

Information, Inspiration and Advocacy for People Living with HIV/AIDS

● — To nuke, or not to nuke?

While specific drugs have fallen in and out of favor, the basic structure of anti-HIV therapy—called HAART—has changed very little since the late 1990s. Almost all regimens include one highly potent drug—either a boosted protease inhibitor (PI) or an NNRTI—along with two NRTIs. While there's no doubt that this has proven very successful, it comes with many side effects associated with taking two NRTIs. As two new important classes of drugs launch onto the market, it may now be the time to begin questioning the conventional wisdom of HAART. One area that seems most ripe for it is the widespread use of NRTIs (nucleoside/nucleotide analog reverse transcriptase inhibitors).

As of this writing there are 20 unique anti-HIV drugs. When fixed dose combinations are included, there are 27 different products to treat HIV disease currently sold in the US. When discontinued drugs and reformulations are added into the count, over 30 products have come to market in less than 20 years. That is a remarkable achievement and credit is due to everyone who made this unparalleled accomplishment, including the scientists, researchers, activists, pharmaceutical companies and especially the people with HIV who participated in the studies.

While the list of available drugs is large, the truth is that many of them are not widely used. Some, like Rescriptor (delavirdine), were never widely used while others like Zerit (stavudine, d4T) and Crixivan (indinavir) were once quite popular but are now rarely used.

NRTIs are the oldest and most widely used class of anti-HIV drugs. This class is quite large and diverse. It includes the oldest drugs, like Retrovir (zidovudine, AZT), Videx (didanosine, ddI) and Epivir (lamivudine, 3TC); newer drugs like Viread (tenofovir, TDF) and Emtriva (emtricitibine, FTC); as well as the fixed-dose combination pills like Epzicom and Truvada.

In the nine years between the approval of Retrovir in 1987 and the beginning of the HAART era in 1996, NRTIs (sometimes called 'nukes') were the only drugs available to treat HIV. At first they were given alone, called monotherapy. This was followed in the late 1980s and early 1990s by the first generation of combination therapy, using two NRTIs. When PIs came along, they proved much more potent. NRTIs then took on a supporting role in therapy. This paradigm continued as a third class of drugs, called NNRTIs (non-nucleoside reverse transcriptase inhibitors), joined PIs as the potent agents.

As the third decade of anti-HIV therapy approaches, there are good reasons to start examining the role of NRTIs. These reasons fall into two categories: concerns over long-term

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toxicity and the basic question of whether they're needed to be used all the time any more. While it's premature to make a blanket call for major changes in how we treat HIV, the sheer variety of anti-HIV drugs now available may give us the chance to re-evaluate when and how to use NRTIs.

The main concern about NRTIs is their safety, especially with long-term use. This stems from two concerns. The first is the real world community experience of these drugs. Almost as soon as the first NRTIs became available, the first major problems began to appear. They ranged from annoying (like nausea) to painful (like *peripheral neuropathy*) to life-threatening (like *pancreatitis*).

As newer NRTIs came out, some improvements were noted. The second generation, like Efavir and Zerit, appeared less toxic than the first. However, problems persisted—some quite difficult. As the HAART era took hold, the role of NRTIs in a newly recognized syndrome (to be named *lipodystrophy*) started to become apparent. All NRTIs, some more so than others, are involved in the loss of fat in the arms, legs, buttocks and face (*lipoatrophy*). Even the newest and best tolerated NRTIs draw concern from some, due to possible but so far unproven bone and kidney problems.

While there are very real differences in safety and tolerability among the NRTIs, there's concern about how they work that affects the whole class. NRTIs work by blocking the synthesis of HIV DNA—a process called *reverse transcription*. It is also known that they can sometimes interfere with the synthesis of another kind of DNA that exists inside the cell. This kind is called mitochondrial DNA, or mtDNA, and is different from the DNA inside a cell's nucleus. Mitochondria are small cell structures (called *organelles*) that generate energy to help the cell to function. Mitochondrial DNA is much more sensitive to damage than our genetic DNA.

