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## I ANTI-HIV AGENTS

### A. Switching meds: from protease inhibitors to non-nukes

#### Background and Summary

Some people with HIV/AIDS (PHAs) who take combination anti-HIV therapy that includes a protease inhibitor (PI) have developed the following side effects:

- loss of fat in the face, arms and legs
- increased fat in the abdomen, breasts and shoulders
- high levels of sugar (glucose) in the blood
- high levels of insulin and fatty substances (lipids) in the blood

Collectively, these signs/symptoms have been called the lipodystrophy syndrome. At first there was a tendency to place the blame for all of these problems on PIs. However, as doctors have spent more time studying these issues, it has become clear that there is no one cause for the many changes that are part of the lipodystrophy syndrome. Indeed, there may be several syndromes occurring at the same time and the role played by different types of anti-HIV drugs is still not quite clear. Nevertheless, some PHAs may wish to switch from a PI-based regimen to a combination based on a non-nucleoside analogue, or non-nuke, such as nevirapine (Viramune) or efavirenz (Sustiva).

Doctors in Spain enrolled 20 subjects who complained of changes in body shape since they had started taking PI-based regimens. All subjects had low HIV levels — below the 200 copy mark — and had their PI replaced with efavirenz. In general, six months after the switch, viral load and CD4+ cell counts remained stable. Some aspects of the lipodystrophy syndrome changed while others did not. The possible reasons for this are discussed in the following report.

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## Study Details

Researchers enrolled 11 males and 9 females whose profile was as follows:

- average age - 40 years
- 7 subjects had AIDS
- average CD4+ count - 319 cells
- viral load was below the 200 copy mark

At the start of the study, before switching medications, all subjects complained of fat redistribution with some experiencing one or more of the following signs:

- enlarged stomach
- increased breast size
- pads of fat on the shoulders (buffalo humps)

As well, subjects had lost fat in their arms, legs and buttocks. All subjects switched their medication “backbone” from one based on a PI to one based on efavirenz. They were monitored for at least six months.

## Results — waist size, fat

Overall, body weight did not change, even six months after subjects switched therapy. Subjects did lose weight in their abdomen as their waist became smaller, but this trend did not become statistically significant.

Ultrasound scans of fat under the skin (subcutaneous fat) in the abdominal area did not detect any decrease six months after the medication switch. However, 11 subjects reported that they felt their appearance had improved after the switch.

## Results — viral load and CD4+ cells

At the start of the study, before subjects switched medications, levels of HIV in the blood were as follows:

- in 20 of 20 subjects — fewer than 200 copies
- in 18 of 20 subjects — fewer than 5 copies

Six months later, after switching from a PI to efavirenz, virus levels in blood samples were as follows:

- in 19 of 20 subjects — fewer than 200 copies
- in 17 of 20 subjects — fewer than 5 copies

The one subject whose viral load rose above the 200 copy mark to 565 copies had to stop taking efavirenz.

Before the switch, CD4+ counts averaged about 280 cells. After the switch, counts rose slightly to 363 cells — this change was not statistically significant.

## Lipids and Sugar

Levels of lipids — triglycerides and “bad” cholesterol or LDL (low density lipoprotein) — that were higher-than-normal at the start of the study decreased significantly six months after subjects switched to efavirenz. Levels of “good” cholesterol or HDL (high density lipoprotein) and sugar (glucose) in the blood did not change after six months of efavirenz use.

## Side Effects

Five subjects developed minor efavirenz-related side effects, including the following:

- problems falling asleep
- intense and frequent dreams
- dizziness

These symptoms cleared after one month. Three other subjects developed severe side effects including the following:

- intense dizziness
- slower movement of body and limbs
- feelings of loss of control

These side effects were severe enough that subjects had to stop taking efavirenz and replace it with nevirapine. A few days after switching to nevirapine these symptoms cleared.

It is disappointing that the subcutaneous fat — the fat under the skin that acts as a cushion and insulation — did not reappear after subjects had switched therapy, because its return would also improve the appearance of PHAs with lipodystrophy. Researchers are still trying to understand the cause(s) of the lipodystrophy syndrome. It is not clear if the loss of this type of fat is permanent. Loss of subcutaneous fat has been linked to the use of nucleoside analogues, or nukes, such as AZT and related drugs. Therefore, continued use of these drugs may impair the return of subcutaneous fat. There are several studies in which subjects have taken only PIs or a combination of PIs and non-nukes. Doctors in several centres are measuring levels of subcutaneous fat in subjects on these regimens to find out if they have experienced loss of this type of fat. Results from these studies should be available at major AIDS conferences in 2002.

