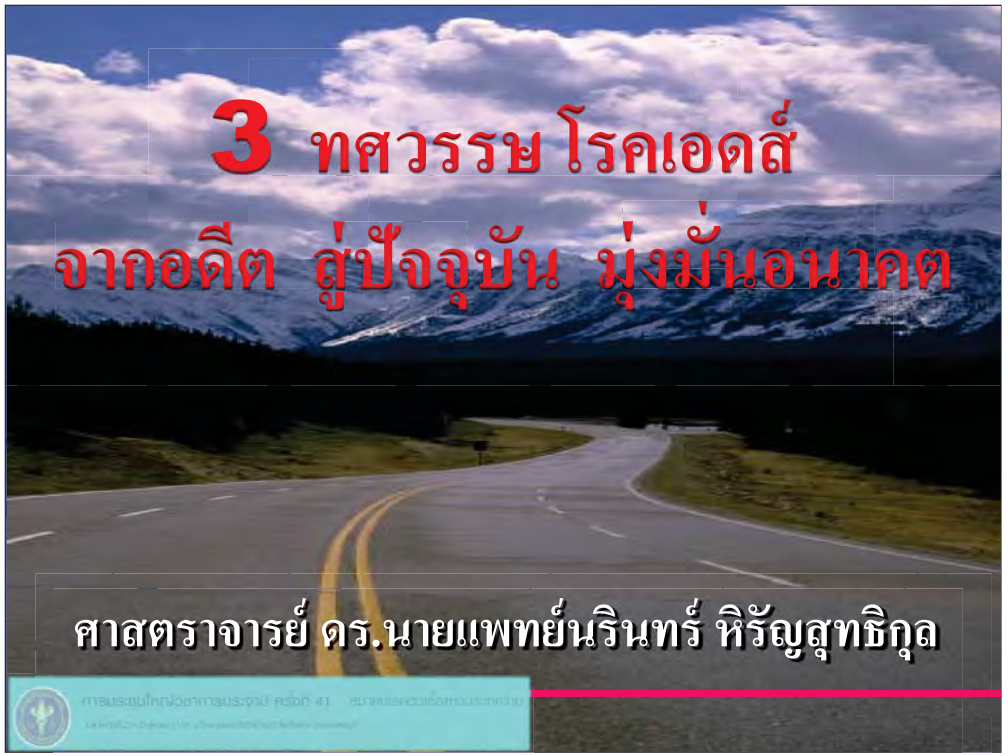
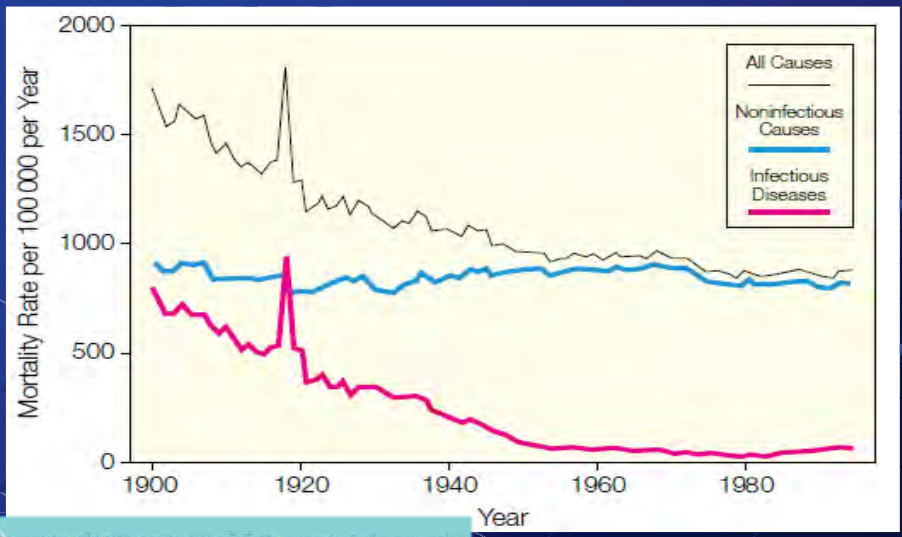
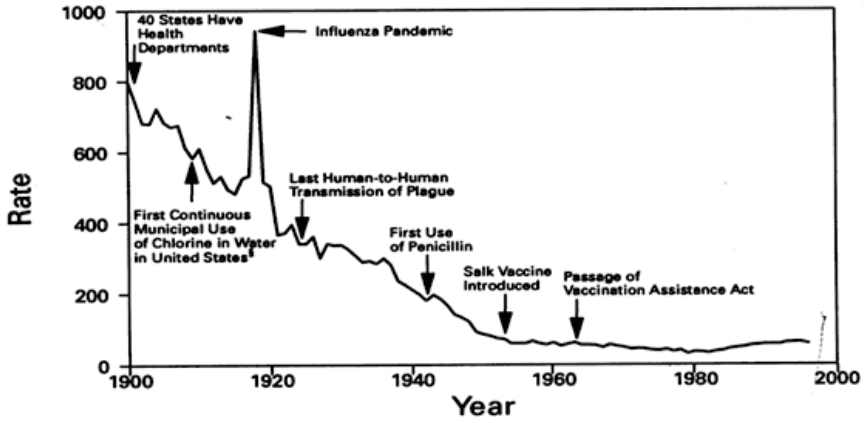


Crude Mortality Rates for All Causes, Non-Infectious Causes, and Infectious Diseases in USA 1900-1980



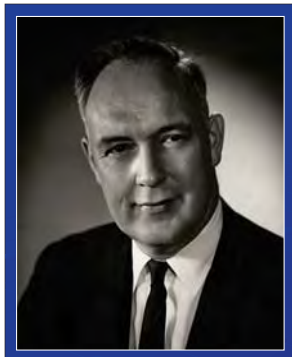
Armstrong GL. JAMA 1999;281:61-66.

Crude death rate for infectious diseases - United States, 1900 - 1996



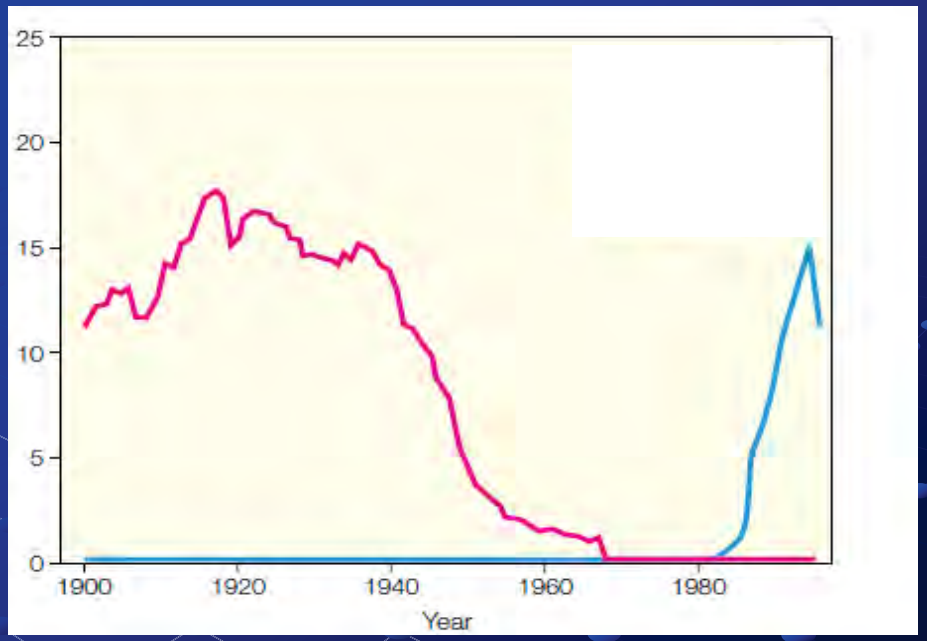
*Per 100,000 population per year.
†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA 1999:281;61–6.
§American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES



“ It’s time to close the book on infectious diseases, declare the war against pestilence won , and shift national resources to such chronic problems as cancer and heart disease.”

- US Surgeon General William H. Stewart, 1967



Armstrong GL. JAMA 1999;281:61-66.

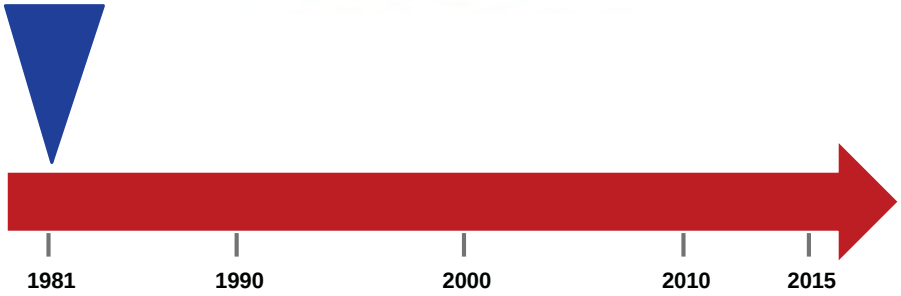
โรคเอดส์...โรคไร้พรมแดน

- เหตุการณ์และพัฒนาการที่สำคัญ
- สถานการณ์และแนวโน้ม
- ความก้าวหน้าด้านการรักษา
- การหายจากโรคเอดส์ (?)
- มุ่งสู่ทศวรรษที่4

โรคเอดส์...โรคไร้พรมแดน

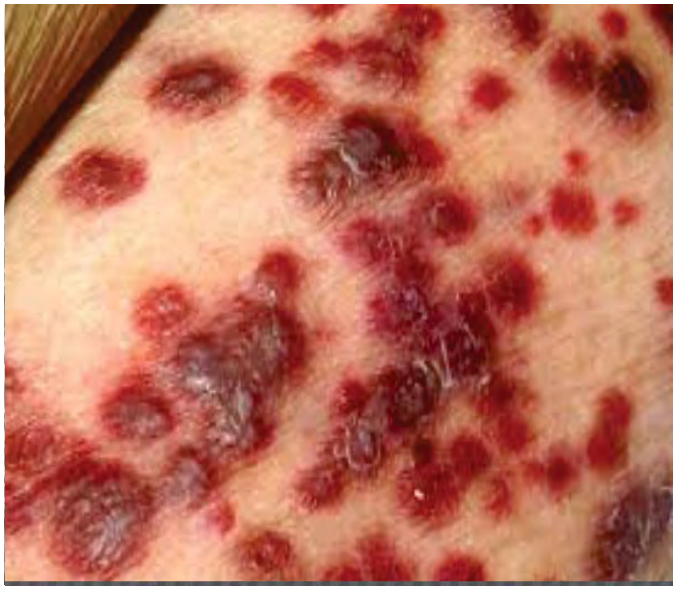
- เหตุการณ์และพัฒนาการที่สำคัญ

34 Years of HIV/AIDS




CONFIDENTIALITY ENDANGERED? / Halberstadt (P. 9)
NEW YORK
NATIVE
Summer Likes It Hot Native Fashions

May 18,1981



Lawrence D Mass
(Born 1946)


MMWR
MORBIDITY AND MORTALITY WEEKLY REPORT

June 5, 1981
Pneumocystis Pneumonia – Los Angeles

July 4, 1981
Kaposi's Sarcoma and Pneumocystis Pneumonia Among Homosexual Men – New York City and California


The Washington Post

August 30, 1981

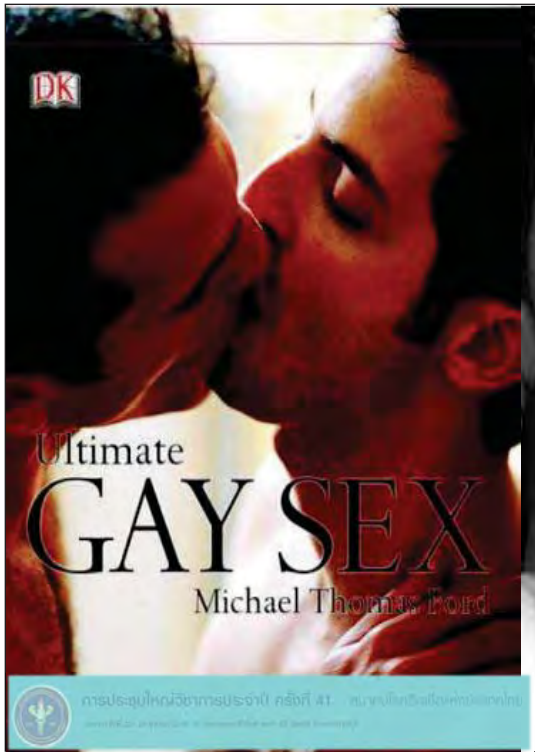
2 Mysterious Diseases Killing Homosexuals

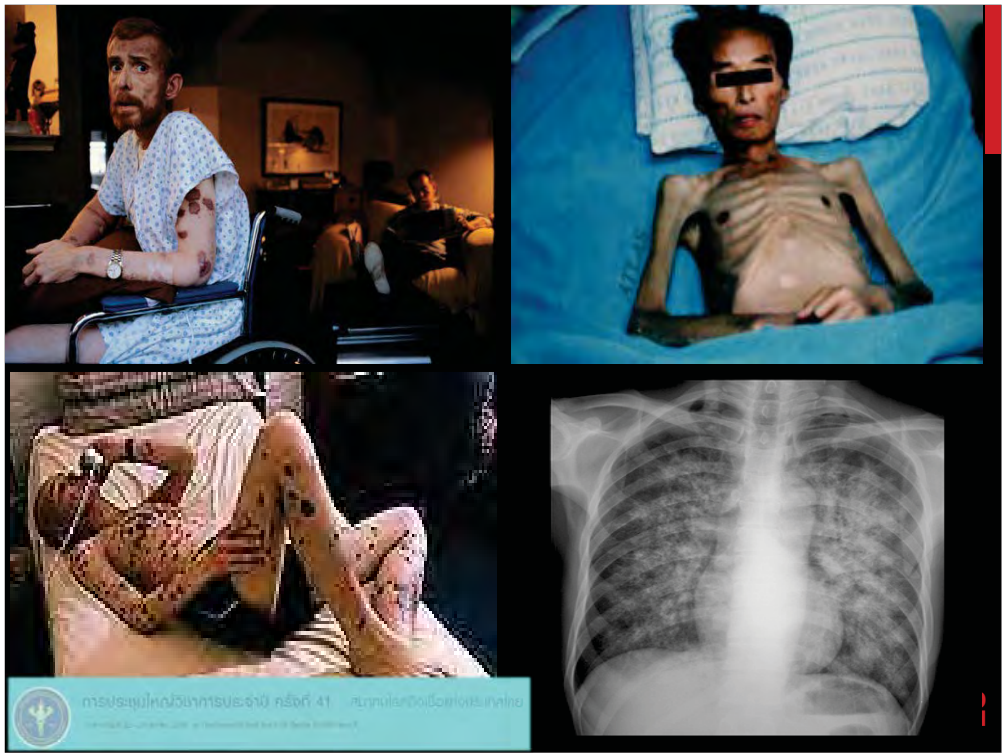
By Philip J. Hilts

Two rare diseases have suddenly struck more than 100 homosexual men in the United States and killed nearly half of them, in a medical mystery that appears to be on the scale of the toxic shock syndrome or Legionnaire's disease.