It is widely thought that many of the side effects of NRTIs are due to their interference with the normal function of mtDNA. In some cases, the link is unclear. In others, like *pancreatitis* and *lactic acidosis*, the connection is well understood. All NRTIs have the potential to damage mtDNA but some, like Zerit, are more likely to do so than others. It may also be the case that some people are more prone to mtDNA damage than others. This could explain, at least in part, why some people have severe problems taking NRTIs while others have little or no problems, even with long-term use. (For more information on this topic, read Project Inform's publication, *Mitochondrial Toxicity and Lactic Acidosis*, available at www.projectinform.org.)

If this is a problem for the whole class of drugs, why are they so widely used? In part the explanation lies in the time when many of them were approved. In the 80s and early 90s, effective therapy for HIV was measured in its ability to extend a person's life by weeks or months. Any gain in survival was welcomed. However, when PIs ushered in the HAART era, successful treatment was measured by extending lives by years, thus raising the threshold of what should be expected of a new drug.

Now, we have moved to thinking in terms of decades. Many people think that a person living with HIV, with access to an experienced HIV medical provider and adequate therapies, should expect to live a normal life span. While this is a tremendous achievement, it also requires adjusting the way we evaluate the drugs used to treat HIV. Side effects and toxicities that used to be "acceptable" may become unacceptable when the new time frame now is years or decades.

The other central factor leading some to re-evaluate NRTIs is the other kinds of anti-HIV drugs. By the end of 2007 there should be six unique types, or classes, of anti-HIV drugs. It will take time, research and real-world use to figure out the best ways to use them. The time might not be too far off that it won't be necessary to use NRTIs—or other commonly used drugs—in all or even most regimens.

In memory of...

We dedicate this issue of *PI Perspective* to the following individual. His memory lives on in the work that lies ahead.

Jeff Getty

There's little doubt that NRTIs have contributed greatly to the remarkable advances in HIV care and treatment over that past 20 years. However, the balance between their potency and their toxicity seems less favorable than the other classes. This doesn't necessarily mean they should all be abandoned and relegated to medical history but their role in the future of HIV treatment is uncertain.

As we move into the next decade and beyond, the difficult work of constantly re-examining our basic assumptions must be done. Even those assumptions that have served people with HIV well should be open to scrutiny. We have done quite well, but it is time now to ask how we could do better.

Some pharmaceutical companies could become obstacles to this process since these drugs are also important revenue streams for them. Without profits from the sale of older drugs, less money will be invested to search for new and better anti-HIV drugs. Of course, the well-being of people living with HIV is more important than any company's bottom line, but there's a link between profits and continuing research and development. However, that link is also challenged by other factors, including the length of time these drugs have been on the market. One NRTI—Retrovir (AZT, zidovudine)—has already lost its patent protections and others are soon to follow. Thus, their value in turning a profit is limited anyway.

Times have indeed changed. Where once activists called loudly for ddC to be approved, there's little doubt it wouldn't get support from the activist, scientific or medical communities if it were developed today. The overriding goal of treatment advocacy is to facilitate and ensure the development of the very best treatments for HIV/AIDS. With new classes of drugs close on the horizon, this goal might be advanced by calling not for more drugs, but for fewer and better ones. It is truly a testament to how far we've come that this discussion is even possible.

Reporting Adverse Medication Events to the FDA

One of the most important details when taking a new medication is how safe it is. The US Food & Drug Administration (FDA) collects this information in many different ways, including from individuals who use the medicines or medical products. By doing so, the FDA can identify possible problems, especially when medicines enter expanded access programs (EAPs) and reach more people.

As three new anti-HIV drugs enter EAPs—etravirine (TMC-125), raltegravir (MK-0518) and maraviroc, it's important for readers to know that they can report problems to the FDA. This voluntary program is known as MedWatch and can be used by anyone. It covers medicines, medical devices, special nutritional and tissue-based products and cosmetics.

Adverse events can be reported, especially serious ones. These include ones that are life-threatening, require a hospital visit, require intervention to prevent permanent impairment or damage, birth defects and, of course, death. Issues such as quality, safety, performance, product use errors, and packaging problems can be reported, even if you're not certain the product caused the adverse event or if you don't have all the details.

