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Improving the preanalytical phase in laboratory medicine

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EDITORIAL

Preanalytical phase is responsible for the most frequent errors in laboratory medicine [1], that represent a major source of result variability.

A constant commitment should thus be given by all clinical laboratory players – physicians, nurses, technicians, *in vitro* diagnostic devices providers, and laboratory professionals – to reduce the clinical laboratory variability [2]. Unfortunately, these professionals subestimate the impact of a single source of laboratory variability. Therefore, lack efforts to control details like: tourniquet application time; patient compliance regarding fasting time, handling and processing of biological materials. The most important question when dealing with the laboratory sources of error is 'how huge is the error if all sources of variability impact together on a single laboratory outcome?'. Keeping this question in mind we can progressively work to improve laboratory quality then guarantee patient safety.

This Special Issue from the electronic Journal of the International Federation of Clinical Chemistry and Laboratory Medicine (eJIFCC) entitled ***Improving the preanalytical phase in laboratory medicine*** selected

nine manuscripts: five original articles, two case reports, and two critical reviews.

Some authors have assessed various pre-analytical problems at the hospital. Tóth et al. thoroughly evaluated the hemolysis problem in samples from inpatients (newborns and adults); Barbato et al. present a case report where the rejection of a hemolyzed sample caused failure to confirm hypokalemia by albuterol sulphate (salbutamol); whereas Alavi et al. worked on sample management showing the rate of blood sample nonconformities.

Concerning patient instructions, Stonys et al. provided proper evidence that in fasting patients chewing sugar-free gum could jeopardize laboratory testing [6]. Regarding sample management, Flores et al. determined the stability of K_3EDTA-plasma and serum on different storage conditions; and Salazar-García et al. showed the impact of chemical preservative in urine samples.

Abal et al., presented a case report about pseudothrombocytopenia by ethylenediaminetetraacetic acid (EDTA), drawing attention to the need for an intense communication between the laboratory and the clinician aiming to avoid misinterpreting the laboratory report. A truthfully non-systematic critical review by Caruso et al., highlighted the preanalytical interferences on laboratory immunoassays and appropriately showed the difficulty in performing properly venous blood sampling at high altitude environments. A further non-systematic critical review by Marques-Garcia deals with the main methods thus far developed for assessing the impact of hemolysis on laboratory testing.

On behalf of the eJIFCC, I congratulate all authors for their work on preanalytical phase and express my gratitude to the referees for their efforts to show the authors the best way to improve their manuscript.

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