

World AIDS Day AMA: We're Drs. Marina Klein and Jean-Pierre Routy and we're here on World AIDS Day to discuss the pathology and epidemiology of HIV infection.

WorldAIDSDayAMA¹ and r/Science AMAs¹

¹Affiliation not available

April 17, 2023

Abstract

Hi Reddit, we are Marina Klein and Jean-Pierre Routy Professors in the McGill University Faculty of Medicine, and clinician-scientists at the Research Institute of the McGill University Health Centre where we study the pathology and epidemiology of HIV infection and viral hepatitis co-infection. We're here on Worlds AIDS Day to answer your questions about human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS). We'll be here at 2:30 pm EST (11:30 am PST, 7:30 pm UTC) to answer your questions. Dr. Marina Klein is National Co-Director of the CIHR Canadian HIV Trials Network, and is an International AIDS Society (IAS) Governing Council representative for the North American Region. In addition, Dr. Klein leads one of the largest multi centre cohorts of HIV/Hepatitis C Virus co-infected in the world, including more than 1400 patients across Canada. The primary focus of her research is the study of the epidemiology and clinical aspects of HIV infection, particularly the impacts of HCV co-infection and antiretroviral and HCV therapies on the health of those infected by both viruses. Dr. Jean-Pierre Routy is Co-Director of the Immunotherapy and Vaccine Core group at the CIHR Canadian HIV Trial Network, and Co-Chair of the IAS Clinical Trails Scientific Working Group. Throughout his research career he has studied the pathologies of both cancer and HIV. His study of HIV infection has been concerned with study the interaction between the virus and the immune system, as well as understanding this pathology in the context of antiretroviral therapy, co-infection, and drug resistance. Edit: Moderator message. Drs. Klein and Routy are both in hospital today. Dr. Klein very much enjoyed participating but has now had to return to her duties. We haven't heard from Dr. Routy, though he did have a very busy schedule this afternoon. If we do hear from him we will updated you. - Surf

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ABSTRACT

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Thank you for doing the AMA!

What is the outlook now for someone who is HIV+?

I understand that it's now possible for someone to live an effectively normal life and lifespan, but what lifestyle changes are required?

[StonedPhysicist](#)

The outlook for people living with HIV has changed enormously in the last 10-15 years. Treatments are more effective, far simpler (as easy as one pill per day) and have fewer side effects than ever before. This means that someone diagnosed today who starts on treatment can expect to control their HIV infection, preserve their immune system and live a normal life expectancy. Effective HIV treatments prevent AIDS and a lot of other conditions that have been associated with having chronic inflammation from HIV infection such cancers and heart disease. The benefits of HIV treatment extend beyond benefits to individual health. When the virus is suppressed below the level of detection in the blood, it

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becomes very difficult for someone to transmit HIV infection thereby protecting their partners. Used on a wide scale, HIV treatments can therefore reduce the number of new infections that occur worldwide.

HIV still remains a chronic disease and is not curable. This means that people still have to take treatment every day for their entire lives. This isn't always easy. Side effects can occur and people can get tired of taking therapy. Infected people taking therapy will still need to be seen regularly by their physicians, have regular blood tests and screening for infectious and other diseases which occur more commonly in HIV infected people and simply those conditions that occur with aging such as heart disease, diabetes, high cholesterol and cancer. People who have been taking HIV treatment for a long time often experience more chronic health problems than the general population. Often these are the result of side effects from earlier generations of therapy or are the result of coinfections with other viruses such as hepatitis C and human papilloma virus that are more common. Many HIV physicians spend more time managing blood pressure, cholesterol and liver disease than HIV these days. /mk

Hi Dr. Klein and Dr. Routy! I'm a medical student at McGill and I really appreciated your lectures last year - they provided an accessible introduction to the basics of epidemiology that will stick with me for life.

What are your thoughts on pre-exposure prophylaxis for HIV prevention in at-risk populations and do you think it should be covered by provincial drug plans?

