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D-dimer

D-dimer is a degradation product of cross-linked fibrin which is produced *in vivo* during thrombosis and disseminated intravascular coagulation. D-dimer results are widely used by clinicians in the evaluation and exclusion of venous thromboembolism (VTE), where results below a threshold value may be used to exclude venous thromboembolism in a patient (i.e., negative predictive value). The reportable units of the D-dimer may vary by manufacturer but may include both Fibrinogen Equivalent Units (FEU) and D-dimer Units (D-DU). A critical concept of the conversion between these two units is that the mass of one unit of FEU is twice that of the mass of one unit of D-DU (1 FEU=2 D-DU). For example, 500 ng/mL FEU=250 ng/mL D-DU. Thus, for patient safety reasons, it is important that the laboratory correctly report the D-dimer results. If the D-dimer result is not calculated or reported appropriately, a patient with VTE could be erroneously discharged without treatment.

Recent analysis of CAP D-dimer proficiency testing showed results with very high CVs within method due to variation in units used (type and magnitude). Results from the analysis showed:

1. Among all methods for reporting the quantitative D-dimer, there is wide variation in the units reported.
2. Some laboratories may be using methods for excluding VTE that are inappropriate
3. As many as one third or more of laboratories using quantitative assays for exclusion of VTE are reporting the use of a threshold above that recommended by the manufacturer or reported in the literature.
4. Many laboratories are unclear about which type of units they are reporting.
5. Many patients may be erroneously excluded from VTE because of inappropriate thresholds.

Because of the importance of correctly reporting D-dimer values, several new questions have been added to the Hematology Coagulation Checklist. The new questions assess whether the laboratory is reporting D-dimer units per the manufacturer's recommendation or whether the laboratory is calculating D-dimer units to a different value, and whether the calculations are being done correctly. The questions also assess whether the laboratory is using a D-dimer method that has been validated for the evaluation of venous thromboembolism. In addition, they assess whether a cutoff value for exclusion of venous thromboembolism is reported along with a normal reference range.

Laboratories should review their current D-dimer methods and result reporting to ensure that correct patient results are being reported.

Coagulation Resource Committee