

# The Tapestry of HIV Care

A supplement of Connection - The CANAC Newsletter

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## Can We Overcome HIV Drug Resistance?

Plenary Session by Dr. Mark A. Wainberg, McGill University AIDS Centre, Jewish General Hospital, Montreal, QC

Resistance of HIV-1 to anti-retroviral therapy is the major factor limiting drug efficacy and resultant treatment failure in HIV infection. Dr. Wainberg provided CANAC's 11th Annual Conference and General Meeting with an overview of the development of drug resistance, methods of determining HIV drug resistance and possible courses of action that would minimize drug resistance.

To begin to understand drug resistance it is essential to recognize that any individual infected with HIV has pre-existing viral mutations. The reverse transcriptase gene, responsible for copying viral RNA into DNA, has a very high error rate (i.e. 20 billion mutations every day per person). The protease gene also has a high error rate. Therefore, mutations do not start once individuals are started on anti-retroviral therapy but are present before therapy is initiated. These mutations are not one viral strain but quasi-species and all types of mutations occur. They exist, however, as a minority of the total viral population pre-therapy and are less competent in replicating compared to wild-type virus. It is in the presence of anti-retroviral agents



The 2003 Conference Planning Committee

that mutations are "selected out" and these mutations have a competitive advantage over the wild-type virus. . An example of this is the mutation M184V, commonly seen with the use of lamivudine (3TC).

How do mutations of the virus affect the ability of drugs to interfere with reverse transcriptase? With nucleoside analogues, mutations interfere with the ability of the drugs to arrest DNA chain elongation by acting as competitive inhibitors of reverse transcriptase. With non-nucleoside reverse transcriptase inhibitors, mutations occur which prevent these drugs from acting as non-competitive antagonists of enzyme activity by binding to the catalytic site of reverse transcriptase.

Patients who receive combination therapy consisting of three or more drugs are less likely to develop resistance since these combinations can suppress viral replication with much greater efficiency. While there may be mutations present to a specific drug, the other drugs in the combination will inhibit the growth of resistant virus. Clinical resistance occurs when there becomes an accumulation of resistant mutations. For example, zidovudine resistance requires the presence of three mutations on a single viral genome to be clinically significant. This introduces the concept of "genetic barrier" for resistance.

In general, 3TC and the NNRTI's are considered to be drugs of "low genetic barrier" since only a single mutation (M184V for 3TC) can yield high-level drug resistance. Zidovudine, on the other hand, requiring at least 3 mutations on a single viral genome has a "high genetic barrier" for resistance. It takes a longer period of time for meaningful resistance to occur. This can also be expressed as decreasing sensitivity of the virus to the drug or phenotypic resistance where the IC50 increases. Clinically, combinations of drugs with high and low "genetic barriers" can be more potent.

Drug resistance has been observed in all of the protease inhibitors developed to date. In addition,

many strains of HIV have shown cross-resistance to a variety of protease inhibitors both in clinical use and in vitro. Mutation patterns observed with protease inhibitors are more complex than those observed with reverse transcriptase inhibitors. The reasons for this are that there are a greater number of mutations (at least 40) within the protease gene probably as a result of the protease enzyme adapting more easily than reverse transcriptase to pressures exhibited by anti-retroviral agents. However, protease inhibitors have a high "genetic barrier", where 5 to 6 mutations must occur to convey resistance.

Single-point mutations may confer resistance. Also, a variety of other mutations (both primary and secondary) may confer cross-resistance to all anti-retrovirals in the same class. An example of this is the K103N mutation resulting in cross-resistance to all non-nucleoside reverse transcriptase inhibitors. The amino acid change results in a change in the RT enzyme which in turn can no longer "take up" molecules of nevirapine, efavirenz or delavirdine.

How do we determine changes in the genome of reverse transcriptase or protease? Genotypic resistance assays determine the nucleotide sequence of genes encoding these enzymes. These assays are able to identify specific amino acid changes that confer resistance to particular anti-retroviral medications. They can rapidly detect all mutations in the reverse transcriptase and protease genes.

## **CANAC represented on The Hepatitis C Steering Committee**

Between July 2001 and March 2003 Health Canada funded an initiative titled: *Increasing Awareness and Competencies In Hepatitis C Among Nurses: A Comprehensive, Long-Term Program*. Under coordination of the Canadian Nurses' Association (CNA), fifteen nurses from various national nursing associations were recruited to participate in a steering committee mandated to develop several strategies to increase awareness and competencies in Hepatitis C care amongst nurses. I was one of them.

