

## A Plug for Hair Monica Gandhi MD, MPH

Why hair? As you may have noticed, the WIHS is starting to collect hair samples as of our last visit. This collection involves the snipping off of a small thatch of hair (only 10-20 strands!) from the back of the head. You have probably heard this is to 'check HIV medication levels' in the hair, which is true . . . .but why hair, exactly?

The problem is this: We are now seeing that these HIV medications are not the magic solutions to HIV we thought they were at the beginning. Many patients 'fail' these therapies for one reason or another and still more people have side effects with these medications. In fact, many patients have to stop their HIV medications because of these side effects, which include nausea, vomiting, diarrhea, liver problems, high cholesterol, etc. We know that part of the reason these medications fail is because some patients have a hard time taking some of the complicated HIV regimens in the right way. However, we think that a big reason some patients may fail therapy (meaning, their HIV virus load does not go down to an "undetectable" level on therapy) is because different people absorb or break down the medications differently. This means that not everyone gets the same effect from the same HIV pill because each person has different genetics – some people absorb a lot of the drug, some people absorb a little bit, some people break down the medication very quickly, some people break down the medication very slowly, etc. One way to figure out how much medication a patient actually gets in her system is to measure the level of that medication in her bloodstream. That way, we can get a rough idea of how much drug the HIV virus is actually seeing once the medication hits the bloodstream.

Doctors in Europe are looking at blood levels of HIV medications more than we are in the US to figure out how to adjust HIV therapy – a patient with very high blood levels of HIV medications and side effects from the medicines may need a lower dose, for instance. We are also looking at blood levels of these medications as part of the WIHS study. However, medications get into the bloodstream quickly and leave quickly and a single blood level can only tell us what medication the patient took over the past 24 hours. Thus, the interest in measuring drug levels in hair. HIV medications accumulate in hair more slowly than in the bloodstream, over a period of weeks to months, in fact. Hair levels tell us how much drug the patient has been seeing over a long time period, which may tell us more about why she is not doing well on the therapy or why she is having side effects on the therapy. Hair is also easy to collect since it requires just a small amount to measure drug levels. Different cosmetic treatments of hair (bleaching, perming, dye procedures, etc.) may affect drug levels in hair but we are working on techniques to adjust for those procedures so that our levels will be accurate. Hopefully we will be able to *one day* tell you, just by analyzing a small piece of hair, how much HIV medication your body is actually seeing and help you adjust your medication doses to best suit your body. For now, we need the hair to help us figure out these techniques! Thanks, as always, for your participation in the study. Happy New Year!