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## B. Triple nuke therapy — results after one year

### Background and Summary

Therapy with at least three anti-HIV drugs — one of which being a protease inhibitor (PI) — has been the standard of care in North America for the past four years. Such drug combinations often have complicated dosing schedules and food and meal restrictions, and require PHAs to take many pills several times daily. In addition to potential drug interactions with the use of PIs and non-nucleoside analogues, or non-nukes, there's the risk of developing diabetes, cardiovascular illness and liver damage with certain combinations. In an effort to create simpler, more tolerable combinations, drug companies and doctors are testing different regimens. One combination that appears to be attractive contains the following three drugs:

- AZT, 3TC (lamivudine) and abacavir (ABC, Ziagen)

These three drugs are all marketed by Glaxo SmithKline and are being squeezed into one pill and sold as Trizivir. Until Trizivir becomes more widely available (it is not yet approved in Canada), some doctors are prescribing Combivir (a combination of AZT and 3TC) together with ABC. Before the availability of Trizivir, doctors in the U.S. conducted a study of AZT, 3TC and ABC. Subjects who entered this study had relatively low viral loads — averaging about 1,300 copies — and no previous exposure to PIs. The researchers found that after one year, triple nuke therapy was able to push viral load below the 50 copy mark in 56% of subjects.

### Study Details

Researchers enrolled 87 subjects (16% female, 84% male) for this study. No subjects had symptoms of AIDS at the time the study began and most subjects had more than five months' exposure to nukes (AZT, d4T, 3TC, ddI) but none were using AZT. At the start of the study subjects had the following profile:

- average age - 40 years
- average viral load - 1,300 copies
- average CD4+ count - 500 cells

Researchers monitored subjects for up to one year after they entered the study.

### Results — Changes in viral load

Significant reductions in viral load occurred in as little as two weeks after subjects started taking triple nuke therapy. Previous use of AZT or 3TC did not significantly decrease the ability of AZT, 3TC and ABC to reduce viral load. After one year, the proportion of subjects who had viral loads below the following levels were as follows:

- fewer than 200 copies - 82%
- below the 50 copy mark - 56%

Despite the use of triple nuke therapy, 15 subjects had viral loads that could not be successfully suppressed. On average, these 15 subjects entered the study with relatively higher viral loads (15,000 copies) compared to other subjects in whom viral loads remained suppressed (800 copies).

### Results — Changes in CD4+ counts

One year after starting triple nuke therapy, subjects' CD4+ counts increased on average by 66 more cells.

### Side Effects

Study subjects developed the following side effects in the proportions shown:

- nausea - 41%
- tiredness/lack of energy - 36%
- nausea and vomiting - 15%
- diarrhea - 15%
- headache - 14%
- problems sleeping - 14%
- fever and/or chills - 8%
- dizziness - 7%
- loss of appetite - 7%
- higher-than-normal levels of liver enzymes - 5%
- skin rash - 5%

In other studies, a small proportion of people experienced a hypersensitivity reaction to ABC, symptoms of which can include the following:

- difficulty breathing
  - cough
  - sore throat
  - fever
  - rash
  - fatigue
  - nausea
  - vomiting
  - diarrhea
-

The hypersensitivity reaction occurred in only three subjects in the current study; all three stopped taking ABC after developing the reaction.

Triple nuke therapy did not raise the level of sugar, cholesterol or triglycerides in the blood during the study.

The results from this study suggest that triple nuke therapy with AZT, 3TC and ABC can reduce viral load below the 50 copy mark in about 56% of people with HIV. People in this study had never used a protease inhibitor, did not have AIDS and had relatively low viral loads. Results may be less promising in people with higher viral loads and AIDS and in those who have used protease inhibitors.

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## C. Nukes linked to fat wasting

### Background and Summary

In the late 1990s, PHAs using highly active antiretroviral therapy (HAART) began to report strange changes in body shape. There were also reports of increased levels of sugar, insulin and fatty substances in the blood of these people. These changes increased the risk of non-insulin-dependent diabetes and cardiovascular disease, among other complications. Together, these changes have been called the lipodystrophy syndrome.

The precise cause(s) of these problems is not clear, but their appearance in large numbers of PHAs taking HAART is striking and relatively recent. Although some people have been quick to blame protease inhibitors (PIs) for these problems, recent research suggests that nucleoside analogues, or nukes, such as AZT and similar drugs, may also play a role in the lipodystrophy syndrome.

