



Clinic Notes: News from the Hemophilia Clinic

St. Michael's
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Inspiring Science.

Welcome to the first edition of the hemophilia newsletter 'Clinic Notes' which will provide information about a variety of topics relevant to hemophilia and inherited bleeding disorders. Topics will be selected based on information provided through surveys and conversations with patients over the past few years.

This first edition will discuss:

- Pharmacokinetic (PK) Studies
- Recovery
- Half life

WHAT IS A PK STUDY?

PK studies involve injecting a dose of factor and taking blood samples at specific time points. Typically this is done before the factor and at 15-30min post infusion, 1hr, 3hr, 6hr, and 24hr post infusion. Based on the clotting factor levels at each time point, it is possible to calculate several values which can help to design a treatment schedule for an individual. In a research study, PK studies are done to determine these values for new or experimental products.

Deciding on a dose and frequency of factor administration may be based on average values but it is sometimes better to calculate how you specifically respond to your treatment product. The only way to determine your response to a specific factor concentrate is to conduct a PK study.

Since full PK studies are time-consuming for patients, they are often reserved for patients with a history of inhibitors (antibodies to factor that affect how your body uses factor) or suspected inhibitors.

WHY DO A PK STUDY?

The PK results may help to confirm the presence or absence of inhibitors in some cases, and are used to guide treatment plans. Occasionally just pre and immediate post factor levels are done, which provides partial information. When PK studies are done, the results assist the team in making decisions about dose and frequency of factor administration. The PK study measures your "recovery" and "half life".

RECOVERY

Recovery is the highest level your factor reaches after you get an injection of factor concentrate. For most people this highest point will be between 15-30 min after completion of the factor infusion. This is why prior to surgery we will check your factor level to ensure that an adequate improvement in your factor level was reached.

The target recovery depends on what the factor is being infused for. Higher levels are required prior to surgery or in the case of a severe bleed. Lower levels are targeted for mild/moderate bleeding episodes and for prophylaxis. The dose of factor used in a particular situation is determined based on the desired recovery level.

HALF LIFE

The other piece of information helpful when deciding frequency of factor administration is half-life. This is the time it takes for the clotting factor level to fall to half of its highest value just after infusion.

For factor VIII the average half-life is 8-12 hours and for factor IX, 18-24 hours.

So what does recovery and half-life mean for you when treating at home? Using the information just provided, if you had a bleed one evening but you had infused factor that morning as prophylaxis, what should you do? Often patients will report that an additional treatment is not given because "I treated this morning." A new bleed usually requires a new dose of factor. Remember, the factor's half life! Maintaining the amount of factor in your blood will ensure enough factor is present to assist in stopping the bleed.

Similarly, if you have a very bad bleed and inject your factor promptly - sometimes a slightly larger dose than you use for prophylaxis is required.

The Hemophilia Treatment Centre should always be consulted to provide guidance on bleed treatment and dosing. A good reference is your wallet card or factor first card which provides dosage recommendations for mild, moderate and severe bleeds.

Finally, how much factor and how frequently you need to treat are also influenced by other principles such as consumption (more factor is used when a bleed is present) and the severity and location of the bleed..

Hopefully this article has brought new light and understanding to the topic of PK studies, recovery and half life and that you feel more knowledgeable about these concepts. If you have any questions about if or when to treat a bleed or how much factor to use please contact the nursing office at 416-864-5129.

We are always looking for feedback so let us know what you think about this first edition of 'Clinic Notes'.

The Hemophilia Team at St. Michael's Hospital