

Comparison of the Falling Drop Method to Existing Hemoglobin Methods

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Anemia continues to be a major global health problem and the World Health Organization (WHO) estimates that about two billion people (25% of world's population) have some form of anemia, the majority of which tend to be in underdeveloped countries. Current methods of quantitating total blood hemoglobin are unsuitable for routine use in laboratories and clinics in underdeveloped countries due to the lack of: sufficient funding; reliable source of electricity, batteries, or instrument repair; adequate training of laboratory staff, and proper waste disposal. Our laboratory developed a simple and inexpensive method to measure hemoglobin, the Falling Drop Method, that does not require electricity or batteries and has low toxicity. The Falling Drop Method allows for hemoglobin measurements in clinics with limited financial means and without electricity. The method was also designed to be used in conjunction with Sickie Confirm, a method to identify and determine sickle cell zygosity, a method also developed in our lab. The Falling Drop Method will allow Sickie Confirm to be used in clinics without the financial or electrical means to measure hemoglobin or hematocrit. A previous correlation study conducted in our lab showed good correlation of the Falling Drop method ($R^2=0.908$) to the gold standard method (Sysmex KX-21N) but not as good as other point of care devices (Hemocue 201+: $r^2=0.992$ and Mission Plus: $r^2=0.978$). Modifications were made to the Falling Drop Method to extend the column length and repeat correlation studies are underway; concluding on May 1, 2018. Preliminary data suggests an improved correlation to the Sysmex KX-21N.