Researchers in France compared the effect of different combinations of nukes on body fat and insulin production. According to their results, long-term use of nukes appeared to be linked to the loss of fat under the skin (subcutaneous fat). Subjects who used the nuke d4T were more likely to have high levels of triglycerides in their blood than subjects who did not use d4T.

### Study Details

Researchers enrolled 56 adults with HIV infection who were not taking hormones or appetite stimulants. Some subjects were either taking combinations of nukes or no therapy and were divided into the following three groups:

#### d4T group — 23 subjects

Combinations used — d4T with 3TC or ddI

#### AZT group — 16 subjects

Combinations used — AZT with 3TC or ddI or ddC

#### Control group — 13 subjects

These people did not use anti-HIV drugs

The average CD4+ cell counts of the groups were around 500 cells and viral load in subjects on treatment ranged from 200 to 500 copies. Among subjects not taking therapy, viral load was, on average, higher — around 15,000 copies.

### Results — Fat under the skin

The fat under the skin, which acts as a cushion and insulation, is called subcutaneous fat. In the HIV lipodystrophy syndrome, subcutaneous fat often disappears from the arms, legs and face. In this study, researchers used X-ray or CAT scans to measure levels of subcutaneous fat in the thigh and abdomen of subjects. According to their scans, subjects not taking therapy had the most subcutaneous fat followed by subjects taking AZT. Subjects using d4T had the least amount of this type of fat. Note that the length of time subjects had used anti-HIV therapy was not significantly different between AZT- and d4T-users.

### Results — Fat inside

The other type of fat is located deeper inside the body and is called visceral fat. Subjects taking d4T had the highest amount of visceral fat compared to subjects taking AZT or no therapy. This difference in visceral fat levels between the d4T and other groups was also significant.

### Results — Fat wasting

By observing subjects, researchers found that the following proportion in each group looked as if they had lipodystrophy:

- d4T group — 63%
  - AZT group — 19%
  - control group — 0%
-

## Drugs

Subjects taking d4T were likely to develop lipodystrophy faster than subjects taking AZT. Use of other drugs such as ddI or 3TC was not linked to the development of lipodystrophy.

## Fat in, fat out

As part of a larger, long-term study, data on body weight and composition were collected on subjects three months before they entered the current study. In those three months, subjects receiving d4T lost an average of 2 kg of weight while those taking AZT gained an average of 1.3 kg of weight. This difference between the two groups was significant. No significant changes occurred in muscle mass despite these changes in weight. This suggests that the weight gained or lost was largely fat.

This study does point out a potential link between d4T use and fat wasting in PHAs. Further studies need to be conducted in larger groups over longer periods to confirm this link. As well, as some PHAs are taking large amounts of antioxidant supplements (vitamins C and E, co-enzyme Q<sub>10</sub>, lipoic acid and acetyl-L-carnitine) in the hope of protecting themselves from this side effect, research also needs to be conducted on the effect of such products on fat wasting.

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## II HORMONES

### A. DHEA — Background

The hormone DHEA (dehydroepiandrosterone) is produced by the adrenal glands, which sit on top the kidneys. DHEA is converted by the body into testosterone and estrogen. DHEA may also have other functions but scientists aren't sure what they might be. The body's production of DHEA is highest between the ages of 20 to 30 years and then gradually declines, reaching its lowest level in the elderly. Researchers have found that cells of the immune system, such as CD4+ and CD8+ cells, send signals to the adrenal glands, perhaps triggering their production of DHEA. When T-cell activity is suppressed by the use of drugs such as transplant drugs cyclosporin or tacrolimus, DHEA production falls. In people with HIV infection, HIV-infected cells

could also play a role in reducing the production of DHEA.

In the late 1980s and early 1990s, several research teams found that DHEA levels were generally lower in HIV positive people compared to HIV negative people of the same age. As well, two research teams found that DHEA levels in HIV positive people decreased over time, reaching their lowest level shortly before the onset of AIDS. Indeed, a group of researchers found that symptom-free HIV positive people with relatively low levels of DHEA were likely to develop AIDS faster than other HIV positive people with higher levels of DHEA.