To report by phone, call 1-800-FDA-1088. For adverse events with a vaccine, call 1-800-822-7967. To report online, go to www.fda.gov/medwatch/report.htm and fill out form 3500. It is confidential and may also be printed and either mailed or faxed (1-800-FDA-0178).

A Look Ahead at This Year's Drug Approvals

The year 2007 is shaping up to be a busy one for anti-HIV drug development. By year's end at least two and possibly three new anti-HIV drugs will be approved. It's not only the number of new drugs that is significant. Two of them—maraviroc and raltegravir—will be the first of their types to gain FDA approval. The third drug, etravirine, represents a much needed second chance for many people whose virus has become resistant to an entire class of drugs. This article reviews these three drugs, focusing on how each differs from the current drugs and how it may fit strategically into the treatment of HIV.

Maraviroc: the first CCR5 inhibitor drug

Maraviroc, developed by Pfizer, is expected to gain FDA approval in late spring of 2007. Pfizer submitted data to the FDA in December 2006. The FDA has a six-month window to rule on a drug once it's submitted, so a decision must be reached no later than June 2007. Typically the FDA rules near the end of that window; however, it has scheduled a hearing before the Antiviral Advisory Committee in late April. It's possible that this might lead to maraviroc's approval shortly thereafter.

Maraviroc attempts to block HIV from entering an immune cell. It does this by attaching to a protein called *CCR5* that is part of the surface, or membrane, of the cell. This protein, often just called *R5*, is a co-receptor that HIV uses to enter cells. By attaching to *R5*, maraviroc—and other drugs like it—seeks to keep HIV from attaching to the protein and thus prevents the virus from entering the cell.

Any drug that works by stopping HIV from getting inside immune cells is called an entry inhibitor, or *EI* for short. One approved EI is on the market now, called Fuzeon (enfuvirtide, T20). Fuzeon interferes with a different step in HIV's entry into cells. This is important because HIV that has become resistant to Fuzeon won't typically be resistant to maraviroc, or other *R5* inhibitor drugs. Unlike Fuzeon, which is given as two injections per day, maraviroc is taken as a pill twice a day. However, when Fuzeon and maraviroc are used together, HIV's entry is blocked in two ways, which may make for a good combination.

Most, but not all, HIV uses *R5* to enter CD4+ cells. Some HIV uses another protein called *CXCR4*, or *X4* for short. Almost everyone in early HIV disease has HIV that uses *R5* (referred to as *R5 HIV*). Some percentage of people's virus will shift over time to use *X4*. This happens most often in more advanced HIV disease. Some think that *X4* virus is more aggressive and speeds up disease progression. Others think it might be an outcome, rather than the cause, of disease progression.

Further complicating matters, people can have HIV that only uses *R5* (called *R5-tropic*), only uses *X4* (*X4-tropic*), uses either *R5* or *X4* (*dual-tropic*), or both *R5* and *X4* (*mixed-tropic*). Additionally, people with *X4* HIV don't always have a more aggressive form of disease. Therefore, it's difficult to draw any hard conclusions other than to say that blocking whichever receptor that HIV uses is a good thing.

For a complete list of approved drug names and classes, see the DRUG ID CHART on page 10.

Maraviroc is only expected to be useful for people with R5 HIV. A lab test, developed by Monogram Biosciences (formerly Virologic), can distinguish these different types of HIV. This test, called Trofile, will probably be required before a person is given maraviroc, or any R5 inhibitor drug.

Before the 2007 Conference on Retroviruses and Opportunistic Infections (CROI), less was known about maraviroc this close to FDA approval than is typically the case. This is because Pfizer was allowed to combine their Phase II and III programs. Typically these stages are done separately. This shortened the time it took for maraviroc to advance through the FDA approval process. It also reduced the amount of data available to Project Inform and other treatment activists to review ahead of approval.

Maraviroc might be more useful for people who have never taken anti-HIV drugs, or are on their second regimen. Unfortunately there will be little, if any, data on maraviroc being used in these groups. This will probably make some doctors hesitate to prescribe it for people earlier in HIV disease.

