Authors outline best practices for blood collection, processing, shipment, and storage


Abstract:

Translational research often involves tissue sampling and analysis. Blood is by far the most common tissue collected. Due to the many difficulties encountered with blood procurement from children, it is imperative to maximize the quality and stability of the collected samples to optimize research results. Collected blood can remain whole or be fractionated into serum, plasma, or cell concentrates such as red blood cells, leukocytes, or platelets. Serum and plasma can be used for analyte studies, including proteins, lipids, and small molecules, and as a source of cell-free nucleic acids. Cell concentrates are used in functional studies, flow cytometry, culture experiments, or as a source for cellular nucleic acids. Before initiating studies on blood, a thorough evaluation of practices that may influence analyte and/or cellular integrity is required. Thus, it is imperative that child health researchers working with human blood are aware of how experimental results can be altered by blood sampling methods, times to processing, container tubes, presence or absence of additives, shipping and storage variables, and freeze-thaw cycles. The authors of this review, in an effort to encourage and optimize translational research using blood from pediatric patients, outline best practices for blood collection, processing, shipment, and storage.
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