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Standardizing Patient's Posture During Blood Collection by Venipuncture

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The clinical laboratory standard institute (CLSI) H3-A6 document (presently renamed to CLSI GP41-A6) contains specific information regarding patient's posture during blood collection by venipuncture, stating that "specimens should be drawn with the patient seated comfortably in an appropriate chair or lying down" (1). The world health organization (WHO) guidelines on blood drawing contain a different indication, as follows: "make the patient comfortable in a supine position (if possible)" (2). Consequently, healthcare professionals often assume that these two postural positions-either supine or sitting-could be interchangeable, and the shift from one posture to the other may not generate significant bias on laboratory testing. It is noteworthy that inpatients blood samples can be drawn at different moments and postures, e g, in sitting position during the day, and in supine position during the night. On the other hand, outpatients (e g, patients attending for blood collection sites) usually do not maintain a definite and/or stable position before venipuncture. Consequently, samples are frequently drawn from subjects who indifferently walked or remained standing for long time, or remained seated for short time-e.g., seated less than three minutes at phlebotomy room-before blood collection.

Lippi et al. demonstrated that postural change during venous blood collection impacts on coagulation tests, and is a major source of bias in routine clinical chemistry determinations (3, 4). Briefly, the venous pressure in the lower parts of the body increases after a prolonged standing position, thus generating an enhancement of capillary pressure which ultimately leads to ultra-filtration of plasma in the interstitial space. Accordingly, larger and non-diffusible biomarkers remain entrapped within the blood vessels, whereas smaller and filterable elements migrate along with water into the interstitial space (5). These evidences suggest that patient's posture during venous blood sampling must be standardized to a reference position, either sitting or supine. Irrespective of the selected criterion, a recommendation should be given that a minimum period between 15 to 20 minutes of resting in reference position should be observed before collecting diagnostic blood samples (3, 4). From an organizational perspective, this resting period could seriously impact on the workflow at blood collection sites-but this can be obviated by scheduling blood collections, thus starting an appropriate personalization of laboratory analysis. Contrary to the above evidences, the meaningless bias observed by comparing troponin T (TnT) values in supine and standing positions also suggests that it may be unnecessary to allow the patient rest for 15 - 20 minutes in sitting or supine position before venipuncture upon admission to the emergency room, thus saving valuable time for diagnosis or rule out of acute myocardial infarction by TnT (6).

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