[offering imperfectly](#)

Thanks! Pre-exposure prophylaxis (PrEP) is a major advance in our tools to prevent HIV infection especially for high risk populations. There is currently no vaccine and condoms, while very effective at preventing infections, are used inconsistently. Taking a pill (tenofovir or tenofovir/FTC = Truvada) once a day or "on demand" (around planned sexual activity) have been shown in several randomized controlled trials to reduce the risk of HIV infection among high risk men who have sex with men, reducing the risk of getting HIV by 80-86% making it one of the most effective tools for HIV prevention we have. See today in the New England Journal of Medicine <http://www.nejm.org/doi/full/10.1056/NEJMoa1506273>

But this effect is only present WHEN the pill is taken consistently. Safety is very good. PrEP does not obviously protect against other sexually transmitted infections which occurred very commonly in those taking it in trials (e.g. syphilis, gonorrhoea and Chlamydia). And its role for protecting women is still uncertain. Several studies have suggested little or no effect. Currently it is also quite expensive (approx \$8000/year in Canada). There are very few jurisdictions where it is covered. Quebec may be one of the few places which has placed it on its formulary. PrEP is however likely to be cost effective especially in high risk, high prevalence settings so more advocacy for increasing access is needed. /mk

Thanks for doing this AMA.

As a high school health educator I find myself having to be mindful of the words I use and the approach I take when it comes to HIV/AIDS education. The focus of our lessons is on prevention, but I also don't want my students to be under the impression that their lives will be totally over or somehow less fulfilling if they or someone they know becomes HIV+, as the disease can be managed now. Most of all, I don't want my students to be fearful of those who are HIV+.

What do you wish health educators would focus on/or advice do you have when it comes to HIV/AIDS education in schools?

[chat lunatique](#)

Great question. My feeling is that HIV/AIDS education should come as early as possible and be normalized in the context of teaching a healthy understanding about sexuality. I think depending on your setting (clearly there are more and less liberal jurisdictions) it's important to be as open and frank about these things as possible. I've been heartened to see a growing openness to discussing issues of sexuality in schools and not linking certain behaviours to specific diseases rather focusing on how anyone can be affected and it's everyone's responsibility to know how to protect themselves and others and learn how to approach sex safely (not just from the disease perspective). E.g. Knowledge rather than fear based approaches to prevention. I'm not an educator, but peer to peer support and having real people come to speak can also be destigmatizing. /mk

When the media say transmission risk from someone with a undetectable viral load is very low or "closer to zero."

Can you please explain what very low mean? How close to zero is it?

[Hi5guy](#)

This is an excellent question. When the HIV viral load is undetectable AND there are no other risk factors promoting HIV transmission (such as an active sexually transmitted infection) the risk is essentially zero. The numbers quoted below come from the PARTNER study that looked at rates of HIV transmission between sero-discordant couples. They studied 1110 couples where the partners nearly 40% of whom were gay couples. This study found NO HIV transmissions between partners when HIV + partner had a viral load <200 copies/ml over 2 years in which they estimated there were 16,400 occasions of sex in the gay men and 28,000 in the heterosexuals. Because this was a study, there is always some uncertainty around these estimates and the % quoted below reflect the maximum level of risk these data are compatible with. That said, the collected evidence is very compelling that the risk is far below this. Nevertheless, in Canada the supreme court has deemed even a tiny risk is enough to require an HIV + person to disclose their status to a potential partner even when undetectable if they chose not to wear a condom. /mk

Hi!

A single thing is bothering me:

Why with all the knowledge and prevention programs HIV infections are growing? (at least in Europe)

[Voveve](#)

HIV treatments are expensive and still not accessible everywhere for everyone who needs them. Some people need to make hard choices about paying for medicine or for food, even in developed countries. Stigma still exists which means that disclosing one's HIV infection to friends, family, and partners and in the workplace is still challenging and can lead to discrimination and ostracization. People therefore often don't come forward for testing because of these reasons and therefore can't access the benefits of treatment. The lack of testing and the failure of people to have tested positive to be linked to care are recognized as the two major stumbling blocks to achieving the UN goals of 90-90-90-- that is to get 90% of people diagnosed, on treatment and undetectable. Recent changes to the guidelines to state that all HIV+ persons should be offered treatment will help achieve this worldwide, but HIV still occurs in very concentrated epidemics both in developing and developed countries. In these groups, there are often many barriers such as stigma, lack of education, and socio-economic hardships. In Canada for example, one of the fast growing epidemics is among Indigenous communities in Western Canada where injection drug use has become a real challenge. Similar epidemics are occurring in the rural US and in Eastern Europe. Concerted efforts are needed to have

improve access to diagnosis and care for these people. /mk

I remember hearing that 100 or so top AIDS researchers died in the Malaysian plane crash, how has this affected future AIDS endeavors?

edit: 6 Delegates on the plane. 100 attendees.