เดือนมิถุนายน พ.ศ.2524 ศูนย์ควบคุมโรคแห่งสหรัฐอเมริกาได้รับรายงานจากนครลอสแอลเจลิส รัฐแคลิฟอร์เนีย ว่ามี**ชายหนุ่มรักร่วมเพศ** 5 คน ป่วยเป็นปอดบวมจากเชื้อนิวโมซิสติส คารินิไอ 1 เดือนต่อมา มีรายงานจากนิวยอร์กและแคลิฟอร์เนียว่ามี **หนุ่มรักร่วมเพศอีก** 26 ราย ป่วยเป็นมะเร็งแคโปสิซาร์โคมา

ต่อมามีผู้ป่วยอีกหลายรายเป็นโรคปอดบวม และติดเชื้อฉวยโอกาส ชายหนุ่มที่ป่วยทุกรายไม่มีโรคประจำตัวและไม่เคยได้รับกดระบบภูมิคุ้มกัน ทุกราย พบว่าการทำงานของเซลล์ที่มีหน้าที่เกี่ยวข้องกับภูมิต้านทานผิดปกติ แม้ว่าจะได้รับการรักษาอย่างเต็มที่ **ทุกรายเสียชีวิตในเวลาอันรวดเร็ว**





This Week's Citation Classic®

Barré-Sinoussi F, Chermann J C, Rey F, Nugeyre M T, Chamaret S, Gruest J, Dauguet C, Axler-Blin C, Vézinet-Brun F, Rouzioux C, Rozenbaum W & Montagnier L. Isolation of a T-lymphotropic retrovirus from a patient at risk for acquired immune deficiency syndrome (AIDS). *Science* 220:868-71, 1983.
[Dépt. Virologie, Inst. Pasteur; Lab. Cent.-Virologie, Hôp. Claude Bernard, and Dépt. Santé Publique et Médecine Tropicale, Hôp. La Pitié-Salpêtrière, Paris, France]

This paper describes the isolation of the lymphadenopathy AIDS virus, obtained from a homosexual male presenting with lymphadenopathy. Antibodies to this virus were found in two patients' sera. This new retrovirus, not related to HTLV I, was T lymphotropic and produced a decline of lymphocyte proliferation (demonstrating a cytopathic effect). [The SCI® indicates that this paper has been cited in over 835 publications.]

Françoise Barré-Sinoussi
Jean-Claude Chermann
Luc Montagnier
Viral Oncology Unit
Institut Pasteur
75724 Paris
France

December 11, 1986

In 1983, when we published our first evidence for the role of a new retrovirus in AIDS and associated symptoms, the viral etiology of AIDS was already acknowledged by researchers in the field. However, the idea that our viral isolate was a new retrovirus that might be the cause of the disease was not very well accepted until it was confirmed one year later by other laboratories.

For several years, our laboratory had been involved in researching animal retroviruses and the control of retrovirus expression. In 1982 we were studying the presence of retrovirus related to mouse mammary tumor virus or M.MTV-related sequences in lymphocytes of patients with breast cancer.[1] Thus, in January 1983, when we decided to look for a retrovirus as a possible cause of AIDS, our laboratory was technically well placed to carry out such a study.

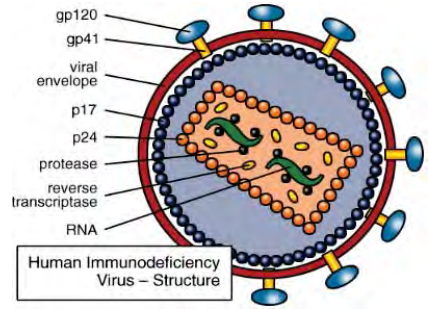
For our first attempt, we looked for a retrovirus produced by T lymphocytes, which were known to be affected by the disease. But we did not start with a preconceived idea about which retrovirus, if any, we would find. In order to be in the best situation for such an attempt and in collaboration with clinicians, we decided to study a man at risk for the disease, but who was not immunosuppressed; in such a case, the target cells for the etiological agent should still be present. We added antihuman interferon serum to the target-cell cultures since, in earlier studies, we had shown control of retrovirus production by endogenous interferon produced by cells.[2] A retrovirus was detected in our T-lymphocyte cultures' supernatant as early as two weeks after the beginning of the experiment, and, surprisingly, the virus-producing cell culture was dying. At that time, we thought that this virus might be a new one, so we were very eager to propagate it and not to lose it. However, we were rapidly successful in the infection of normal T cells from a healthy donor and from cord blood. This allowed us to study this virus in more detail, to confirm its new characteristics and to develop serologic tests.

Since the first discovery, this new retrovirus, named Lymphadenopathy Associated Virus (LAV) and also Human T-Lymphotropic Virus type III (HTLV III) and ARV (AIDS related virus) by others, has been recognized by the scientific community as the etiological agent of AIDS. This virus is also called Human Immune Deficiency Virus (HIV).

Thus, this paper is highly cited because it provided evidence for the role of a new human retrovirus in AIDS. It is satisfying to see researchers recognizing the contributions of our group to the field in which we continue to work.[3-5]

1. Crepin M, Lidereau R, Chermann J C, Pauillart P, Magdelenat H & Montagnier L. Sequences related to mouse mammary tumor virus genome in tumor cells and lymphocytes from patients with breast cancer. *Biochem. Biophys. Res. Commun.* 118:324-31, 1984.
2. Barré-Sinoussi F, Montagnier L, Lidereau R, Sitruse J, Wood J & Chermann J C. Enhancement of retrovirus production by anti-interferon serum. *Ann. Inst. Pasteur Microbiol.* 130B:549-62, 1979.
3. Montagnier L, Chermann J C, Barré-Sinoussi F, Chamaret S, Gruest J, Nugeyre M T, Rey F, Dauguet C, Axler-Blin C, Vézinet-Brun F, Rouzioux C, Saltmar G-A, Rozenbaum W, Gluckman J C, Klatzmann D, Vilmer E, Griscelli C, Foyer-Gazengel C & Brunet J B. A new human T-lymphotropic retrovirus: characterization and possible role in lymphadenopathy and acquired immune deficiency syndromes. (Gallo R C, Essex M E & Gross L, eds.) *Human T-cell leukemia/lymphoma virus. The family of human T-lymphotropic retroviruses: their role in malignancies and association with AIDS.* Cold Spring Harbor, NY: Cold Spring Harbor Laboratory, 1984. p. 363-79.
4. Chermann J C, Barré-Sinoussi F & Montagnier L. A new human retrovirus associated with acquired immunodeficiency syndrome (AIDS) or AIDS-related complex. (Dodd R Y & Barker L F, eds.) *Infection, immunity, and blood transfusion: proceedings of the XVth Annual Scientific Symposium of the American Red Cross, Washington, DC, May 8-11, 1984.* New York: Liss, 1985. p. 329-42.
5. Garfield E. The most-cited 1984 life sciences articles highlight AIDS research. *Current Contents* (49):3-17, 8 December 1986.

1-18



Human Immunodeficiency Virus – Structure

Discovery of HIV

From the earliest reports of a new disease, scientists around the world focused their efforts on finding the cause of AIDS. They circulated information informally; they held meetings to exchange ideas; and they published promising findings. A pioneer in this effort was Dr. Robert Gallo of the National Cancer Institute, who only recently had discovered the first two human retroviruses, HTLV-I and HTLV-II. In 1984, research groups led by Dr. Gallo, Dr. Luc Montagnier at the Pasteur Institute in Paris, and Dr. Jay Levy at the University of California, San Francisco, all identified a retrovirus as the cause of AIDS. Each group called the virus by a different name: HTLV-III, LAV, and ARV, respectively. As has happened many times in scientific history, contention emerged about who had been first. In 1987, the president of the United States and the prime minister of France announced a joint agreement on the issue–the first time a medical research question had reached this level of political negotiation. More importantly, the identification of that virus, renamed human immunodeficiency virus, or HIV, provided a specific target for blood-screening tests and for scientists around the world conducting research to defeat AIDS.

Schematic of HIV

The virus that causes AIDS is shown budding out of a human immune cell, which the virus infects and uses to replicate

Luc Montagnier

Researcher

Luc Antoine Montagnier is a French virologist and joint recipient with Françoise Barré-Sinoussi and Harald zur Hausen of the 2008 Nobel Prize in Physiology or Medicine for his discovery of the human immunodeficiency virus. Wikipedia

Born: August 18, 1932 (age 82), Chabris, France

Robert Gallo

Researcher

Robert Charles Gallo is an American biomedical researcher. He is best known for his role in the discovery of the human immunodeficiency virus as the infectious agent responsible for acquired immune ... Wikipedia

Born: March 23, 1937 (age 77), Waterbury, Connecticut, United States

Françoise Barré-Sinoussi

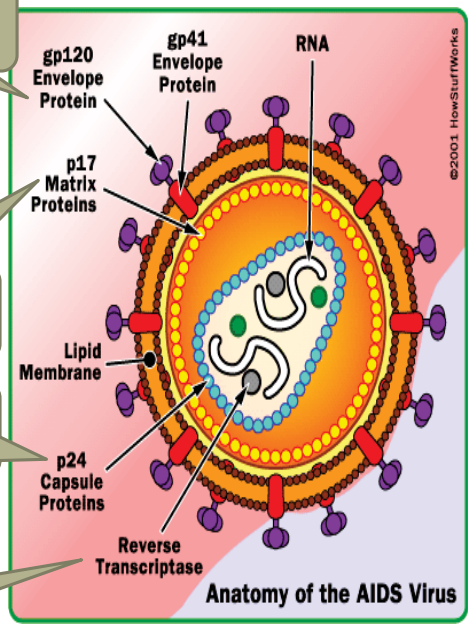
Françoise Barré-Sinoussi is a French virologist and director of the Regulation of Retroviral Infections Division at the Institut Pasteur in Paris, France. Wikipedia