Some doctors and activists have raised a different concern about maraviroc and other drugs like it. Maraviroc would become one of the few drugs not to target HIV, but rather the cells of the immune system. R5 has many roles in the immune system, and it is not known what problems blocking it might have for a person's immune function and health in the long-term. While nothing alarming has been reported from studies so far, there are unresolved concerns about long-term use. One encouraging sign is that people who are born with a defective gene that prevents their cells from producing R5 don't seem to have any unusual health problems.

An expanded access program (EAP) for maraviroc began enrolling in February 2007. It is open to people with limited treatment options because of drug resistance or intolerance. (To enroll, consult www.maraviroceap.com.) Visit www.projectinform.org throughout spring 2007 for regular updates on maraviroc as it progresses toward its anticipated FDA approval.

Raltegravir: the first integrase inhibitor

Following fairly closely on the heels of maraviroc is another new kind of anti-HIV drug. Raltegravir, formerly known as MK-0518 from Merck, is set to become the first of a new type of drug called an integrase inhibitor, or simply *II*. Merck is expected to submit raltegravir to the FDA early in the second quarter of 2007, with approval likely to follow at most six months later.

Integrase is an enzyme (a kind of protein) that HIV uses to combine its own genes with the genes of an immune cell. A drug that successfully stops this step in the HIV replication cycle has long been sought. Three companies, Merck, Gilead and GlaxoSmithKline (GSK), have IIs in human studies, with Merck's drug the closest to approval. Both Merck and GSK had other IIs that failed to pan out. Several other companies, including Ambilia, Avexa and Bristol-Myers Squibb, have IIs in pre-clinical development. Merck and Gilead are also working on second generation IIs.

Raltegravir has generated a good deal of excitement, beginning at the 2006 CROI. Data from one study in treatment experienced people showed the largest average reduction in viral load ever seen in this group of people. Two more compelling studies were presented later in 2006.

One, presented at the International AIDS Conference in Toronto, looked at raltegravir in people

taking anti-HIV drugs for the first time. This study showed that people had more rapid reductions in viral load on raltegravir than people taking a regimen based on Sustiva (efavirenz). This is significant because other studies, including a large, well controlled study presented at the 2007 CROI, show that the more quickly a drug reduces viral load, the longer it continues to work before developing resistance.

A second study, presented at the 2006 ICAAC, compared the effects of raltegravir on the kinds of fats that circulate in the blood, called lipids. This study found that, compared to people on a Sustiva regimen who experienced higher lipid levels, people taking a raltegravir regimen actually saw a small but significant decrease in lipids.

In developing raltegravir, Merck bucked a long-standing trend among companies that develop new anti-HIV drugs. Most newer drugs have been studied first in treatment experienced people and then maybe later in people taking anti-HIV drugs for the first time. Merck decided for a more-or-less parallel development plan, studying it in both groups of people at the same time. The studies in treatment experienced people are somewhat further along than those in people new to treatment.

When the FDA rules on raltegravir later in 2007, one interesting question will be the exact nature of the approval. Often anti-HIV drugs are approved by the FDA only in select groups of people. For example, maraviroc will likely be approved for people with R5 HIV only. The early data suggest it's both powerful and well tolerated. If, as expected the studies in people new to therapy aren't done by the time the FDA makes its decision, there will likely be debate over this issue.

Some will argue that the data are only complete for treatment experienced people, so the approval should be only for them. Others are likely to argue that the drug appears powerful, and moreover well tolerated. Since all drugs that have worked well in treatment experienced people have worked at least as well (and usually better) in people taking anti-HIV drugs for the first time, the drug should be given a broader, more inclusive approval.

More data on raltegravir are expected during the next two years. It is available now in an EAP for people who are resistant to at least one drug in each of the three main classes of drugs. For more information about the raltegravir EAP, see www.benchmark.com/secure/earmrk/earmrk.html. Remember though that the drug was previously known as MK-018.