What are possible contributors to treatment failure? Examples provided by Dr. Wainberg include the host's immune status where advanced infection with a higher viral load, possibly a broader range of quasi-species present and a diminished ability immunologically to control viral replication. Inadequate drug levels and viral resistance are also possible. Some studies have noted that the prevalence of some degree of resistance in newly infected individuals is approximately 26% in some geographic areas and for patients who fail their first combination therapy the rate is up to 75%.

How can resistance be further prevented? Dr. Wainberg suggested five possible means of achieving this goal. The first is to completely suppress viral replication. Second, in theory, to shorten the time to undetectable levels (possibly by not giving the virus as much time to mutate) and next to use therapeutic drug monitoring to tailor the drug dosage for each patient. Genotypic testing in new patients who exhibit acute infection or are failing an anti-retroviral regimen is another tool to assist clinicians in selecting appropriate combination therapies. Finally, an essential method is to improve adherence to anti-retroviral therapy. Nurses working in this specialty have a role in patient adherence, improving patient's knowledge about the replication cycle of HIV and the role that anti-retroviral drugs play in this cycle.

by Ted Birse

The project is over now and some nurses had the opportunity to hear a bit about it in my workshop at our last conference in Halifax. Many others might be interested, so I shall attempt to give you a quick overview of some of the resources created during this project.

### **Hepatitis C: A Nursing Guide**

This is a guide for nurses, created by nurses, covering a lot of useful material, a bit like our Module 3 for Nursing HIV care but for Hepatitis C care.

More than 12000 hard copies have been distributed and it is available in English and in French on CNA's website in .pdf format (Adobe Acrobat).

## **Educate-the-Educator Resource Manual**

Five workshops were facilitated in five different cities by nurse-facilitators to bring together nurses with varied levels of skills and knowledge in Hepatitis C and in peer/adult education to assist them in building their capacity to play a leadership roles in disseminating information to their colleagues and clients.

These workshops were really appreciated by their participants and had amazing ripple effects in sharing available information and resources.

## **Internet based course**

Following a one-day workshop on Hepatitis C, which was offered prior to CNA's annual conference the presentations, were recorded and posted on the CNA web site.

This allows anyone interested in the various topics offered, to listen to the nursing experts present while following on the PowerPoint slides. This was possible using the Learning Library link on the web site.

## **Memories of Halifax**

This epidemic calls us to excel clinically, personally, spiritually and politically- how lucky that CANAC\ACIIS conferences always help us be better equipped to contribute. Thank you, hardworking Halifax committee, for continuing the tradition.

I have been back from the Halifax conference for a month now and despite all the intervening events, many images and words are fresh in my mind. Came home to SARS screening at our clinic, and fears of West Nile virus, (have just killed my first mosquito of the year in the house, at my computer); two projects on HIV best practices, one on stigma around HIV/AIDS, another on interventions for lesbian violence, a young client's suicide and a volunteer's death, two new client seroconversions, etc. Of course there are also the tulip festival and sunshine and client successes and a wonderful team. Still, I am wondering at what we choose to panic about, or are pushed into worrying about in the health fields. Of course other viruses hurt people and kill them, but HIV's toll is so huge and

## **List serv**

A strong desire to remain in touch and to allow other nurses to network with both the steering committee and the expert group led us to create another resource: A list serv.

This is available through a web site called community zero and selecting to join "Hepatitis C - Canadian Nurses Association". Check out [communityzero.com](http://communityzero.com). It's free.

Other strategies that the committee was either directly or indirectly involved with include: CNA's pre-conference workshop, a nurse's mentorship program and a survey of research priorities. The end of project report provides more details for those interested in finding out more.

For further information feel free to contact me.

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so many people seem relatively unconcerned. How are you all processing the "competing viruses" issue?

Ottawa's HIV nurses and allies are fortunate to have monthly education at HIV Primary Care meetings - good learning and networking events, sponsored by various pharmaceutical firms. Two recent topics show the range of HIV care- we've learned about a medical trip of folks from Ottawa to Gabon; volunteer nurses and doctors offering the best care possible in a situation where even the basics are often unavailable, and about sophisticated HIV treatments-the benefits of high genetic resistance in HIV medication regimes.

I had the pleasure of attending, for CANAC, the Canadian Nurses' Association breakfast during Nurses' Week. A panel addressed the ICN theme of fighting HIV discrimination and stigma, "caring for all". We heard about nurses' struggles to redress stigma, and times when our efforts fall short, reminding us of work still needed. CNA shared that some nurses had objected to the topic, saying it was inappropriate for an event supposed

to celebrate nursing. Dozens of nurses and allies there felt it was an excellent idea. What is your opinion? A reminder from one of the panelists also impressed me: applying universal precautions appropriately is an important way to reduce HIV stigma, while protecting the health both of nurses and clients.