Born: July 30, 1947 (age 67), Paris, France

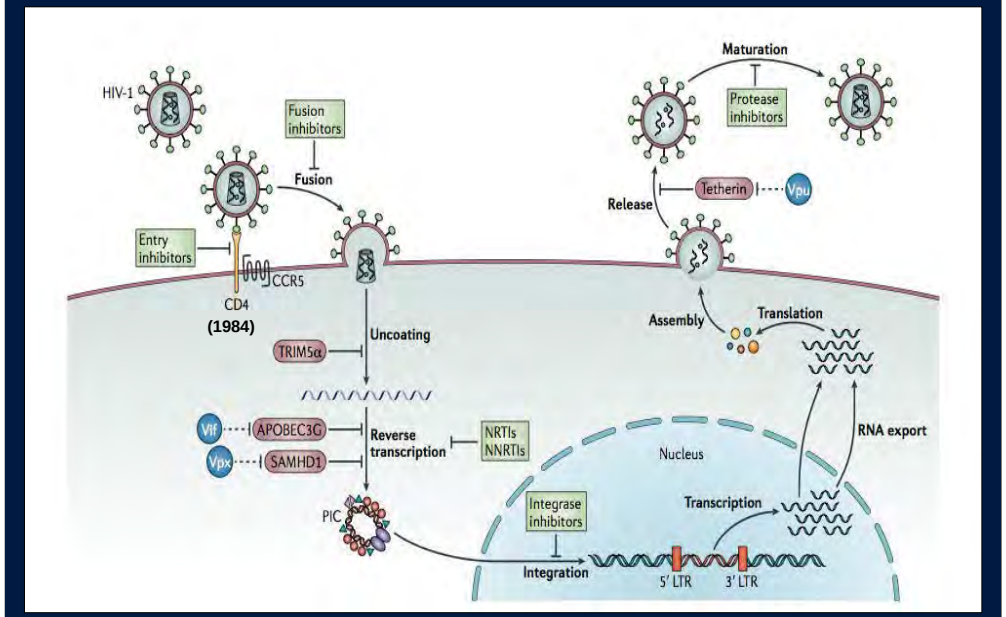
VIROLOGY

Family : Retrovirus

Single-stranded RNA

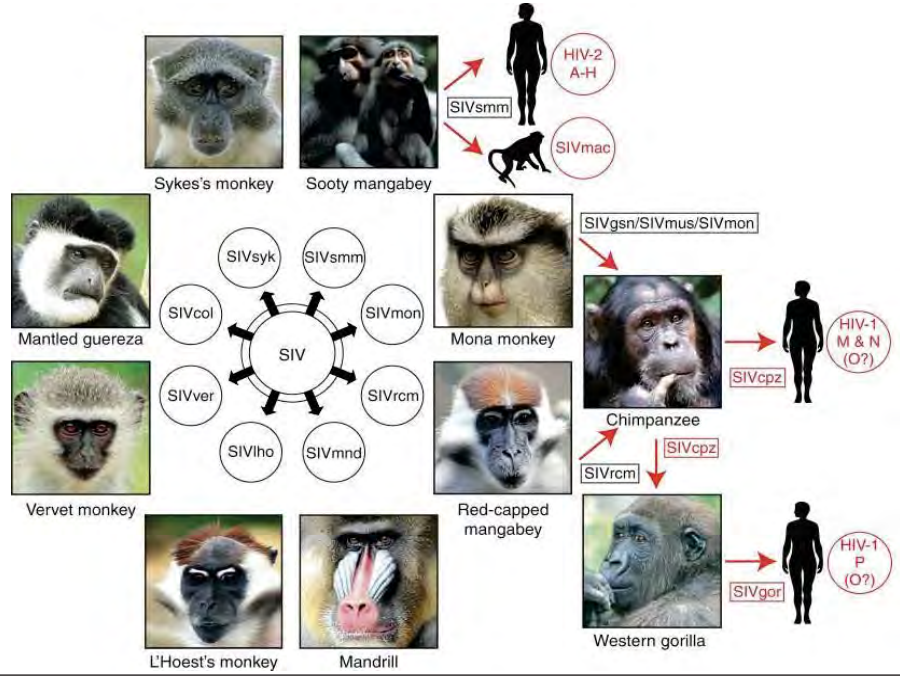


Schematic Overview of HIV Replication Cycle

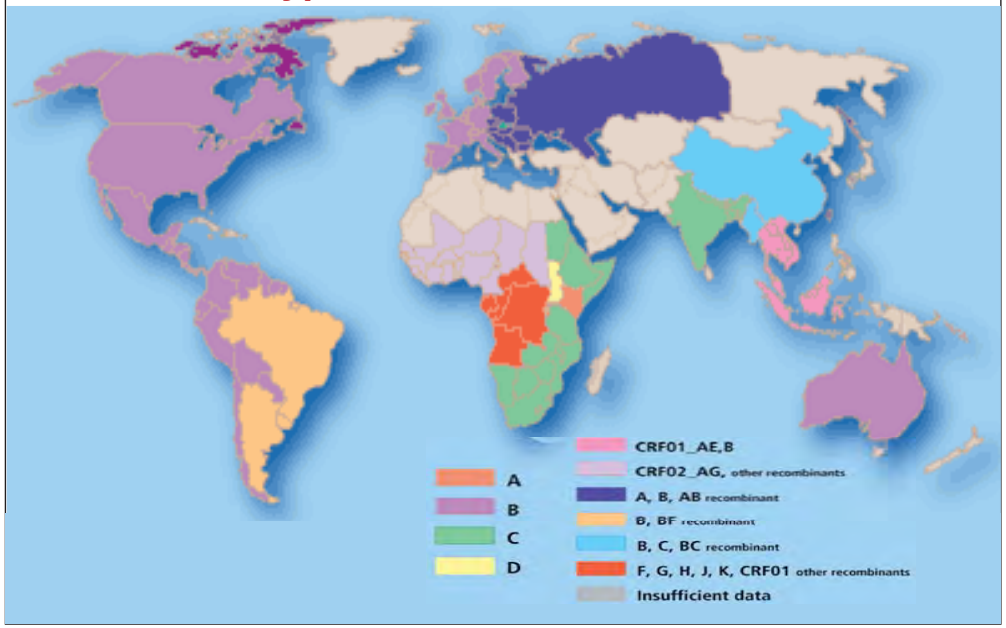


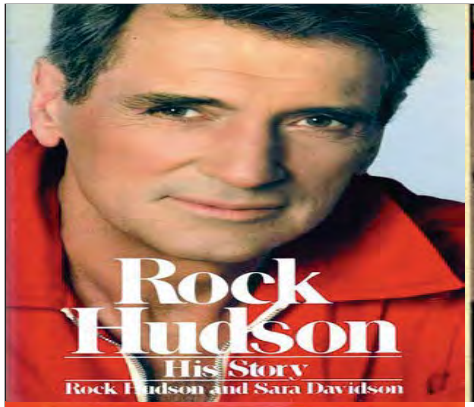
Barré-Sinoussi F, Ross AL, Delfraissy JF. Nat Rev Microbiol 2013; 11:887-883.

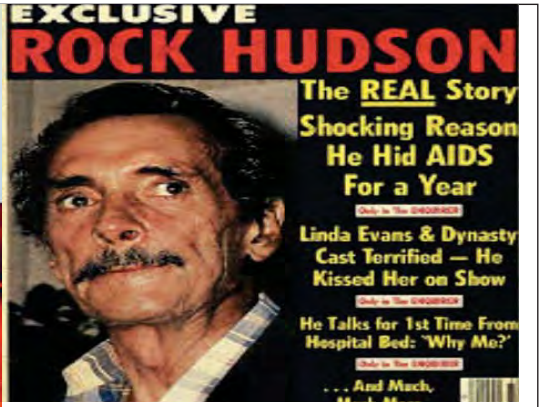
Origin of HIV

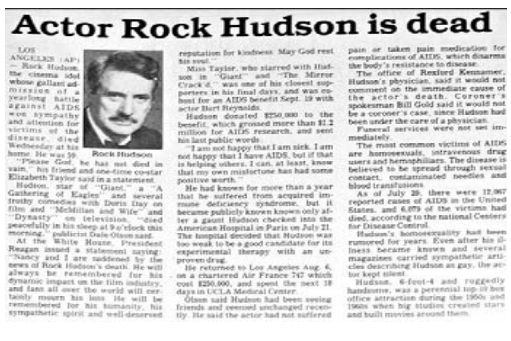


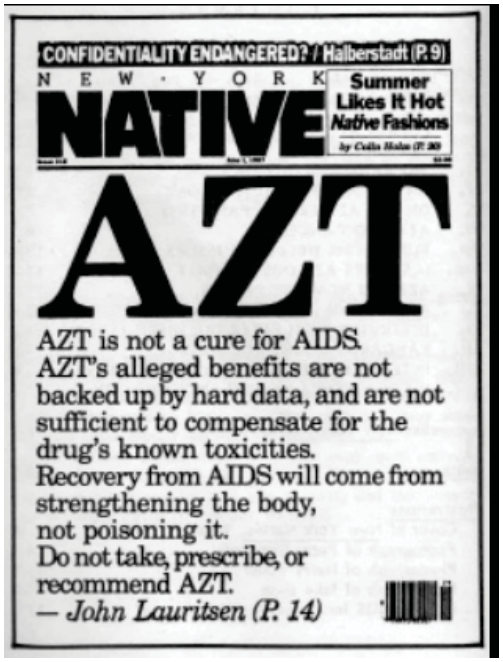
Regional Epidemic Patterns of Subtypes and Recombinants of HIV









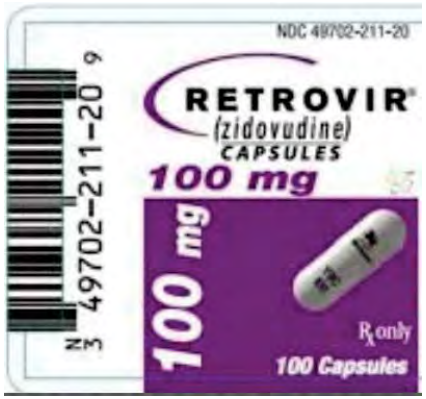

CONFIDENTIALITY ENDANGERED? / Halberstadt (P. 9)

NEW YORK NATIVE

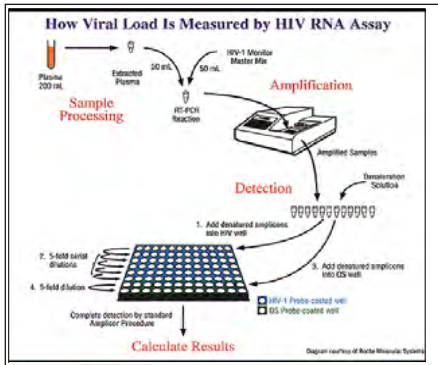
Summer Likes It Hot
Native Fashions
by Colin Mohn (P. 20)

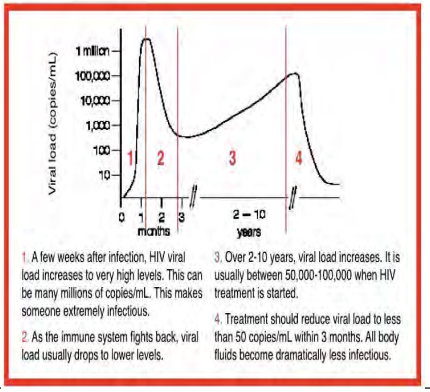
AZT

AZT is not a cure for AIDS.
AZT's alleged benefits are not backed up by hard data, and are not sufficient to compensate for the drug's known toxicities.
Recovery from AIDS will come from strengthening the body, not poisoning it.
Do not take, prescribe, or recommend AZT.
— *John Lauritsen (P. 14)*



The Impact of AIDS on the San Francisco Gay Men's Chorus





1. A few weeks after infection, HIV viral load increases to very high levels. This can be many millions of copies/mL. This makes someone extremely infectious.
2. As the immune system fights back, viral load usually drops to lower levels.
3. Over 2-10 years, viral load increases. It is usually between 50,000-100,000 when HIV treatment is started.
4. Treatment should reduce viral load to less than 50 copies/mL within 3 months. All body fluids become dramatically less infectious.

High Levels of HIV-1 in Plasma During All Stages of Infection Determined by Competitive PCR

M. Piatak, Jr., M. S. Saag, L. C. Yang, S. J. Clark, J. C. Kappes, K.-C. Luk, B. H. Hahn, G. M. Shaw, J. D. Lifson*

Quantitative competitive polymerase chain reaction (QC-PCR) methods were used to quantify virion-associated human immunodeficiency virus type–1 (HIV-1) RNA in plasma from 66 patients with Centers for Disease Control stage I to IVC1 infection. HIV-1 RNA, ranging from 100 to nearly 22,000,000 copies per milliliter of plasma (corresponding to 50 to 11,000,000 virions per milliliter), was readily quantified in all subjects, was significantly associated with disease stage and CD4+ T cell counts, and decreased by as much as 235-fold with resolution of primary infection or institution of antiretroviral therapy. Plasma virus levels determined by QC-PCR correlated with, but exceeded by an average of 60,000-fold, virus titers measured by endpoint dilution culture. Quantitation of HIV-1 in plasma by QC-PCR may be useful in assessing the efficacy of antiretroviral agents, especially in early stage disease when conventional viral markers are often negative.

M. Piatak, J. L. L. Yang, K.-C. Luk, J. D. Lifson, Division of HIV and Exploratory Research, Genelabs Technologies Inc., Redwood City, CA 94063
M. S. Saag and S. J. Clark, Division of Infectious Diseases, Department of Medicine, University of Alabama at Birmingham, Birmingham, AL 35294
J. C. Kappes, B. H. Hahn, G. M. Shaw, Division of Hematology-Oncology, Department of Medicine, University of Alabama at Birmingham, Birmingham, AL 35294.
*To whom correspondence should be addressed.