Etravirine: the first second-generation NNRTI

Etravirine (formerly TMC-125) is an experimental NNRTI (non-nucleoside reverse transcriptase inhibitor) being developed by Tibotec Therapeutics. Unlike maraviroc and raltegravir, which are set to become the first drugs of their kind, etravirine is the same type as Sustiva, Viramune (nevirapine) and Rescriptor (delavirdine).

Etravirine is different from the older NNRTIs in one important way: it remains active to some degree against HIV that's resistant to the other NNRTIs. One of the main drawbacks to the NNRTIs has been that HIV that develops resistance to Sustiva is also very likely to be resistant to Viramune and Rescriptor. Moreover, resistance to NNRTIs can develop from a single change in HIV's genes. The result is that most people get one shot at using an NNRTI.

Etravirine was designed to work against HIV that is resistant to the older NNRTIs, and results

from several studies have been published. They suggest that etravirine is a potent anti-HIV drug, reducing viral loads between 1 and 2 logs. It seems to cause more diarrhea than the other NNRTIs, and it can cause a rash like the others as well.

Unlike maraviroc and raltegravir, where major questions remain on who exactly will use those drugs, etravirine's role in anti-HIV therapy is fairly clear. It will likely be used by people who have taken and become resistant to the older NNRTIs. However, one significant controversy remains. It appears that people whose virus has developed more than two NNRTI mutations do not respond as well as people with two or fewer.

Etravirine is available now in an EAP. For more information on it, see www.projectinform.org/bnews_091106.html.

Conclusions

There is little doubt that 2007 will be an important year in anti-HIV drug development. It's expected that the first drugs from two new classes will debut. While unlikely to gain approval in 2007 the first second generation drug from another important class will near approval. This news is especially good for people with a lot of experience taking anti-HIV drugs, who might be running short on options. Each of these three new drugs will be used by this group, to varying degrees. Two of them, maraviroc and raltegravir, show promise for a much broader group of people.

While there's much to be excited about this year, the news might not be as good for the next few. GSK recently announced the end of their experimental PI brecanavir. (See www.projectinform.org/bnews_121806.html for more information.) TNX-355, another type of entry inhibitor, faces an uncertain future due in equal parts to underwhelming results from studies and the purchase of the company developing it. (See www.projectinform.org/blog_06_pd.html#355.) Also facing serious questions are Schering's R5 inhibitor drug vicriviroc and Panacos' maturation inhibitor bevirimat.

This leaves a relatively thin group of new drugs possible for approval in 2008–2010. Of note will be Gilead's integrase inhibitor elvitegravir (formerly GS-913), Tibotec's follow-up NNRTI rilpivirine (TMC-278), and possibly the NRTIs elvucitabine from Achillion and apricitabine from Avexa.

For now, however, the news is very promising. For years, many treatment experienced people faced the prospect of adding only one new active drug at a time. Fairly soon there will be as many as four new drugs—including the PI Prezista (darunavir, TMC-114) approved in late 2006—for treatment experienced people to construct a potent regimen. This is an extraordinary and unprecedented opportunity for people who have otherwise run out of options or become resistant to most of the other drugs. Never before have people in these situations had the chance to construct a new regimen with three or four drugs they've never used before.

People need to make careful and wise use of this opportunity. If they do, it should be possible for the great majority to reach undetectable levels of viral load. This opportunity will unlikely be repeated again in the foreseeable future. While there's some uncertainty about the future, Project Inform remains committed to spurring the development of new, innovative and effective therapies to treat, and one day to cure, HIV/AIDS.

New Area of Research Needed for People Over 50

Since the early days of the AIDS pandemic, much of the focus has settled on the effect that the disease had on the young. When previously healthy, young adult gay men began showing up in hospitals around the country with a baffling, and usually fatal new disease, the tragedy of life lost early was palpable. When the disease soon appeared in newborns and children, even those unsympathetic to the plight of gay men felt the sting of HIV. While this sad dynamic remains all too real today in many areas of the world, a different HIV infected population is growing more prominent throughout the developed world—older people living with HIV.

