

HARVARD MEDICAL SCHOOL
DEPARTMENT OF SURGERY

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Dear Hank:

Thanks for your note and for your reprint.

Your reprint is welcome but, of course, unnecessary . . . as we are very familiar with this work and quote it constantly!

My only point about the method is that the long-term disappearance slope of any tracer can indicate sudden alterations in volume only if that alteration in volume is due to the dilution of the tracer by the addition of new tracer-free fluid.

Since this is often the case in the sort of experiments you have done, the method is appropriate.

Let us consider a contrasting situation. A dog is bled into shock and remains there for many hours. The equilibrated slope for radioalbumin or T-1824 will show certain perturbations due to transcapillary refilling. Then, at some point, he will start to lose whole blood as such into the gut. This sudden new change in blood volume will not be reflected in the tracer slope immediately because the tracer itself is being lost along with blood and all the other components of blood, into the gut.

This is a simple point which I know you are well familiar with. It is interesting how many other investigators have lost sight of it.

As to the LVH/WBH ratio. In the "Body Cell Mass" book you will find some notes on it. This ratio does not change significantly with acute syndromes; however, it does change in such things as congestive heart failure. Also, if we may believe the work of Dr. Bill Shoemaker in Chicago, there may be marked changes in the ratio

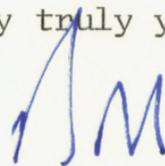
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in such situations as pump oxygenator perfusion at low-flow rates, and prolonged hemorrhagic shock. As you know, he has published curves showing an altered equilibration ratio for tagged cells. Although we have not been able to corroborate this work across the board, Dr. Jim Pluth of the Mayo Clinic (who worked with us last year) showed the same thing in open heart surgery, but on a lesser scale.

If you bleed dogs and follow the slopes, dilution data will give you good numbers. But look out for sudden loss of whole blood or whole plasma from some unknown site.

Thanks a lot.

Very truly yours,



Francis D. Moore, M.D.