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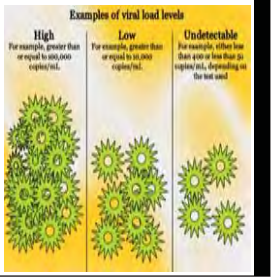
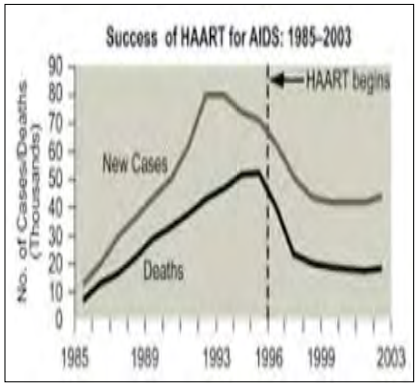
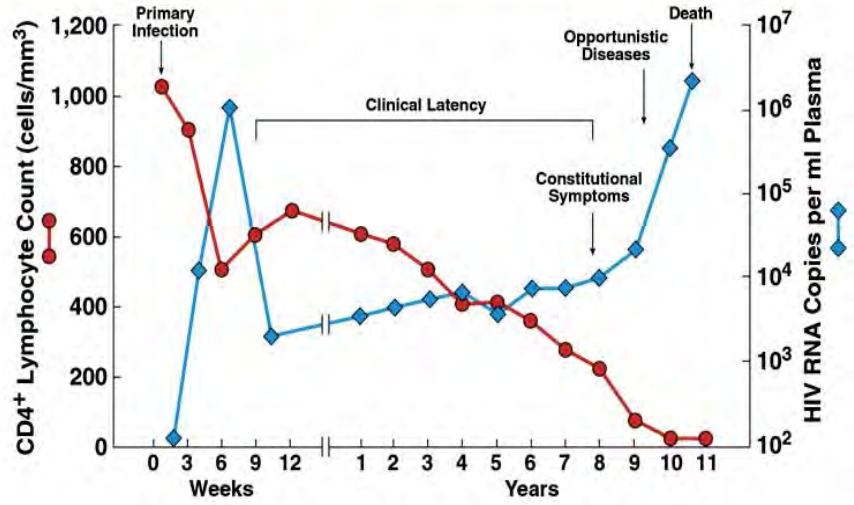


Vancouver 1996: Highly Active Antiretroviral Therapy Highlighted at IAS

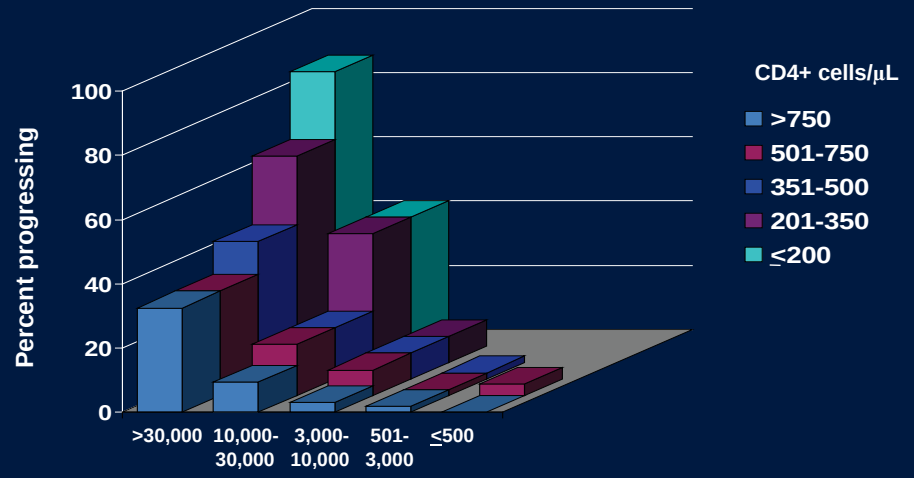


Typical Course of Untreated HIV Infection



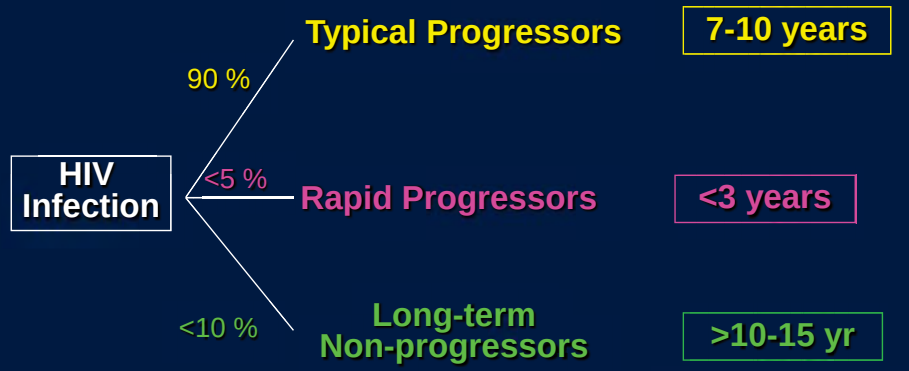
Modified From: Fauci, A.S., et al, Ann. Intern. Med., 124:654, 1996

Likelihood of Developing AIDS in 3 Years



Adapted from: Mellors J et al. Ann Intern Med. 1997

Patterns of HIV Disease Progression



โรคเอดส์...โรคไร้พรมแดน

- เหตุการณ์และพัฒนาการที่สำคัญ
- สถานการณ์และแนวโน้ม

Global estimates for adults and children | 2013

People living with HIV	35.0 million [33.2 million – 37.2 million]
New HIV infections in 2013	2.1 million [1.9 million – 2.4 million]
Deaths due to AIDS in 2013	1.5 million [1.4 million – 1.7 million]

New HIV infection ~ 5,753 cases / day

~ 240 cases/ hour

~ 4 cases/ minute

Source: UNAIDS

UNAIDS

Regional HIV and AIDS statistics and features | 2013

	Adults and children living with HIV	Adults and children newly infected with HIV	Adult prevalence (15–49) [%]	Adult & child deaths due to AIDS
Sub-Saharan Africa	24.7 million [23.5 million – 26.1 million]	1.5 million [1.3 million – 1.6 million]	4.7% [4.4% – 4.9%]	1.1 million [1.0 million – 1.3 million]
Middle East and North Africa	230 000 [160 000 – 330 000]	25 000 [14 000 – 41 000]	0.1% [<0.1% – 0.2%]	15 000 [10 000 – 21 000]
Asia and the Pacific	4.8 million [4.1 million – 5.5 million]	350 000 [250 000 – 510 000]	0.2% [0.2% – 0.2%]	250 000 [210 000 – 290 000]
Latin America	1.6 million [1.4 million – 2.1 million]	94 000 [71 000 – 170 000]	0.4% [0.4% – 0.6%]	47 000 [39 000 – 75 000]
Caribbean	250 000 [230 000 – 280 000]	12 000 [9400 – 14 000]	1.1% [0.9% – 1.2%]	11 000 [8300 – 14 000]
Eastern Europe and Central Asia	1.1 million [980 000 – 1.3 million]	110 000 [86 000 – 130 000]	0.6% [0.6% – 0.8%]	53 000 [43 000 – 69 000]
Western and Central Europe and North America	2 300 000 [2.0 million – 3.0 million]	88 000 [44 000 – 160 000]	0.3% [0.3% – 0.5%]	27 000 [23 000 – 34 000]
TOTAL	35.0 million [33.2 million – 37.2 million]	2.1 million [1.9 million – 2.4 million]	0.8% [0.7% - 0.8%]	1.5 million [1.4 million – 1.7 million]

The ranges around the estimates in this table define the boundaries within which the actual numbers lie, based on the best available information.

Source: UNAIDS

UNAIDS

Global HIV Burden, UNAIDS 2013

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
People living with HIV	29.8 million [28.1-31.9 million]	30.7 million [29.0-32.7 million]	31.4 million [29.7-33.3 million]	31.8 million [30.2-33.7 million]	32.1 million [30.5-34.0 million]	32.4 million [30.8-34.3 million]	32.7 million [31.2-34.6 million]	33.1 million [31.5-34.9 million]	33.4 million [31.8-35.2 million]	33.8 million [32.2-35.6 million]	34.2 million [32.5-36.2 million]	34.6 million [32.8-36.6 million]	35.0 million [33.2-37.2 million]
New HIV infections (Total)	3.4 million [3.3-3.6	3.3 million [3.1-3.5	3.1 million [3.0-3.3	3.0 million [2.8-3.2	2.9 million [2.7-3.1	2.8 million [2.6-3.0	2.7 million [2.5-2.9	2.6 million [2.4-2.8	2.5 million [2.3-2.7	2.5 million [2.3-2.7	2.4 million [2.2-2.6	2.2 million [2.0-2.5	2.1 million [1.9-2.4
New HIV infections (adults)	2.9 million	2.7 million	2.6 million	2.4 million	2.3 million	2.2 million	2.2 million	2.2 million	2.1 million	2.1 million	2.1 million	2.0 million	1.9 million
New infections (children)	580 000 [530 000]	580 000 [540 000–	580 000 [540 000–	570 000 [520 000–	550 000 [510 000–	520 000 [480 000–	490 000 [450 000–	460 000 [420 000–	400 000 [370 000–	360 000 [330 000–	330 000 [290 000–	270 000 [240 000–	240 000 [210 000–
AIDS-related deaths	2.0 million [1.8-2.2 million]	2.1 million [2.0-2.4 million]	2.3 million [2.1-2.5 million]	2.4 million [2.2-2.6 million]	2.4 million [2.2-2.6	2.3 million [2.1-2.5	2.2 million [2.0-2.4	2.1 million [1.9-2.3	2.0 million [1.8-2.1	1.9 million [1.8-2.1	1.8 million [1.7–2.0	1.7 million [1.5-1.8	1.5 million [1.4-1.7
People accessing treatment									5.2 million	7.4 million	9.0 million	10.6 million	12.9 million
Resources		US$ 3.8 billion	US$ 4.6 billion	US$ 5.7 billion	US$ 7.4 billion	US$ 8.8 billion	US$ 10.5 billion	US$ 14.6 billion	US$ 15.5 billion	US$ 15.6 billion	US$ 17.1 billion	US$ 18.9 billion	US$19.1 billion

38%

34%

58%

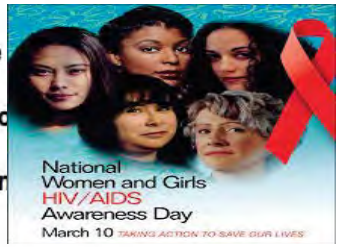
35%

37% (38%, 24%)

About 6,300 new HIV infections a day in 2012

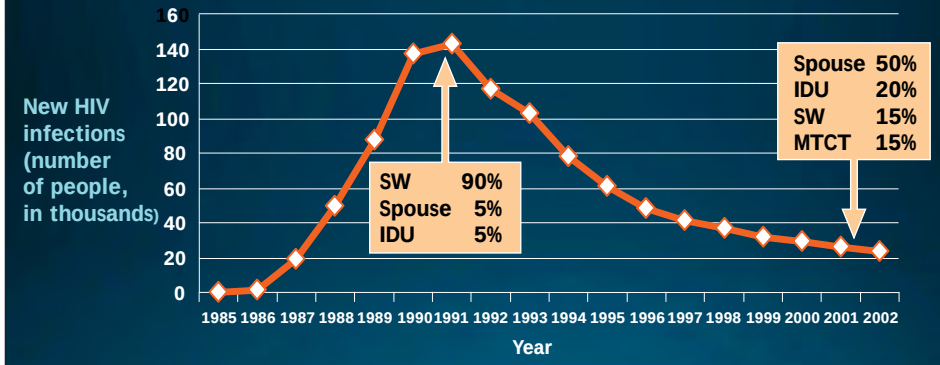
- middle-income
- nder 15 years o
- ged 15 years an

– about 39% are among young people (15-24)



= **4.4 case / minute**

Estimated number of new HIV infections in Thailand by year and changing mode of transmission MOPH Surveillance



Spouse: heterosexual transmission of HIV in cohabiting partnerships;
SW: HIV transmission through sex work
IDU: HIV transmission through injecting drug use; **MTCT**: mother to child transmission of HIV

Source: Thai Working Group on HIV/AIDS Projections, 2001
2004 Report on the Global AIDS Epidemic (Fig 4)

22-23 cases/day
~ 1 cases/hour

Table 1: Key figures of HIV estimation, Thailand

UNAIDS; Thailand progress reports 2014

Estimated Number	2000	2005	2011	2013	
New infections in adult people *	28,241	15,266	9,503	8,134	- 71%
New infections in adult women *	15,716	7,237	2,919	2,235	- 86%
Annual AIDS mortality in adult people *	55,079	30,805	19,511	20,962	- 62%
Annual AIDS mortality in adult women *	12,036	7,153	6,133	6,282	- 48%
Adult people living with HIV *	676,005	544,743	475,638	451,258	
Adult women living with HIV *	217,860	212,351	204,767	193,965 (43%)	
New infections in children <15 years **	1,378	748	176	122	- 91%
Annual mortality among children < 15 years**	452	406	173	158	- 65%
Children < 15 years living with HIV**	7,836	11,065	9,709	8,430	
Total population (million)	**60.6**	**63.1**	**64.1**	**64.5**	

* Estimated from Asian Epidemic Model ** Estimated from Spectrum

สถานการณ์ ผู้ติดเชื้อเอดส์ ในประเทศไทย

ในรอบ 30 ปีที่ผ่านมา

ไทยมีผู้ติดเชื้อที่เป็นผู้ใหญ่สะสมทั้งหมด

1,200,000 คน

เสียชีวิต กว่า 700,000 คน

คาดว่าในปี 2557 นี้ สถานการณ์ภาพรวมดีขึ้น

มีผู้ติดเชื้อเดิมและยังมีชีวิต ทั้งหมด

446,154 คน

ในจำนวนนี้เป็นเด็กอายุน้อยกว่า 15 ปี

7,525 คน

ผู้ติดเชื้อรายใหม่ เฉลี่ยวันละ 22 คน

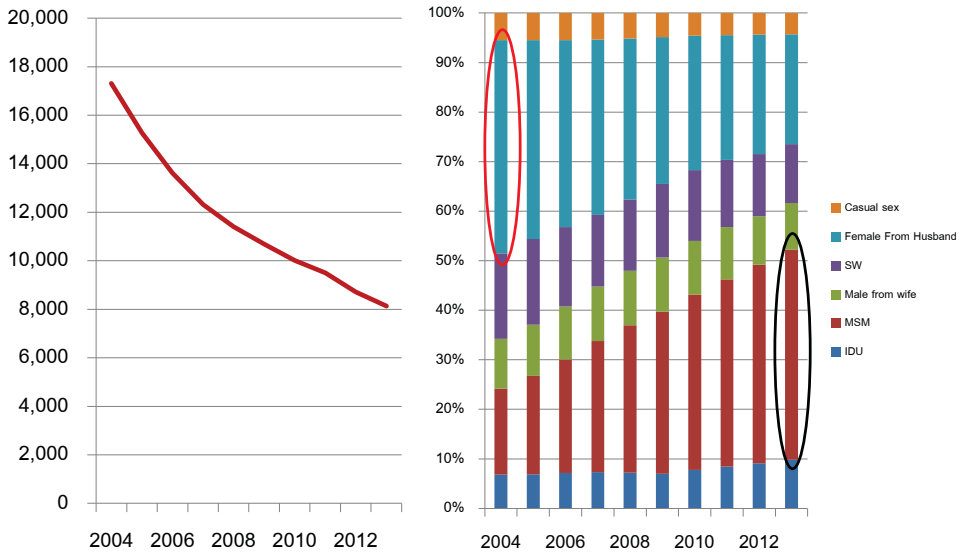
98% เป็นผู้ใหญ่

เด็ก 104 คน

ผู้เสียชีวิตมีประมาณวันละ 56 คน

ถือเป็นสัญญาณโรคที่ดีว่าอัตราการเพิ่มของผู้ติดเชื้อได้ลดลงแล้ว

การคาดประมาณจำนวนผู้ติดเชื้อเอชไอวีรายใหม่

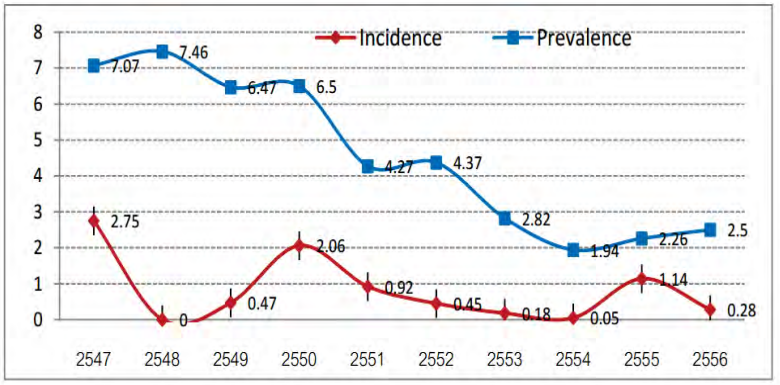


ที่มา: Summary Result 2010-2030 Projection for HIV/AIDS in Thailand, BOE. DDC. MOPH.