A simple interpretation of these findings might suggest that DHEA supplementation could play a role in delaying the onset of AIDS. Unfortunately the situation may be more complex than it appears. In times of serious illness, the body may produce larger amounts of hormones such as cortisol (and other glucocorticoids) than body-building hormones such as DHEA and testosterone. This switch in hormone production occurs because cortisol has anti-inflammatory activity that can help the body cope with the effects of infections, at least temporarily. In HIV infection, a possible role for DHEA might be to balance the excess levels of cortisol, but this theory has yet to be tested. Other potential uses for DHEA in PHAs are as follows:

- In laboratory experiments with cells and HIV, small concentrations of DHEA have anti-HIV activity. In experiments on HIV positive humans, when taken for up to four months even at very high doses, DHEA does not decrease viral load nor raise CD4+ cell counts.
- DHEA has been touted as a drug that might delay or reverse the effects of the aging process. However, clinical trials have found that DHEA has no major anti-aging effect(s).
- DHEA is being studied for its effect on relieving depression in PHAs and others, as well as for its impact on the production of other hormones by the body. At this time, not enough studies have been conducted to be certain about its impact on mood in HIV positive people.

In this issue of *TreatmentUpdate*, there are several reports on DHEA, including the impact of HIV infection on production of this hormone, the effect of highly active antiretroviral therapy (HAART) on DHEA levels, as well as the testing of DHEA in people with depression. There is also a warning about possible side effects that can accompany the use of DHEA.

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## B. Changes in DHEA levels in people taking anti-HIV therapy

Since most of the studies that measured DHEA levels in HIV positive subjects were done before the availability of highly active antiretroviral therapy (HAART), researchers in New York conducted a study to find out about the changes in DHEA and testosterone levels in HIV positive people, some of whom were using HAART. The researchers found that as CD4+ counts fell and viral load rose, DHEA levels were also likely to be reduced. Moreover, HIV positive people on HAART tended to have increased levels of DHEA compared to their levels before they used HAART.

### Study Details

Researchers enrolled 169 HIV positive males whose profile at the start of the study was as follows:

- average age - 40 years
- 11% had AIDS
- 27% had between 200 and 500 CD4+ cells
- 62% had fewer than 200 CD4+ cells
- 5% were taking a protease inhibitor (PI)
- 25% were taking testosterone supplements

Subjects were regularly monitored over the course of one year.

### Notes on measurement

In people, DHEA is produced in the form of either DHEA or DHEA-sulfate (DHEA-S). Technicians usually measure DHEA-S because it is produced in larger quantities than DHEA and is easier to detect. As well, DHEA and DHEA-S can be converted into each other and are considered to be the same.

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Testosterone can be found in the blood, either attached to proteins or unattached. The unattached form is called “free” testosterone and is the form with hormonal activity. Once testosterone is bound by proteins, it is difficult for the body to gain access to this hormone. As a result, it is the free testosterone that has body-building and other effects generally attributed to testosterone.

### Results — Testosterone and DHEA levels

The researchers found that the following proportion of subjects had the indicated levels of the following hormones:

- less-than-normal levels of free testosterone - 9%
- less-than-normal levels of DHEA - 33%

The general trend detected was that as CD4+ cell counts fell and viral load rose, DHEA levels decreased significantly.

### Changes related to illness

Over the course of the 12-month study, the following events occurred:

- 20% of subjects developed a life-threatening infection or cancer
- 5% of subjects died from complications of AIDS

Those subjects who developed AIDS or died were likely to have the following lab measurements one year before these events:

- fewer than 200 CD4+ cells
- less-than-normal levels of DHEA

### DHEA, testosterone levels and anti-HIV therapy

At the start of the study, only 8 subjects were taking combination therapy that included a PI. Over the course of the study, this figure increased to 32 subjects. That this study was conducted around the time that PIs began to be released explains these numbers.

DHEA levels increased significantly among men who started PI therapy than in men who were not taking PIs. Levels of free testosterone did not change significantly in men who were or were not using PIs. In this study, neither DHEA nor testosterone levels were linked to the presence of fatigue or depression.

The results from this study confirm those from at least two other studies in which researchers found that DHEA levels fell with increasing immune deficiency. An interesting finding is that potent anti-HIV therapy appears to restore DHEA levels in some subjects. The results from this study may not apply

to other groups such as injection-drug users and women with HIV, both of whom were not studied.

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### C. DHEA for depression?

Researchers have found that depression is relatively common in HIV positive people. Such depression may also be associated with loss of sex drive and energy. In the 1990s, a number of double-blind studies found that DHEA between 30 mg to 90 mg per day for six to 12 weeks resulted in improved mood and increased energy and sex drive in subjects with and without major depression. To find out the effect of supplements of DHEA on depressed people with HIV, researchers in New York conducted a 16-week study of this hormone. According to their results, some PHAs experienced improved mood.