Let me return to *Memories of Halifax*: just a few of the many reasons I was glad to be there- may they inspire you to book early for Toronto next April!

*Jean's presentation on mentoring*: how I love that concept, expert HIV nurses sharing wisdom and knowledge with novices to HIV care. Oasis nurses owe a lot to the informal mentoring of nurses from the Ottawa Hospital's HIV clinic and those from the University of Ottawa's Health Services; now we help others, and pass the caring on, as preceptors, informal mentors, presenters. It is inspiring that Quebec nurses have formalized this system, and I hope the idea grows across Canada. I will attend workshops June 12 and 13, and let you know my experiences.

*Grace and Margaret sharing the joys and trials of beginning a clinic*: like Oasis in Ottawa, for marginalized drug users, but in Fredericton where the drug of choice is Dilaudid. The idea has taken 7-8 years to grow into reality- community development lessons abound! A conflict in that workshop reminded me of the growth and learning that take place even when we disagree.

*John Flannery's presentation on HIV work with the developmentally delayed*: challenging us, encouraging us to apply our creativity to reaching another underserved group of people. How many nurses assume clients are asexual, or at least not sexually active? This assumption has proven to be an obstacle to prevention and holistic care in mental health care as well as other areas over the decades.

*The pride and joy of nurses celebrating other nurses*: the awards dinner with its delicious lobster and the fun of dancing; glimpses of the ocean.

*The surprising large turnout for the early morning meeting on international AIDS nursing*: partly inspired by Cheryl's story of her work in Botswana

*Faces new to me, and some familiar*  
CANAC supporters: missing some "usual attendees" and making new connections.



Cheryl Arneson and friends in Botswana

*The hotel business centre at 2 a.m.*: filled with nurses striving to do their best for their fellow nurses, wanting their talk to be just right.

*Three different presentations on the topic of Optimism*:

*Anticipating next year's conference already*: thinking of how to get even more nurses there, not only attending but also presenting, doing posters, workshops, panels, any means of bringing forth our challenges and successes. Start now to imagine yourself being there, and get a colleague involved-each one reach one-Share an aspect of your work with other nurses and our allies. Send your ideas for plenary speakers and topics, a concept that fascinates you or a problem you struggle with. Your organizing committee will appreciate any input, and the earlier the better.

*My opportunity to present on HIV, mental illness, and substance abuse*: our milieu at Oasis, and increasingly the clientele of all HIV clinics. Barney Hickey of BC generously shared his master's thesis on nurses and psychosocial needs of clients with me, and with all of us "I would gladly share any work I have done to help my fellow nurses in AIDS care." Thanks to him, our Oasis team and clients, and a course on dual diagnosis, offered in Ottawa by CMHA and facilitated by Dr Chip Palmer from Trinity College, Vermont. It is one of my favourite topics: how to reduce our clients' suffering without adding to our own. Oasis uses harm reduction, health promotion, and Prochaska and Diclemente's stages of change in addictions to guide us. Teamwork, partnership, motivational interviewing and purposeful use of self, help us build on client strengths. Facing lists of complex client needs, we sort out priorities using client

direction and Marsha Linehan's pyramid of priorities: safety issues first; next, treatment interfering issues; next, quality of life issues, etc. (board members are giving notes from all our presentations but I still have none of my hour-long talk in an electronic form so here's a summary and a promise of more in the future).

*Launching the new logo:* the dancing nurse/red ribbon cheers and inspires me!

*The breakout sessions :* asking our Ontario attendees for ideas on increasing membership; on what's wanted from the rep, the website and the newsletter. Having conversations that make you want more time. Ontario nurses suggested: increase membership via the 2004 conference program "rekindle the fire"; the theme will be on leadership and leading edge nursing; seek recruits also amongst those nurses needing basic HIV-taking care of PHA'S but not thinking of themselves

## **Thoughts from the Conference Chair**

It is hard to believe that more than a month has gone by since the conference. Looking back it all seems like a blur, The Tapestry of HIV Care has come and gone and now we all have a few more stories to tell. It was good to connect with friends from past conferences and to meet lots of new people.

This year's conference presented us with a few challenges; as you know funding for travel is getting harder to come by and this presented a challenge for many nurses. Then the war added to people's concern regarding air travel. That wasn't enough though; SARS hit and regrettably there were a few people that could not attend because they could not leave their place of work. We were very glad that just over 100 nurses were able to attend the conference.