แนวโน้มการระบาดในผู้ที่มีพฤติกรรมเสี่ยงสูง

รูปที่ 3 ความชุกของการติดเชื้อเอชไอวี และอุบัติการณ์การติดเชื้อเอชไอวี กลุ่มพนักงานบริการหญิงตรง ประเทศไทย พ.ศ. 2547 - 2556

ร้อยละ



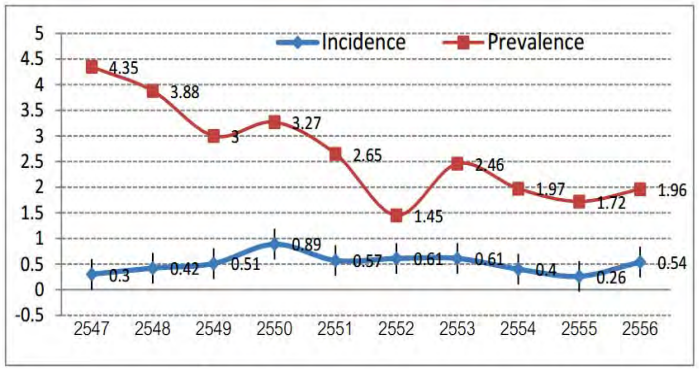
ที่มา : การเฝ้าระวังการติดเชื้อเอชไอวี พ.ศ. 2547 - 2556 สำนักระบาดวิทยา กรมควบคุมโรค

ภาพรวมสถานการณ์การระบาดของการติดเชื้อเอชไอวี ประเทศไทย **พ.ศ. 2556** สำนักระบาดวิทยา กรมควบคุมโรค

แนวโน้มการระบาดในผู้ที่มีพฤติกรรมเสี่ยงสูง

รูปที่ 4 ความชุกของการติดเชื้อเอชไอวี และอุบัติการณ์การติดเชื้อเอชไอวีกลุ่มพนักงานบริการหญิงแฝง ประเทศไทย พ.ศ. 2547 - 2556

ร้อยละ



ที่มา : การเฝ้าระวังการติดเชื้อเอชไอวี พ.ศ. 2547 - 2556 สำนักระบาดวิทยา กรมควบคุมโรค

ภาพรวมสถานการณ์การระบาดของการติดเชื้อเอชไอวี ประเทศไทย พ.ศ. 2556 สำนักระบาดวิทยา กรมควบคุมโรค

แนวโน้มการระบาดในผู้ที่มีพฤติกรรมเสี่ยงสูง

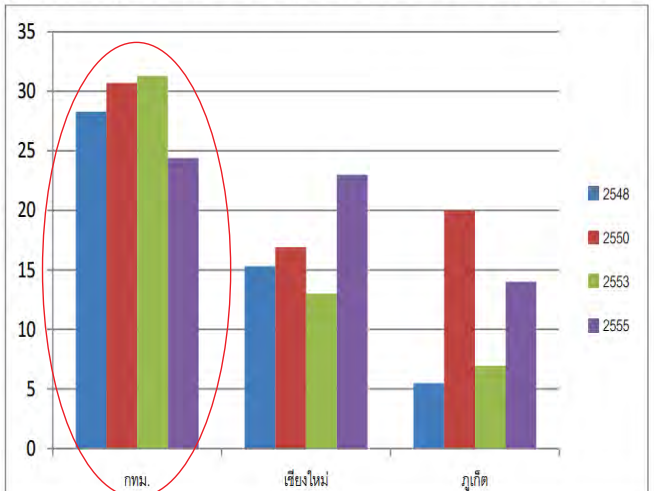
ตารางที่ 3 อัตราความชุกการติดเชื้อฯของพนักงานบริการหญิงที่ทำงานนอกสถานบริการและ ในสถานบริการพ.ศ. 2550 และ 2554

ประเภทของพนักงานบริการ	พ.ศ. 2550		พ.ศ. 2554		
	กทม.	เชียงราย	เชียงใหม่	ภูเก็ต	ชลบุรี
พนักงานบริการทำงาน*นอก*สถานบริการ (จำนวน)	20.0%	10.0%	5.0%	1.4%	1.2%
	(519)	(87)	(287)	(285)	(284)
พนักงานบริการทำงานในสถานบริการตรง (จำนวน)	4.6%	6.9%	3.1%	2.8%	-
	(264)	(72)	(128)	(284)	
พนักงานบริการทำงานในสถานบริการแฝง (จำนวน)	1.6%	1.2%	0.98%	2.61%	-
	(314)	(573)	(205)	(274)	

ภาพรวมสถานการณ์การระบาดของการติดเชื้อเอชไอวี ประเทศไทย พ.ศ. 2556 สำนักระบาดวิทยา กรมควบคุมโรค

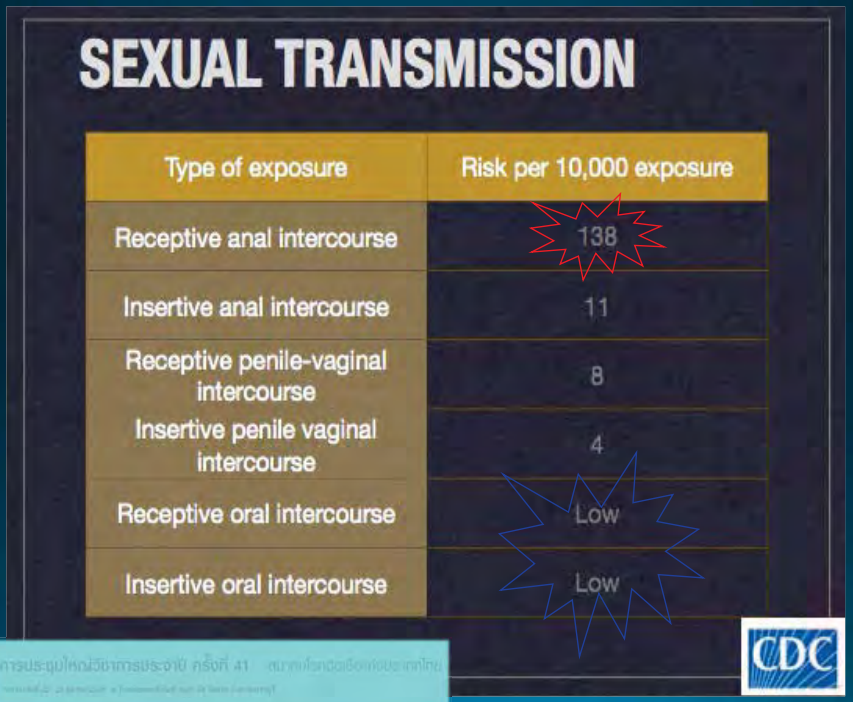
แนวโน้มการระบาดในผู้ที่มีพฤติกรรมเสี่ยงสูง

รูปที่ 6 : ความชุกการติดเชื้อเอชไอวี ในกลุ่มชายมีเพศสัมพันธ์กับชาย ในกรุงเทพฯ เชียงใหม่และภูเก็ต พ.ศ.2548 – 2555



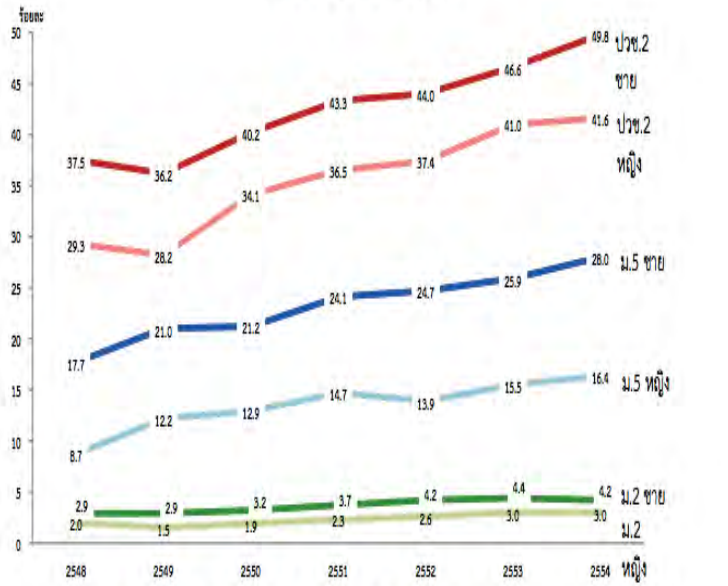
แหล่งที่มา : การสำรวจ IBBS ในกลุ่มชายมีเพศสัมพันธ์กับชาย พ.ศ. 2548 – 2555, สำนักระบาดวิทยา และศูนย์ความร่วมมือไทย-สหรัฐด้านสาธารณสุข

ภาพรวมสถานการณ์การระบาดของการติดเชื้อเอชไอวี ประเทศไทย พ.ศ. 2556 สำนักระบาดวิทยา กรมควบคุมโรค



ภาพรวมสถานการณ์การระบาดของการติดเชื้อเอชไอวี ประเทศไทย พ.ศ. 2556 สำนักระบาดวิทยา กรมควบคุมโรค

ร้อยละของนักเรียนเคยมีเพศสัมพันธ์



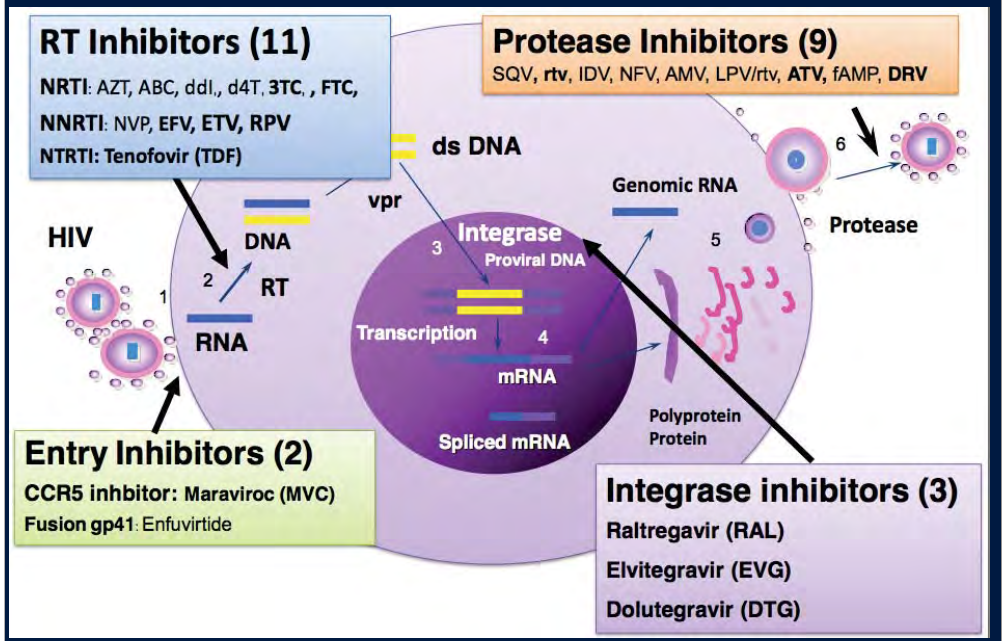
ที่มา : ผลการเฝ้าระวังพฤติกรรมที่สัมพันธ์กับการติดเชื้อเอชไอวี กลุ่มนักเรียนประเทศไทย 2554, สำนักระบาดวิทยา กรมควบคุมโรค