The aging population of people living with HIV in the US is the result of several factors. First and foremost, the advances in care and treatment have allowed people to live longer and healthier with HIV. Life expectancy for people with HIV is now measured in decades rather than years. In fact, at a recent Project Inform public meeting, a leading HIV doctor told the audience that there was no fundamental reason for people with HIV not to expect to live a normal life span.

Another important factor is the aging of the US population in general. According to the US Census, people over 50 made up over 27% of the population in 2000. This is expected to grow to over 35% by 2025 as the so-called “baby boomers” age. This is mirrored in the statistics of people living with HIV. In the first half of the 1990s, the number of AIDS cases in people over 50 grew at twice the rate of the general population. This trend is likely to continue, if not accelerate as the population ages.

Some also think that the widespread use of impotence drugs such as Viagra in this population contributes to new infections among older people. Few prevention efforts have been aimed at older people. Widely held assumptions about sexuality and drug use have contributed to a lack of targeted messages. New treatments for sexual dysfunction, as well as the recreational use of these drugs and other factors, have likely contributed to a growing of newly infected people over 50.

Whatever the causes, there’s clearly a growing population of people over 50 living with HIV. With much of the focus of research and services having been on younger people, issues unique to this population are growing in importance. Several areas are of particular interest to Project Inform: the growing complexity of drug interactions in older people; the immune system and aging; the difficulty of distinguishing between the consequences of aging and HIV-related conditions; and access to care and treatment. Over the next few months, we will present more in-depth articles on each of these important areas.

There’s a pressing need for more targeted medical research on HIV and aging. There are many areas appropriate for specific research in older people with HIV. Broadly, they can be put into two categories: the impact of aging on HIV disease and the impact of HIV on aging. Within these broad categories there are many possible avenues of research.



For more treatment and health care information, call Project Inform’s toll-free National HIV/AIDS Treatment Hotline at 1-800-822-7422.

How aging impacts HIV disease

Fundamentally HIV/AIDS is a disease of immune dysfunction. It is a complex disease with many important areas not fully understood. Some of the most fundamental questions of how HIV causes disease are far from settled. This is further complicated when considering older people with HIV, as there has been too little research in this group.

It is well documented that a person's immune system declines with age. This decline is seen in all major areas of immune function, from how immune cells communicate with each other to wide scale changes in immune organs themselves. However, the study of the immune system lags well behind other areas of medicine- a gap that has closed notably in large part due to research spurred by the AIDS epidemic.

How exactly do these two immunologic processes, aging and HIV disease, affect each other? This is an area ripe for research. Our understanding of the function and activity of the immune system grows over time, with careful and innovative research. To gain a meaningful and practical understanding of the interplay between aging and HIV on the immune system, this research is absolutely necessary. The insights gained are likely to benefit everyone living with HIV, as well as everyone growing older.

One area where aging and HIV treatment intersect is around drug interactions. As people age they tend to take more prescription drugs. Drugs for elevated cholesterol, hormone deficiencies, digestive problems, high blood pressure and other conditions are more widely used by older people. This makes avoiding and managing drug-drug interactions that much more challenging. This problem is likely to grow more difficult as the population of older people continues to grow—and the pharmaceutical industry develops new therapies to address the health problems of aging.

Drug interaction studies need to be done between HIV drugs and drugs widely used by people over 50. However, this might not be enough. In general, drug interaction studies are done between two drugs at a time. This often does not reflect the real life situation of people taking many drugs together. Knowing how three, four or more drugs will interact is not always as simple as looking at whether any pair of those drugs is known to have an interaction. The interaction of HIV drugs and the drugs of aging are quite complicated when a person's HIV regimen includes a drug like Norvir, which greatly changes the way the liver clears many drugs from the blood.

How HIV disease impacts aging

It is equally important to understand the role that HIV disease plays on the process of aging. HIV infection, as well as the treatments used against it, may significantly impact some of the normal processes of aging. This has already been suggested in that several of the diseases that continue to vex people living with HIV, despite successful anti-HIV therapy, are diseases of older age. Specifically, people with HIV are at an increased risk of heart disease, diabetes and cognitive dysfunction—all hallmarks of aging. HIV itself and HIV drugs are also tied to metabolic syndromes, which increase in frequency and severity with age.