### Study Details

All subjects were HIV positive and experiencing varying degrees of depression and loss of energy. Although 45 subjects (6 female, 39 male) enrolled in the study, only 32 subjects completed the first eight weeks. The profile of subjects at the start of the study was as follows:

- 51% had AIDS
- average CD4+ count - 286 cells
- 85% of subjects were taking three or more anti-HIV drugs
- five subjects were taking antidepressants with only “partial” benefit
- average level of DHEA-sulfate (DHEA-S) - 153 micrograms/dL
- 17% of subjects had less-than-normal levels of DHEA-S for their age
- all subjects reported feeling low in energy
- 83% of subjects reported low sex drive
- 30% of subjects had less than 90% of normal muscle mass

### DHEA dose

Subjects took 100 mg of DHEA per day for the first week of the study then increased the dose to 200 mg/day in the second week and 300 mg/day in the fourth week. Subjects could increase the dose of DHEA beyond 300 mg/day if they did not experience any relief from depression and if there were no significant side effects.

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### Different parts of the study

The first part of the study lasted eight weeks and during this time all subjects received DHEA. After this, if a subject's mood had not improved, he/she was removed from the study. Those subjects who responded to DHEA continued taking it for a further four weeks (12 weeks altogether). Subjects whose mood improvement continued through the 12<sup>th</sup> week were randomly assigned to receive either continued DHEA or fake DHEA (placebo) for a further four weeks. Thus some subjects stayed in the study for up to 16 weeks.

### Results — dropouts

Thirteen subjects (29%) left the study before the 8<sup>th</sup> week, leaving 32 subjects still participating. Most of these dropouts occurred during the first two weeks of the study for the following reasons:

- 2 subjects - increased feelings of depression
- 3 subjects - side effects
- 2 subjects - scheduling problems with work and the study
- 1 subject - moved
- 1 subject - anti-HIV medication side effects
- 1 subject - illness
- 1 subject - personal reasons
- 2 subjects - lost contact with the study personnel

### Results — Improved mood

Of the 32 subjects who completed eight weeks of the study, 72% (23 subjects) reported a “much or very much” improved mood. This improvement was statistically significant. Even when the seven subjects who were taking antidepressants or testosterone (which can also improve mood) were removed from the mood analysis, the response rate of the group was 68%. Improved mood was not linked to DHEA levels at the start of the study. The most common dose of DHEA used was 300 mg/day.

### Other symptoms

Subjects who remained in the study also reported the following improvements:

- 82% had more energy
- 50% of subjects with pre-existing low sex drive reported an increase in this measure
- men reported stronger erections

### Results — Muscles

The researchers had data about body composition taken at different times from 25 subjects. The doctors found that there was a statistically significant increase in muscle mass by the 12<sup>th</sup> week of the study. During the placebo-controlled phase of the study — weeks

12 through 16 — there was no further increase in muscle mass for those subjects who continued to receive DHEA. As well, muscle mass did not decrease in those subjects who switched from DHEA to placebo.

### Changes in mood during the placebo phase

From the 12<sup>th</sup> through 16<sup>th</sup> week of the study, researchers randomly assigned 21 subjects to receive either continued DHEA or placebo. After analysing blood samples, technicians did not find any significant changes between subjects on placebo and those on DHEA during the final part of the study.

### Side Effects

The following side effects were reported by some subjects:

- irritability
- acne
- headache
- problems falling asleep
- nasal congestion

### Notes on the study

Although some subjects on DHEA experienced increased muscle mass, technicians did not detect any increase in testosterone levels. This is interesting because DHEA is used as a building block for testosterone and estrogen. Other research teams think that DHEA may enhance the body-building effect of testosterone.

Although researchers expected depression to recur when subjects switched from DHEA to placebo it did not. This could possibly be explained by the “placebo effect.” The study authors note that improvements in depression seen with placebos in other studies is usually between “20% to 30%.” Since at least 75% of subjects had an improvement in the current study, this is not likely due to a placebo effect. As well, increased levels of muscle mass were sustained in those subjects who switched from DHEA to placebo for four weeks.

A possible explanation for these findings is that no subject in the study had major depression and that milder forms of depression can be relieved by taking DHEA for three months. Once recovered from depression, subjects may not need continuous doses of DHEA. As well, other placebo-controlled studies have found DHEA useful in treating depression.