โรคเอดส์...โรคไร้พรมแดน

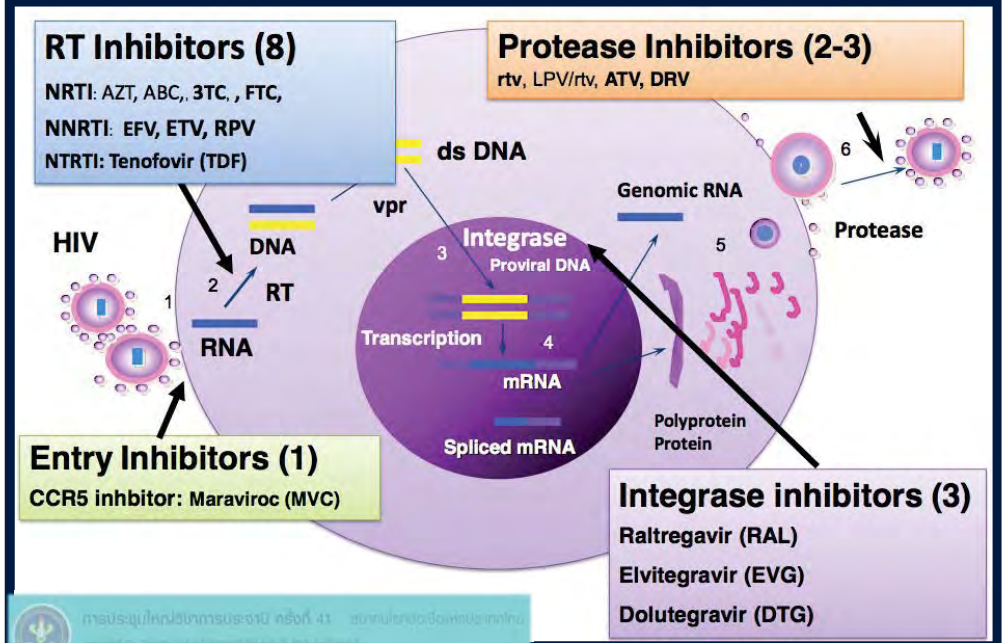
- เหตุการณ์และพัฒนาการที่สำคัญ
- สถานการณ์และแนวโน้ม
- ความก้าวหน้าด้านการรักษา

47

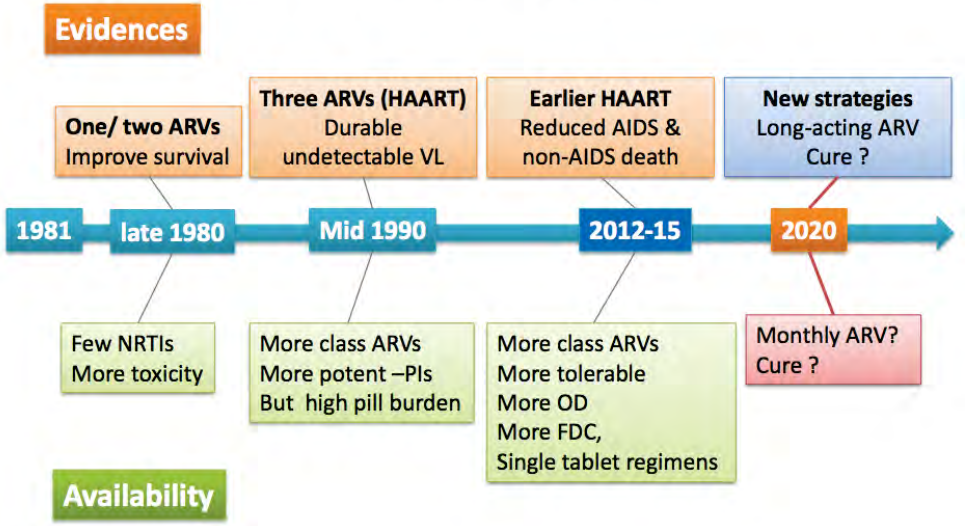
Antiretroviral Agents



Current Antiretroviral Agents



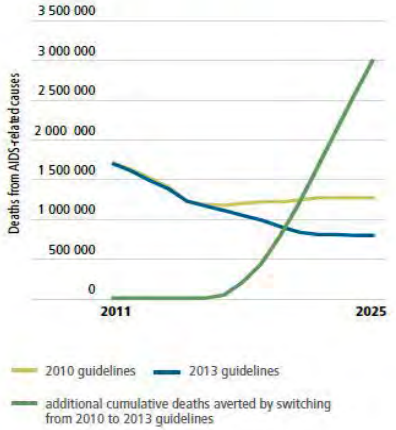
Three Decades of Learning and the Future



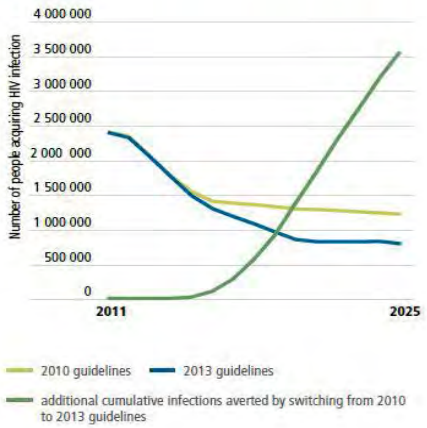
Treatment Simplification for PLWHIV

- Since the HAART era, treatment of HIV infection has become more potent and increased survival of PLWHIV
- Current HAART are more effective, more convenient, and less toxic than regimens used in the early HAART
- Treatment Simplification is an option for many patients currently being treated with HAART

Projected annual number of people dying from AIDS-related causes in low- and middle-income countries based on the 2010 WHO treatment guidelines and the 2013 WHO ARV guidelines and cumulative deaths averted by switching from 2010 to 2013 guidelines, 2011–2025



Projected annual number of people acquiring HIV infection in low- and middle-income countries based on the 2010 WHO treatment guidelines and on the 2013 WHO ARV guidelines and additional cumulative number of people avoiding HIV infection by switching from 2010 to 2013 guidelines, 2011–2025



Impact on life expectancy of HIV-1 positive individuals of CD4+ cell count and viral load response to antiretroviral therapy

Margaret T. May[a], Mark Gompels[b], Valerie Delpech[c], Kholoud Porte[d], Chloe Orkin[e], Stephen Kegg[f], Phillip Hay[g], Margaret Johnson[h], Adrian Palfreeman[i], Richard Gilson[j], David Chadwick[k], Fabiola Martin[l], Teresa Hill[m], John Walsh[n], Frank Post[o], Martin Fisher[p], Jonathan Ainsworth[q], Sophie Jose[m], Clifford Leen[r], Mark Nelson[s], Jane Anderson[t], Caroline Sabin[m], for the UK Collaborative HIV Cohort (UK CHIC) Study

AIDS 2014, 28:1193–1202

Keywords: antiretroviral therapy, CD4+ cell count, HIV, HIV-1 RNA, life expectancy, viral load

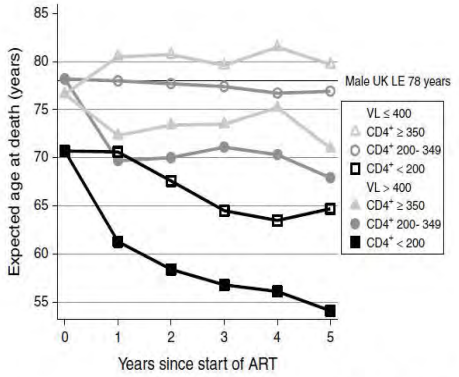


Fig. 1. Expected age at death of men aged 35 years at different durations of antiretroviral therapy according to current CD4+ cell count and viral suppression compared with the general population.

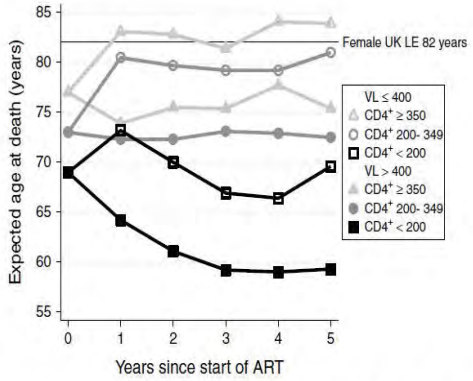
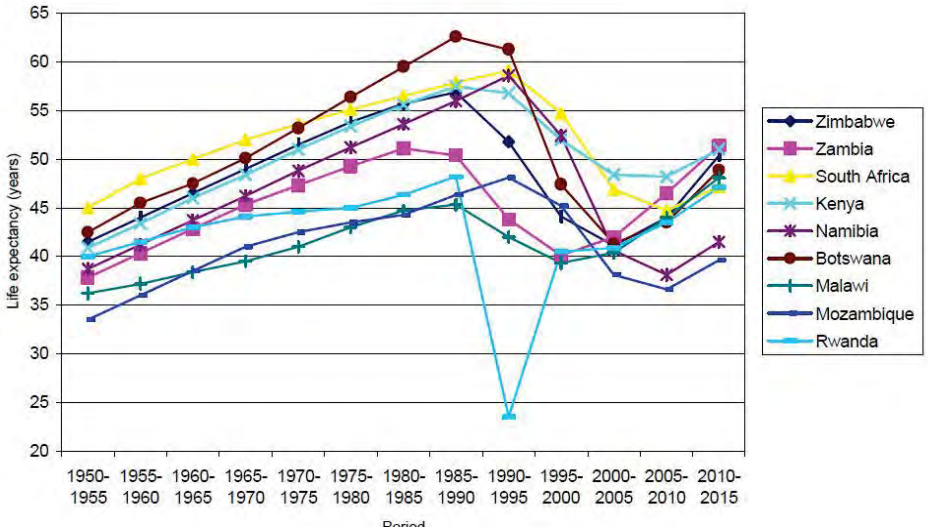
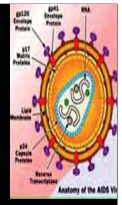


Fig. 2. Expected age at death of women aged 35 years at different durations of antiretroviral therapy according to current CD4+ cell count and viral suppression compared with the general population.

LIFE EXPECTANCY AT BIRTH WITH AND WITHOUT AIDS, THE 9 COUNTRIES WITH THE HIGHEST PREVALENCE, 1950-1955 TO 2010-2015



HIV/AIDS



During past 30 years

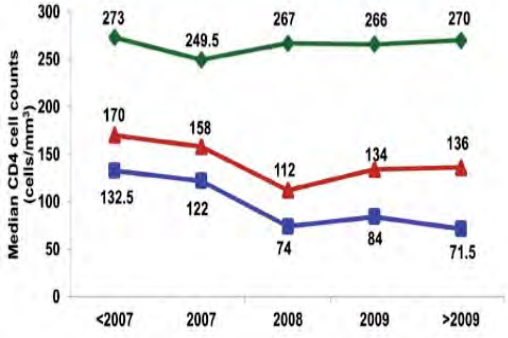
HIV/AIDS has been transformed from

An almost fatal illness → **A chronic manageable disease**

ICAAP11 BANGKOK - THAILAND 2013

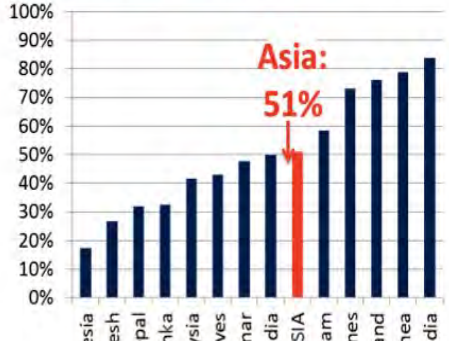
The 11th International Congress on AIDS in Asia and the Pacific
Queen Sirikit National Convention Center (QSNCC)
18-22 November 2013 ✣ Bangkok, Thailand

Low CD4 level at ART initiation

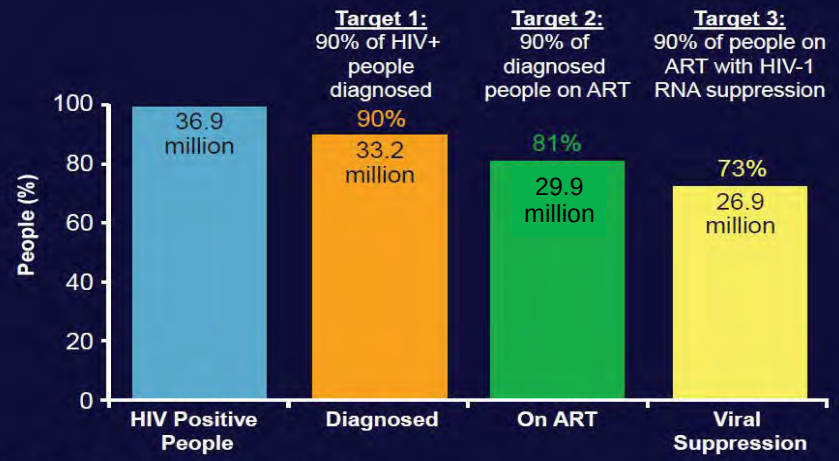


	P for trend
CD4 cell counts >200 cells/mm³	0.890
CD4 cell counts <200 cells/mm³	<0.001
Overall	0.268

Low coverage of ART

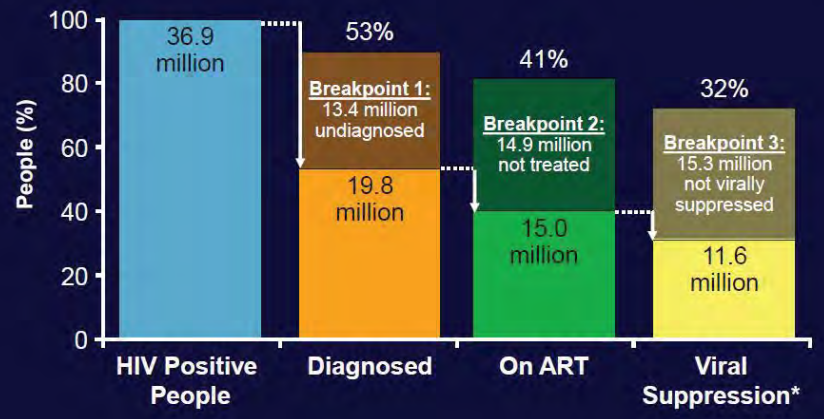


UNAIDS: 90-90-90 Treatment Targets



Levi J, et al. IAS 2015. Abstract MOAD0102.