Discussion

This is far from an exhaustive discussion of the needs of people over 50 living with HIV. There are many other issues—including prevention methods, nutrition, psychosocial support, autoimmune illnesses like arthritis, stigma and sexuality. This article is meant to open a much wider and in-depth discussion of HIV and aging. Even the bio-medical topics mentioned are only a sampling of the many unanswered questions on this topic. Only dedicated research on these areas and others will get the answers that this growing population needs.

The bulk of research to date has focused on the disease in children and younger adults. The remarkable advances in treatment have led to many people living longer, healthier lives with HIV. As more people infected in their 40s now enter their 50s and beyond, the opportunity for specific research grows along with it. Project Inform advocates for research on this area of increasing importance, so people with HIV can live productive and healthy lives well into older age.

The National Association of HIV Over Fifty (NAHOF) is an organization dedicated to education and advocacy around all issues, from prevention to care and treatment, for people over 50 living with HIV. For more information, visit www.hivoverfifty.org or call (617) 233-7107. You can also read Project Inform’s article, “HIV and Older Age,” in *Wise Words #10* at www.projectinform.org/ww/ww10a.html.

drug i.d. chart

TRADE NAME	GENERIC NAME
Protease inhibitor	
Agenerase	amprenavir
Aptivus	tipranavir
Crixivan	indinavir
Invirase	saquinavir
Kaletra	lopinavir + Norvir
Lexiva	fosamprenavir
Norvir	ritonavir
Prezista	darunavir
Reyataz	atazanavir
Viracept	nelfinavir
NRTI (nucleoside) and NtRTI (nucleotide) analog reverse transcriptase inhibitor	
Combivir	Epivir + Retrovir
Emtriva	emtricitabine (FTC)
Epivir	lamivudine (3TC)
Epzicom	Epivir + Ziagen
Retrovir	zidovudine (AZT)
Trizivir	Epivir + Retrovir + Ziagen
Truvada	Emtriva + Viread
Videx	didanosine (ddI)
Videx EC	ddI enteric-coated (ddI EC)
Viread	tenofovir
Zerit	stavudine (d4T)
Ziagen	abacavir
NNRTI (non-nucleoside reverse transcriptase inhibitor)	
Rescriptor	delavirdine
Sustiva	efavirenz
Viramune	nevirapine
NRTI + NNRTI combination	
Atripla	Sustiva + Emtriva + Viread
Entry inhibitor	
Fuzeon	enfuvirtide (T20)

How to Survive a Trip to the Hospital

The intern who takes your history just graduated from medical school

By Jim Schniepp, PharmD.

So, you take care of your mind, body, and whatever else is in need of maintenance, and you time your meds by the bleep of the atomic clock and never miss a dose. Good for you. Who would think that going to the hospital for your face-lift or appendectomy or brain transplant could be a threat to all of that hard work and discipline.

Blessedly, few people living with HIV/AIDS need to be hospitalized these days compared to the bad old days. A by-product of this success is that most interns (doctors in training), pharmacists, and nurses who work in hospitals don't have much experience with HIV meds. They may have heard something about "cocktails" and AZT and how easy things are now, but they may not know how drugs are combined or realize the importance of taking every dose on time or that it's not okay to skip one drug out of your combination.

So guess who gets to be the expert? You! Yes, you are a medical expert when it comes to your therapy, and it is up to you to make sure things don't get messed up.

The intern who takes your history just graduated from medical school six months ago and she's really busy and you're only the second person she's seen on HIV meds and it took her a while to enter your orders and the pharmacy is all the way downstairs and they don't know if they have that one med and now it's midnight and you totally fell asleep and didn't get your meds. (For a PDF of the wallet card, go to http://www.tpan.org/publications/pa/sep_oct_06/wallet_card.pdf.)

So what can you do?

