has been given will *always* be falsely elevated despite adequate flushing. In a similar fashion, an anti-Xa level drawn for continuous heparin infusion monitoring should never be drawn from the same line that is infusing the heparin. Enoxaparin and heparin are both monitored via anti-Xa levels; if an anti-Xa level for either enoxaparin or heparin is drawn from the same line as heparin or a heparin flush, this will cause a falsely elevated level.

These labs should not be drawn through a central line (CVC or PICC). It is always preferable to draw drug levels via peripheral stick. If unable to obtain blood via peripheral stick, the next best option is to obtain the level from a line that the medication has not been administered through. If these two options have failed, the drug level can be obtained from a line that has been well flushed, but as stated above the level may come back falsely elevated. Please refer to the nursing policy "[CVL Care Including Insertion, maintenance and Removal](#)" for the detailed procedure on drawing blood from the line. Please contact your clinical pharmacist or call the central pharmacy with questions or concerns.