UNAIDS: 90-90-90 Global Estimated Gaps



*HIV-1 RNA < 1000 copies/mL.

Levi J, et al. IAS 2015. Abstract MOAD0102.

START: Immediate vs Deferred Therapy for Asymptomatic, ART-Naive Pts

- International, randomized trial

Study closed by DSMB following interim analysis

HIV-positive, ART-naive adults with CD4+ cell count > 500 cells/mm^3 (N = 4685)

Immediate ART
ART initiated immediately following randomization
(n = 2326)

Deferred ART
Deferred until CD4+ cell count ≤ 350 cells/mm^3, AIDS, or event requiring ART
(n = 2359)

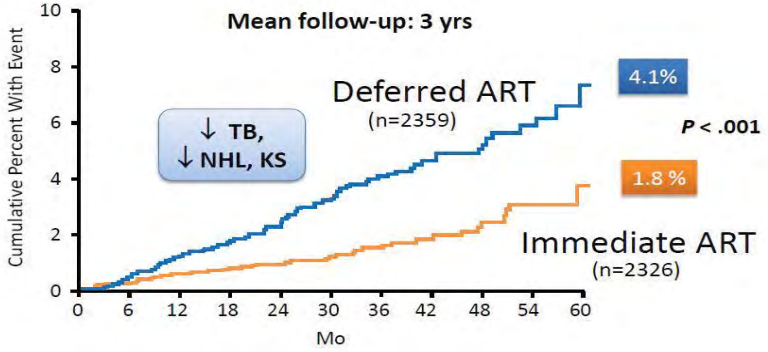
- Composite primary endpoint: any serious AIDS-related (AIDS-related death or AIDS-defining event) or non-AIDS–related event (non-AIDS–related death, CVD, end-stage renal disease, decompensated liver disease, non-AIDS–defining cancer)
- Mean follow-up: 3 yrs; median baseline CD4+ cell count: 651 cells/mm^3; median baseline HIV-1 RNA: 12,759 copies/mL
- Median CD4+ cell count at initiation of ART for deferred group: 408 cells/mm^3

INSIGHT START Study Group. N Engl J Med. 2015;[Epub ahead of print]. Lundgren J, et al. IAS 2015. Abstract MOSY0302.

START Study

57% Reduced Risk of Serious Events or Death with Immediate ART

- **4.1% vs 1.8%** in deferred vs immediate arms experienced serious AIDS or non-AIDS–related event or death (HR: 0.43; 95% CI: 0.30-0.62; ***P* < .001**)



INSIGHT START Study Group. N Engl J Med. 2015;; Lundgren J, et al. IAS 2015. Abstract MOSY0302.

When to start ART by guidelines

Guidelines	CD4	Note
U.S. DHHS 2015	All	When the patient is ready and committed to treatment
WHO 2015	All	All adults with HIV regardless of WHO clinical stage and at any CD4 cell count if the patient is ready and committed
Thailand 2014	All	When the patient is ready and committed to treatment

โรคเอดส์...โรคไร้พรมแดน

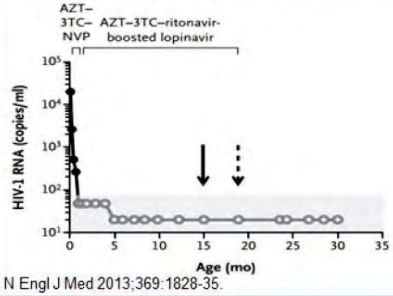
- เหตุการณ์และพัฒนาการที่สำคัญ
- สถานการณ์และแนวโน้ม
- ความก้าวหน้าด้านการรักษา
- การหายจากโรคเอดส์ (?)

The road was bumpy for HIV cure in 2014

- HIV with acute myeloid leukemia
- Myeloablative therapy
- Bone marrow transplantation X2 times from CCR5Δ donor
- Free from HIV

The NEW ENGLAND JOURNAL of MEDICINE

Absence of Detectable HIV-1 Viremia after Treatment Cessation in an Infant



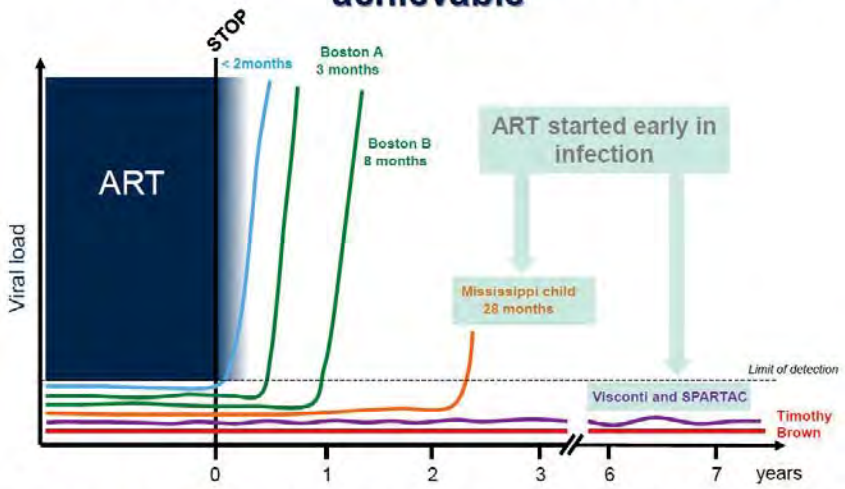
N Engl J Med 2013;369:1828-35.

NIH News
National Institutes of Health
FOR IMMEDIATE RELEASE
Thursday, July 10, 2014

"Mississippi Baby" Now Has Detectable HIV, Researchers Find

The prolonged lack of viral rebound, in the absence of HIV-specific immune responses, suggests that the *very early therapy* not only kept this child clinically well, but also restricted the number of cells harboring HIV infection

Sustained remission off ART is rare but achievable



G. Hütter et al. NEJM 2009; D. Persaud et al. NEJM 2013; K. Luzuriaga et al. NEJM 2015; T. Henrich et al. JID 2013; T. Henrich et al. Ann Intern Med 2014; W. Stöhr et al. Plos One 2013; L. Hocqueloux et al. AIDS 2010; A. Saez-Cirion et al. Plos Path 2013; Adapted from J. Cohen, Science 2015.

MOAA0105LB - Oral Abstract

Long-term "remission" in an infected adolescent without ART.

HIV-1 virological remission for more than 11 years after interruption of early initiated antiretroviral therapy in a perinatally-infected child

Presented by Asier Saez-Cirion

P. Frange[1,2,3], A. Faye[4,5], V. Avettand-Fenoel[1,2], E. Bellaton[6], D. Deschamps[7,8], M. Angin[9], S. Caillat-Zucman[10,11], G. Peytavin[12,13], J. Le Chenadec[14,15], J. Warszawski[14,15], C. Rouzioux[1,2], A. Saez-Cirion[6], ANRS EPF-CO10 Pediatric Cohort

One infant born from a woman with uncontrolled HIV-1 viremia received AZT based prophylaxis during 6 weeks. HIV-RNA and DNA were not detected 3 and 14 days after birth. HIV-DNA was detected at 4 weeks of age. VL reached a peak of 2.1x106 copies/ml at 3 months of age when cART (zidovudine, lamivudine, didanosine, ritonavir) was initiated. VL was undetectable one month later and remained below assay-detection limits while on cART, except at 15 and 21 months of age. Between 5.8 and 6.8 years of age cART was discontinued by the family.

VL was undetectable at 6.8 years of age and cART was not resumed. VL has remained < 50 copies/ml through 18.3 years of age, except for one blip (515 copies/ml). CD4+ T-cell counts remained stable.

IAS 2015 vancouver, canada

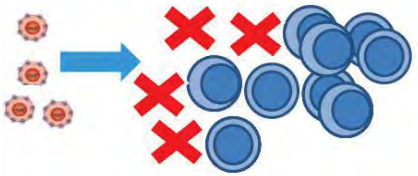
"This is not the end of the story but the beginning of a new chapter."

Current aims

A. Preventing the formation of the pool

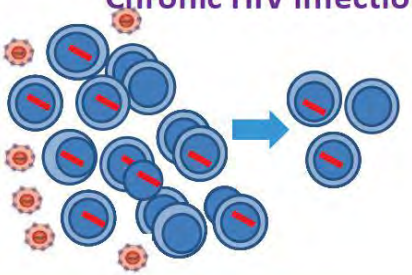
Acute HIV infection

Chronic HIV infection

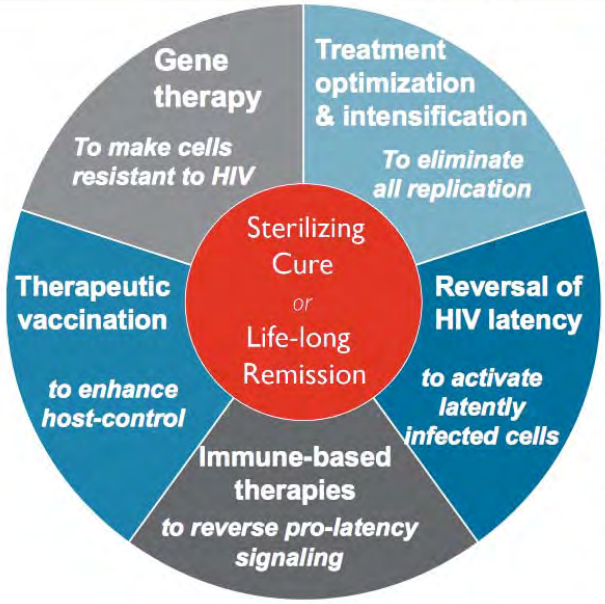


B. Reducing the size of pool of latently infected cells

Chronic HIV infection

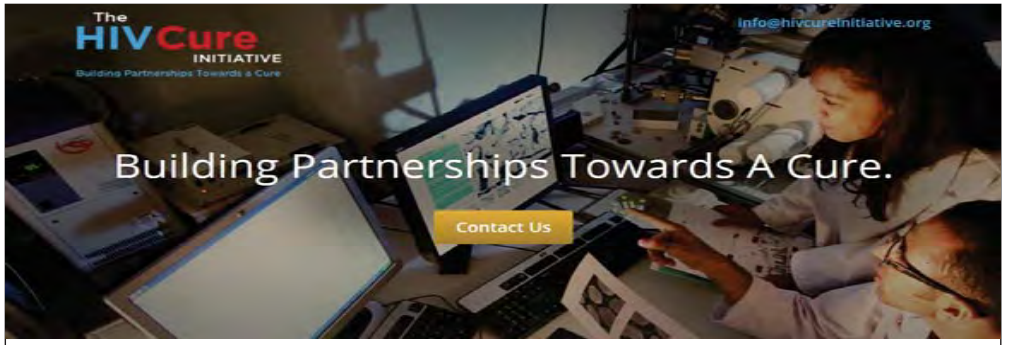


Future HIV Cure Strategies? A combined approach…



Others ongoing or planed studies

1. ***Very early therapy to prevent spread and preserve host responses***
2. ***Direct acting anti-latency drugs***
3. ***Anti-inflammatory drugs***
4. ***Therapeutic vaccination***
5. ***Immune based therapy***
6. ***Cell therapy***



towards an HIV cure
people focused science driven

?????

โรคเอดส์...โรคไร้พรมแดน

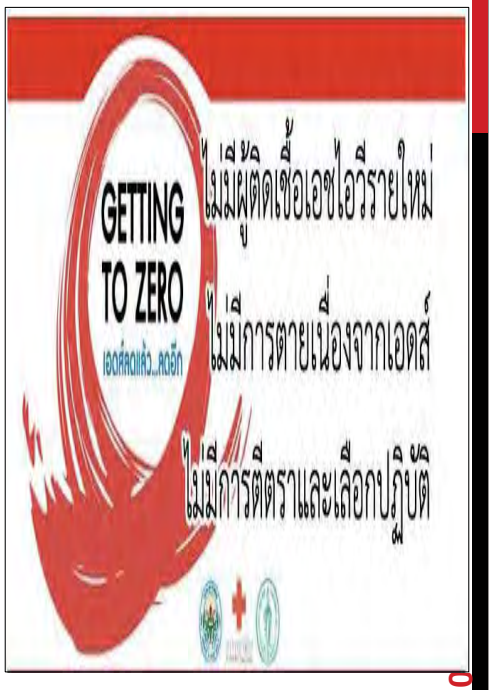
- เหตุการณ์และพัฒนาการที่สำคัญ
- สถานการณ์และแนวโน้ม
- ความก้าวหน้าด้านการรักษา
- การหายจากโรคเอดส์ (?)
- มุ่งสู่ทศวรรษที่4

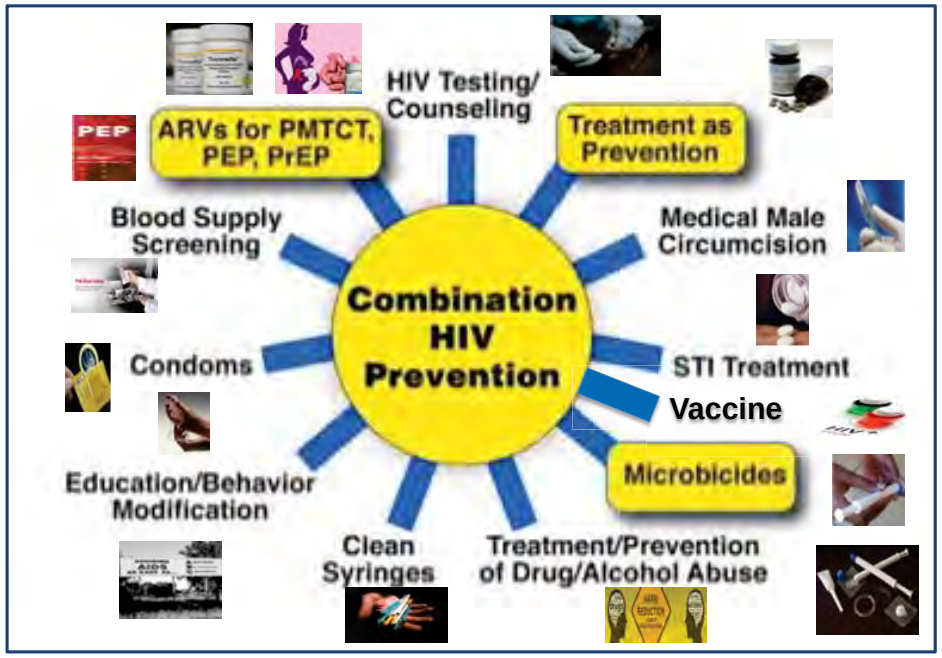
1 December 2012

World AIDS Day 2012: Getting to Zero

27 November 2012 -- **Getting to Zero: Zero new HIV infections. Zero deaths from AIDS-related illness. Zero discrimination** is the theme of World AIDS Day 2012. Given the spread of the epidemic today, getting to zero may sound difficult but significant progress is underway.