1. Most importantly, know what meds you're on, how much you take (the number of milligrams and the number of pills), and how often and when you take them. It's scary how many people are admitted to the hospital and can only recall that there's "a blue pill with a D on it that I used to take, but now I think it's a pink one."
2. Write down your meds and allergies on a wallet card like the one with this article. (You can also print the wallet card from the PDF of this issue at www.tpan.com.) If you don't have a list handy, do not hesitate to call your pharmacy or doctor's office. Either one can speak to the hospital doctor and help you keep your therapy on track.
3. Take a 2-day supply of meds with you to the hospital. Even though all meds that you take in the hospital should come from the pharmacy, they may not have a supply of new or seldomly used drugs. It can also take a while to get your orders processed and filled. Bring each drug separately in a labeled bottle from the pharmacy. Showing an unlabeled pillbox to your nurse is just going to add to the confusion.
4. Most hospital pharmacies don't stock Fuzeon, so definitely bring enough to last your entire stay in the hospital.

Remember to take charge of your meds, don't be afraid to speak up to get them, and enjoy your stay in the hospital. It's the most you will ever pay for bad food.

Jim Schniepp is an HIV specialty pharmacist currently working at Rush University Medical Center in Chicago.



the 13th Annual **RON WILMOT BIKE RIDE**

Benefiting **PROJECT INFORM's** programs including the **National HIV/AIDS Treatment Hotline**
Saturday, May 12, 2007 – Golden Gate Park – San Francisco

Now in its 13th year, this signature event is dedicated to its founder, Ron Wilmot, an avid cyclist who personally relied on Project Inform's HIV treatment information to better manage his health.

A Legacy of Activism and Fun

This year, continuing Ron's legacy of activism and accessibility, we're opening the event to anyone who wants to participate. You can:

- Raise funds online
- Bike the leisurely seven mile course through Golden Gate Park in San Francisco
- Walk or run a portion of the route
- Simply enjoy the morning in Peacock Meadow with other Project Inform supporters

Get Started Today!

Registration is \$25 (waived for students), which is credited to your fundraising goal.

Sign up today at www.projectinform.org, where you can create your personal website, set a goal and track your fundraising:

- Secure, quick and easy
- Help get the word out to friends, family and co-workers by asking them to visit your site and support your commitment to Project Inform's mission
- Allows more of every dollar raised to support our HIV/AIDS programs directly
- Or, if you prefer, register by using this form and we'll send you paper materials to get you started

Raise Money - Get Awards!

This year, the Ride is offering special awards for fundraising:

Raise \$50 or more - receive the Official Ron Wilmot Bike Ride T-shirt

Raise \$200 or more - receive the Official Ron Wilmot Bike Ride Sports Bottle and T-shirt

Raise \$500 or more - receive the Official Ron Wilmot Bike Ride Tote Bag, Sports Bottle and T-shirt

Form a Cycling Team!

Collaborate with at least five of your friends or co-workers to set a group goal of \$5,000 or more. As an added perk, your company or organization will receive special logo recognition on Ride promotional materials! If you register 10 team members by May 2, your team will receive special day-of-event rewards!

Be a Top Fundraiser!

Set a goal of raising \$1,000 or more and let the Top Fundraiser's Club help you to reach your goal! You will receive specialized coaching, tips and tools when you register for the Top Fundraiser's Club. Those who raise \$1,000 will receive the official Ron Wilmot Hat as a special award.

**The actions we take today will impact the future of this epidemic.
We urge you to join us.**

Yes!

I want to Ride Run/Walk Attend in the meadow

Please accept my registration fee and send me a Rider Welcome Packet.

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

- Yes, keep me informed with email updates from Project Inform.
- I cannot participate, please accept my donation of \$ _____.
- Please email me about this event.

T-shirt size S M L XL

I want to raise \$1,000!
Register me for the Top Fundraiser's Club!

Send me information on forming a Team! _____

COMPANY NAME

Please make checks payable to Project Inform or charge my credit card:

VISA MC AMEX

Credit Card Number _____

Exp date _____ CVV code _____

Name _____

Day Phone _____

Signature _____



PIP43



Please mail form to: **Project Inform, 205 13th Street, Suite 2001, San Francisco, CA 94103**
or fax to: **(415) 558-0684**. Questions? Call **(415) 558-8669, ext. 227**