The New York doctors are encouraged by the results of this pilot study and are currently conducting another study; they hope to enroll 100 HIV positive subjects to confirm the effect of DHEA on mood. As

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well, they plan to study the impact of DHEA supplementation on the body's production of other hormones (J Rabkin, written communication 2001).

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## D. DHEA — Cautions and concerns

Pregnant women, non-adults and people at high risk for or who have the following hormone-sensitive cancers should **never** use DHEA:

- breast cancer
- cervical cancer
- prostate cancer
- uterine cancer
- malignant melanoma

Some people with bipolar illness who use DHEA may experience mania that can lead to suicidal behaviour. Therefore, people with bipolar depression should **not** use DHEA.

In small, short studies in HIV positive people, DHEA appears to help relieve depression but this needs to be confirmed in large studies. As well, most studies of DHEA have been in middle-aged or elderly subjects. The safety of DHEA in younger subjects is not known. In PHAs, the safety of taking DHEA for more than four months is not known. Depending on the dose used, HIV positive people who have taken DHEA for less than four months have experienced at least one of the following side effects:

- acne
- fatigue
- headache
- nausea

- nasal congestion
- high levels of the liver enzyme ALT
- joint pain
- problems falling asleep

Because DHEA has not been well-studied in PHAs, there may be other side effects. The impact of DHEA on signs/symptoms of the HIV lipodystrophy syndrome is not known. We do not know of any interactions between DHEA and medications commonly used by PHAs.

### Availability

DHEA has not been approved by Canadian regulatory authorities. Health Canada considers DHEA to be a controlled substance. Products that fall under this category are available only with a doctor's prescription. If you and your doctor(s) decide that you need DHEA to maintain your health, have your doctor call or e-mail Health Canada's Special Access Programme to discuss ways of legally obtaining DHEA. The Special Access Programme may be contacted via telephone at 613-941-2108 (between 8:30 am and 4:30 pm Eastern Standard Time) or 613-941-3061 after 4 pm. E-mail: EDR\_Drugs-BPA@hc-sc.gc.ca.

For more information about DHEA, you may wish to consult a doctor who specializes in the study of the body's hormones — an endocrinologist.

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## III CANCER

### A. Some women may be at high risk for anal cancer

Although cases of anal cancer are increasing in both men and women in the U.S., anal cancer is twice as common in women than in men, according to researchers in that country. In San Francisco researchers conducted a study among women with HIV and women who were at high risk for HIV infection to find out about their risk of anal cancer.

#### Study Details

The profile of women in this study was as follows:

- average age - 40 years
- 251 women were HIV positive
- 68 were HIV negative

In addition to all the usual tests, women in this study also had cells from their anus removed for analysis. Testing to detect human papillomavirus (HPV) — the cause of cervical and some anal cancers — was done with PCR. To measure the amount of HPV, technicians used another test called a “hybrid capture” assay.

#### Results

Technicians analysing cell samples found the following:

- 75% of HIV positive women had HPV infection
- 42% of HIV negative women had HPV infection

Although there are many types of HPV, some types such as HPV 16 are highly associated with the development of cervical and anal cancers. Among HIV positive women, the most commonly detected type was HPV 16, found in 15% of the women. As many as 35% of the women had HPV of an “unknown” type.

### Anal HPV infection

The researchers found that the following factors were involved with the detection of HPV in samples of anal cells:

- fewer than 200 CD4+ cells
- HPV infection of the cervix

### Anal vs. cervical samples

Among HIV positive women who had samples taken from both their cervix and anus, technicians found the following:

- 75% of the women had anal HPV
- 53% of the women had cervical HPV

Among HIV negative women, the results were as follows:

- 43% of the women had anal HPV
- 24% of the women had cervical HPV

In general, technicians found different types of HPV in the cervix compared to samples from the anus.

The findings from this relatively large study confirm those from two relatively smaller studies — that anal HPV infection is common in women at high risk for or who have HIV infection. High levels of HPV were found in women who were HIV positive and who also had low CD4+ cell counts. Women with anal HPV were also likely to have abnormal and precancerous cells in the anus.

Researchers could not measure the impact of highly active antiretroviral therapy (HAART) on their ability to detect HPV. Further work on anal HPV in women needs to be conducted. Since the women in this study largely denied having anal sex, the researchers are not sure how HPV entered their anus. The results from this study suggest that HIV positive women may benefit from regular anal Pap smears, but this needs to be confirmed in studies.

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### Disclaimer

Decisions about particular medical treatments should *always* be made in consultation with a qualified medical practitioner knowledgeable about HIV-related illness and the treatments in question.

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