Our opening speaker Dr Mark Wainberg opening plenary "Can We Overcome HIV Drug Resistance?" challenged us to think about the complex problem of resistance. Cheryl Arneson, warmed our hearts with her wonderful stories about her work in the International Plenary "Weaving My Way In: A Nursing Journey to Botswana". The concurrent workshops covered a wide range of topics; there was something for everyone. It always

as AIDS nurses; needing info and mentoring from specialist nurses. The 2006 International AIDS conference will be in Toronto; let's plan a nursing satellite; let's increase nurses' visibility as presenters. Keep up CANAC communication! For the newsletter: write about the awards winners and put them on the website too. Consider links to CME opportunities we can do on line; prep for the ACRN's; get a presentation on what the ACRN was like from those who have taken it; consider other presentations on the web; a chat room; links to scholarship or other funds for attending/presenting at conferences. Consider monthly email from the regional rep, including a reminder to members about upcoming newsletters so more people can contribute. Technology exists so we could have a kind of report form filled in on the web; would take minimal effort to collate. Whew! Not bad for 15 minutes work, eh? Those of you who were there , please correct me if my notes don't reflect your

amazes me the wealth of experience we have collectively, what an opportunity to show off what we do.

This year we had the opportunity to display a few panels from the NAMES project, the AIDS quilt. The quilt keeps us grounded, I believe it was a welcome addition; many participants have not seen the quilt recently or have not experienced it before.

The highlight for me for this year's conference was the Awards of Excellence. I think it is always the highlight of the conference to have the opportunity to recognize excellence in our peers. This year the Atlantic Provinces did very well with Margaret Dykeman and Consie Howley both receiving an award. The Lobster made the bus ride worth the ride. We did have a good time as promised, we danced, sang and laughed.

I would like to take this opportunity to wish good luck to next year's organizers, although with their experience I am sure they will sail through it without a worry.

My advise to you is if the conference is in your area or coming, get involved, it is lots of work but once it over you are so glad you did it. Think now about raising money to come to the conference next year, think about what you would like to present, remember we all have a story to tell.

Thank you  
Yvonne Lynch-Hill

## Where were the Posters?

I heard that more than once during the conference. What on earth happened to the posters? A poster is a good way to start presenting at an annual conference. They are not as threatening, you don't have to prepare a speech or stand in front of a crowd. You can tell the story of what you are doing in your clinic or some aspect of the care you give. The past few years we have not had many poster submissions and I think this is an important area where we can grow.

The posters we had were great; Kimberly Chow a fourth year nursing student from University of Alberta who was doing a clinical placement in our clinic in Halifax presented a case study entitled "A Complicated Case of PML in a Newly Diagnosed

HIV Patient". She got very good feedback and it was suggested she do an oral presentation on PML next year. Sonja Monteith BsN, Elizabeth Patterson BsN and Jasmine Yong BsN from British Columbia were very interesting to talk to as they shared their experience with Pain Management For HIV Inter-Venous Drug Users on an inpatient unit.

We need to hear from more of you. Think now about interesting cases you have had, if you work with students ask them to prepare a poster for the conference. If you need help preparing your poster there are lots of resources on line or ask your regional representative, I know they would be willing to lend a hand.

Let's see a room full of poster in Toronto.  
Yvonne

## Our Congratulations to our 2003 Awards of Excellence Winners...

Jill Sullivan Award for Excellence in Clinical Practice...  
Consie Howley (Mount Pearl, NF)

Newcomer of the Year Award... Tobin Brown (Newtonville, ON)

Exceptional Contribution to the Development of Nursing in HIV/AIDS Care... Diane Fillion (Ottawa, ON) and Margaret Dykeman (Hanwell, NB)



Award winners (from L to R): Margaret Dykeman, Tobin Brown and Consie Howley

## Ontario AIDS Bureau Scholarship Winners

The following members from Ontario won a scholarship to attend the 2004 CANAC Conference, thanks to the Ontario AIDS Bureau:

Michelle Gauthier

John Flannery

Nathalie Graveline

Tobin Brown

Judy Latendre Paquette

Congratulations to all!

## Winners of Complementary Conference Registrations

The following members won a complementary registration to the 2004 CANAC Conference:

Atlantic: Susan Hyndman, Halifax NS

Quebec: Johanne Belisle, Laval QC

Ontario: Bill Wade, Toronto ON

Prairie: Richard Johnson, Saskatoon SK

BC: Beth Pengelly, North Delta BC

Their names were drawn from amongst all members who joined or renewed by February 14, 2003.

# SNAPSHOTS



It's a gala affair



2002-2003 CANAC Board of Directors (from L to R standing): Jean Clermont-Drolet, Tracey Stevenson, Andrew Johnson, Hannah Cowen, Yvonne Lynch-Hill; (from L to R front row): Alan Wood, Brenda Done.



A view of Halifax



Andrew Johnson, CANAC Past-President, et al enjoying a fabulous lobster dinner.



Fiddler entertains the guests