

Abstract Submitted
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Dynamic light scattering can determine platelet function

NATHAN LEE — Platelet transfusions are life-saving procedures for patients who are bleeding or undergoing chemotherapy. The effectiveness of transfusions depends on the number of platelets transfused and the platelet function. Platelet function correlates with proportion of discoid to activated platelets, morphology response to temperature stress, and inversely correlates with microparticle content. ThromboLUX is a novel device that determines platelet function by measuring all of these characteristics using dynamic light scattering (DLS). During periods of stress, such as decreased temperature, cytoskeletal rearrangements will cause normal, discoid platelets to activate and become spiny spheres. The formation of pseudopods of various lengths facilitates the clotting cascade and also increases the apparent size of platelets. ThromboLUX uses a 37-20-37 ° C temperature cycle that mimics the bleeding, storage, and transfusion process. As the temperature fluctuates, DLS will measure the changing platelet hydrodynamic radius and the size of any microparticles present. ThromboLUX analysis of platelet concentrates *in vitro* would allow determination of high platelet function units before transfusion and would therefore improve transfusion outcomes and patient safety. This study examined how DLS is able to distinguish between discoid and activated platelets as well as measure the parameters that contribute to high platelet function.

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