[HUMOROUSGOAT](#)

This tragic event deeply touched the AIDS research and care communities. While it is true that several very prominent AIDS researchers lost their contributions may not be replaceable, there is no doubt that this event galvanized their colleagues to take up the good work that was being done so that it can continue. /mk

What makes HIV/AIDS so hard to cure? As I'm aware, an immunisation involves injecting dead viral cells (I think they're viral? Polio/measles/etc.) into the body with a few other chemicals which helps the body develop antibodies. So what's stopping us from using dead HIV/AIDS cells to help us build antibodies?

[PM_ME_YOUR_EZREAL](#)

HIV is a virus that integrates its genetic material into our own DNA. It is therefore virtually impossible with our present tools to remove it without killing all the cells that it has infected. This is why to date the only example of a cure from HIV has been the "Berlin" patient discussed below. In this case, a HIV+ man was being treated for a leukemia and underwent chemotherapy and a bone marrow transplant which lead to eradication of all the infected cells. He was cured because he was transplanted with cells from a donor that were resistant to becoming infected with HIV as they lacked a key receptor for the virus to enter cells (CCR5). Such therapy is highly toxic and clearly not feasible on a wide scale. While HIV treatments can control viral replication and prevent new cells from becoming infected, HIV hides out in long lived cells throughout the body, often termed reservoirs. Many efforts have been underway to find novel ways to "flush" HIV out of these reservoirs and as yet have not yielded any viable therapeutic approaches. There are individuals who are infected with HIV however who manage to control the virus without medications. These people often called long term non-progressors or elite controllers provide evidence that in certain circumstances, the immune system is able to contain HIV. Much of current research efforts are now focused on better understanding how to replicate this type of viral control in people who are chronically infected--something that has been termed a functional cure. /mk

Hi Dr. Klein and Dr. Routy. Thanks for all your work and for doing this AMA.

What are your thoughts on the [WHO's recommendations for HIV prevention](#)? It seems they emphasize circumcision as a great prevention method, but only reference 3 RCTs that showed there was some prevention associated with circumcision. Other studies have found the opposite. Why not focus on education, condom use/safe sex, and testing instead?

References:

- [Van Howe & Storms \(2011\)](#)
- Boyle GJ, Hill G. [Sub-Saharan African randomised clinical trials into male circumcision and HIV transmission: methodological, ethical and legal concerns](#). J Law Med. 2011. Dec;19(2):316-34.

- Earp B. [A fatal irony: Why the "circumcision solution" to the AIDS epidemic in Africa may increase transmission of HIV](#). 2012.

Recently [I read an article that indicated that circumcised males in Swaziland were more likely to be infected with HIV due to them believing the circumcision was a preventative to contracting HIV](#).

Thank you for reading and hopefully answering my questions.

[skintact81](#)

I think that the objective evidence, including the 3 large randomized controlled trials you mention is very strong that circumcision is a very effective tool for HIV prevention (e.g. approximately 50% reduction in infections). These trials added to an equally large experience in observational settings about the consistent protective effects of this intervention. There are many people who are opposed to circumcision for ideological rather than medical reasons. There are also some practical reasons why this intervention may not be so easy to implement on a large scale. I think with all prevention efforts we need to look at all the potentially effective tools at our disposal and promote those that make most sense in a package which includes education, condom use, testing and use of antiretrovirals either as treatment for prevention or PrEP depending on the given context. There is as yet no magic bullet--vaccine or cure. /mk

If you were to give advice to a positive patient, would you tell their negative partner to get on Prep? Is Truvada the revolution some say it is?

[maestroenglish](#)

The most important thing is for the positive partner to get HIV treatment and maintain his/her viral load below the limit of detection. This is the best prevention. There is however a role for PrEP in the first 6 months after someone starts on HIV treatment before the time the virus becomes undetectable. /mk

Hi Dr. Klein and Dr. Routy! I'm in Med at McGill now -- super interested in infectious diseases, especially HIV and AIDS -- thanks for your lectures and the time you've taken to teach us.

I'm wondering -- globally, what do you think is the biggest challenge for the next generation of clinicians working on treating HIV? I know a lot of the numbers look great, but what trends, if any, should we be careful of and keep in mind during our training? Thanks a lot!

[raydiowaves](#)

Thank! In the near term, the challenges really will be around 1) implementation of all the existing tools we have (how to improve diagnosis and treatment access) particularly for high risk and stigmatized communities; 2) Managing chronic conditions for people living longer with HIV especially chronic HCV; 3) continuing efforts in biomedical sciences to come up with a vaccine or long-term functional cure for people living with HIV. /mk