In 2011, 2.5 million people were newly infected with HIV. An estimated 1.7 million people died. That is 700 000 fewer new infections worldwide than ten years ago, and 600 000 fewer deaths than in 2005.





B
E

Thai Prime-Boost Study

N = 16,000 volunteers ages 20-30

Sponsors: Thai Government, Aventis Pasteur, VaxGen, US Military

Study Design:

Prominent clade in Thailand is CRF01_AE

VaxGen's AIDSVAX rgp120 from clades B and E

Prime @ 0, 1, 3 & 6 months with ALVAC canarypox vaccine (vCP1521, Aventis Pasteur); contains HIV genes *gag, pol,* and *nef*, clade B

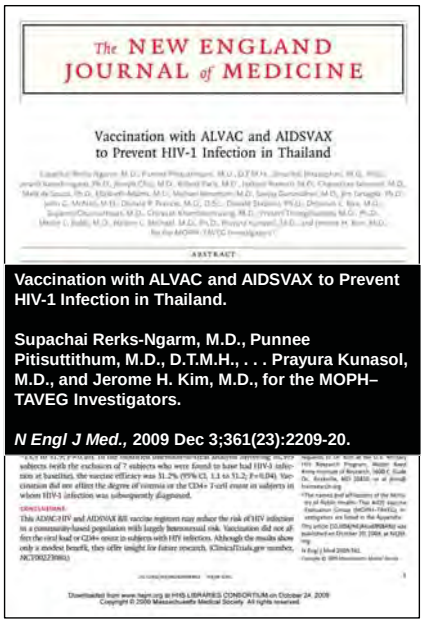
Co-administer AIDSVAX B/E at 3 and 6 months

Started in 2003, 6 year study

Endpoints:
Prevention of HIV Infection
Reduction in Viral Load
Maintenance of CD4+ T cells

http://www.primeboost3.org/eng/

RV-144: Evidence that an AIDS Vaccine Can Prevent HIV-1 Infection in Humans


The NEW ENGLAND JOURNAL of MEDICINE

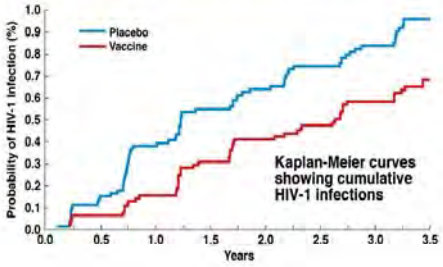
Vaccination with ALVAC and AIDSVAX to Prevent HIV-1 Infection in Thailand

Vaccination with ALVAC and AIDSVAX to Prevent HIV-1 Infection in Thailand.

Supachai Rerks-Ngarm, M.D., Punnee Pitisuttithum, M.D., D.T.M.H., . . . Prayura Kunasol, M.D., and Jerome H. Kim, M.D., for the MOPH–TAVEG Investigators.

***N Engl J Med.*, 2009 Dec 3;361(23):2209-20.**

Cumulative Infection Rates in RV144 ("Thai Trial") – modified ITT Analysis



- Modest 31% reduction in infection
- limited duration

Proof of concept for a protective vaccine

ARV-BASED BIOMEDICAL HIV PREVENTION

- **Global effort to scale up access to ART have largely focused on the life-saving benefits of treatment**
- **More recently, increased attention has been given to the use of ART to prevent HIV infection: 4 interventions.**

1. PMTCT

2. TasP

3. PrEP

4.PEP

ARV given to HIV-infected individual

ARV-Based Biomedical Prevention

ARV given to HIV-uninfected individual

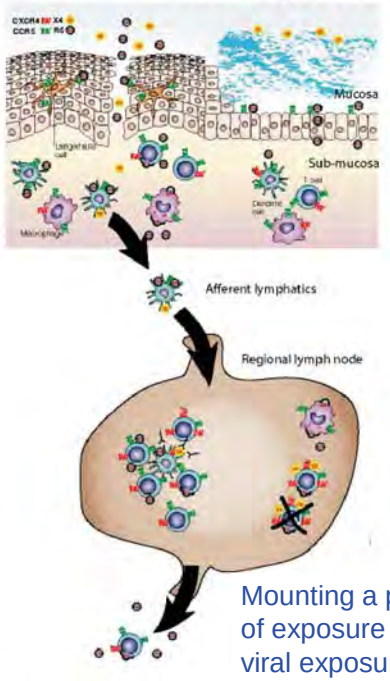
WHO strongly recommended as part of a comprehensive HIV prevention package of evidence-based interventions

Opportunities for HIV Biomedical Interventions

YEARS	HOURS	72 HOURS	YEARS
Prior to exposure	Exposure (pre-coital/coital)	Exposure (post-coital)	After infection
• Male circumcision • Oral pre exposure prophylaxis (daily PrEP) • Topical PrEP (daily gels or intra-vaginal rings (microbicides) • Preventive Vaccines	• Oral pre exposure prophylaxis (intermittent PrEP) • Coitally dependent topical PrEP (microbicides)	• Oral post exposure prophylaxis (PEP)	• Anti-retroviral therapy • Immediate treatment of positive partners in discordant couples (TasP) • Treatment for prevention in all who test positive for HIV (T4P)

All have a behavioral and structural components

The time to act is short !



Exposure: 30-60 mins

DC-T cell transfer 1-4 hours (virological synapse)

Localized infection: 16-72 hours

Dissemination to draining LN: 24-72 hours (virological synapse)

Induction of memory responses: 3-5 days

Mounting a protective immune response within hours of exposure is a biological challenge, particularly if viral exposure is high

HIV
Post-Exposure Prophylaxis (PEP)

Occupational exposure PEP (oPEP)

- Percutaneous exposure ➡ *needle stick*
- Mucous membrane exposure
- Non-intact skin exposure

Non-occupational exposure PEP (nPEP)

- Sexual exposure
  - Consensual - Sexual assault (rape)
- Others - IVDU, Bite, Needle stick, blood Tx

lobal pidemiology of harp n uries

- Among millions of s in regions, there were millions s exposed to at least percutaneous in ury with a sharp ob ect contaminated with , , and
- he annual incidence rate of sharp in uries was per year

Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers :
Am J Ind Med. 2005 Dec;48(6):482-90.

HCWs with HIV Infection after Occupational Exposure in USA

ccupation	Occupational HIV Infection	
	ocumented n = 57 (%)	ossible n = 136 (%)
urse	24 (42)	35 (25)
linical A echnician	16 (28)	17 (12)
hysician, non surgical	6 (11)	12 (9)
on clinical A echnician	3 (5)	0
ouse eeper	2 (4)	13 (9)
urgical technician	2 (4)	2 (1)
mbalmer	1 (2)	2 (1)
urse Assistant	1(2)	15 (11)

he ational urveillance for ccupationally Ac uired nfection as of ecember

HCWs with HIV Infection after Occupational Exposure in USA

ccupation	Occupational HIV Infection	
	ocumented n = 57	ossible n = 136
espiratory therapist	1(2)	2 (1)
echnician	1(2)	3 (2)
ental ersonnel	-	6 (4)
ersonnel	-	12 (9)
urgeon	-	6 (4)
ther echnicians	-	9 (7)
ther HCWs	-	6 (4)

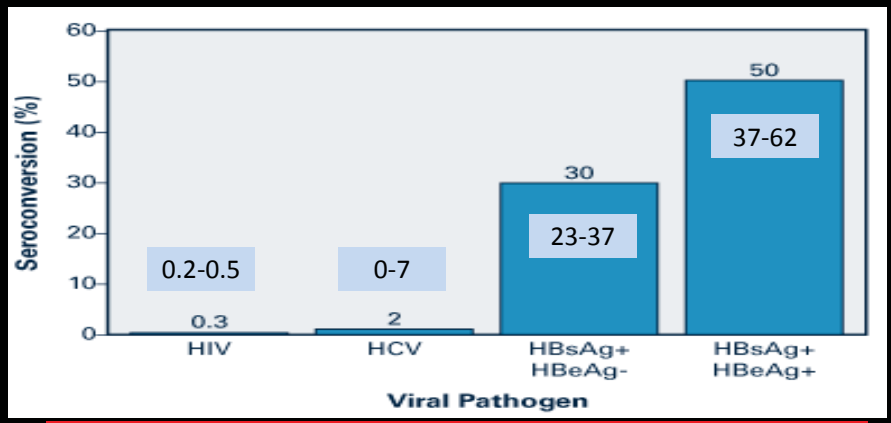
he ational urveillance for ccupationally Ac uired nfection as of ecember

Occupational Exposures to HIV

- he global number of infections among health care wor ers attributable to sharps in uries has been estimated to be , cases range, , per year

http wwwnc cdc gov travel yellowboo chapter the pre travel consultation occupational exposure to hiv

Estimated Pathogen-Specific Seroconversion Rate Per Exposure for Occupational Needlestick Injury



Occupational Infection Risk

HBV : HCV : HIV ~ 30: 3: 0.3 or ~ 100 : 10 :1

1. MMWR 2005; 54 (No. RR-09): 1-24. 2. MMWR. 2001; 50 (No. RR-11): 1-42.
3. Gerberding J . N Engl J Med 2003;348:826-33 4. Henderson D. Clin Microbiol Rev 2003;16:546-68.

2013 USPHS Occupational PEP Guidelines Recommendations for Arv Regimens

Recommended Antiretroviral Regimens for oPEP (28-Day Duration)		
Preferred Regimen		
I S I	**R I**	**ill Burden**
Raltegravir (*Isentress*) 400 mg twice daily or Dolutagravir (*Tivicay*) 50 mg once daily	Tenofovir mtricitabine *Truvada* 1 pill daily	

Source: Kuhar DT, et al. Infect Control Hosp Epidemiol. 2013;34:875-92.

ALTERNATIVE REGIMENS

om ine dru or dru pair from left column it R I pair from ri t column

altegravir arunavir ritonavir travirine ilpivirine Ata anavir ritonavir opinavir ritonavir	enofovir emtricitabine enofovir lamivudine idovudine lamivudine idovudine emtricitabine

lvitegravir cobicistat tenofovir emtricitabine tribild

ource uhar , et al nfect ontrol osp pidemiol

HIV PRE-EXPOSURE PROPHYLAXIS

PrEP

ประสิทธิผลของ PrEP จากการศึกษาในกลุ่มประชากรต่าง ๆ แสดงตาม adherence ในการกินยา

การศึกษา	กลุ่มประชากร	ยา PrEP ที่ใช้	ประสิทธิผลโดยรวม	Adherence ในการศึกษา	ประสิทธิผลเมื่อมี adherence สูง
Partners PrEP	Serodiscordant heterosexual couples	FTC/TDF TDF	75% 67%	81%	90% 86%
TDF2	Heterosexual men and women	FTC/TDF	63%	79%	78%
iPrEX	Men who have sex with men	FTC/TDF	44%	51%	92%
Bangkok TDF	People who use drugs	TDF	49%	84%	74%
FEM-PrEP	Women	FTC/TDF	6%	35-38%	No protection
VOICE	Women	FTC/TDF TDF	-4% -49%	<30%	No protection No protection

Public Health England

PROUD

MRC Clinical Trials Unit

Pragmatic Open-Label Randomised Trial of Pre-Exposure Prophylaxis: the PROUD study

Re exposure **O**ption for reducing in the **U** immediate or eferred

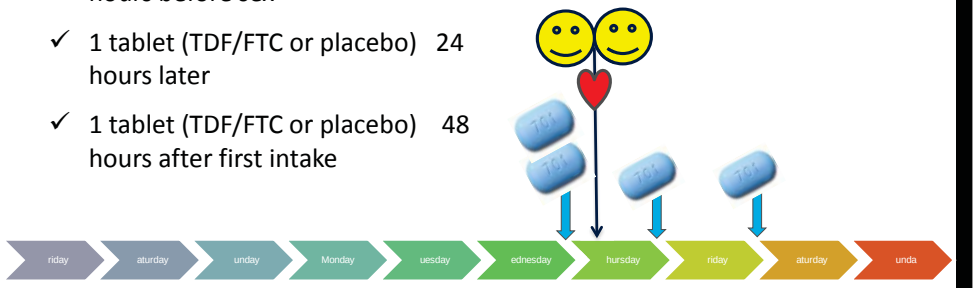
- **To determine whether PrEP worked as well as iPrEx in this setting (44% reduction in HIV)**
- **Possibility that effectiveness might be less in real world**

MRC | Medical Research Council

ipergay ANRS Intervention Préventive de l'Exposition aux Risques avec et pour les Gays

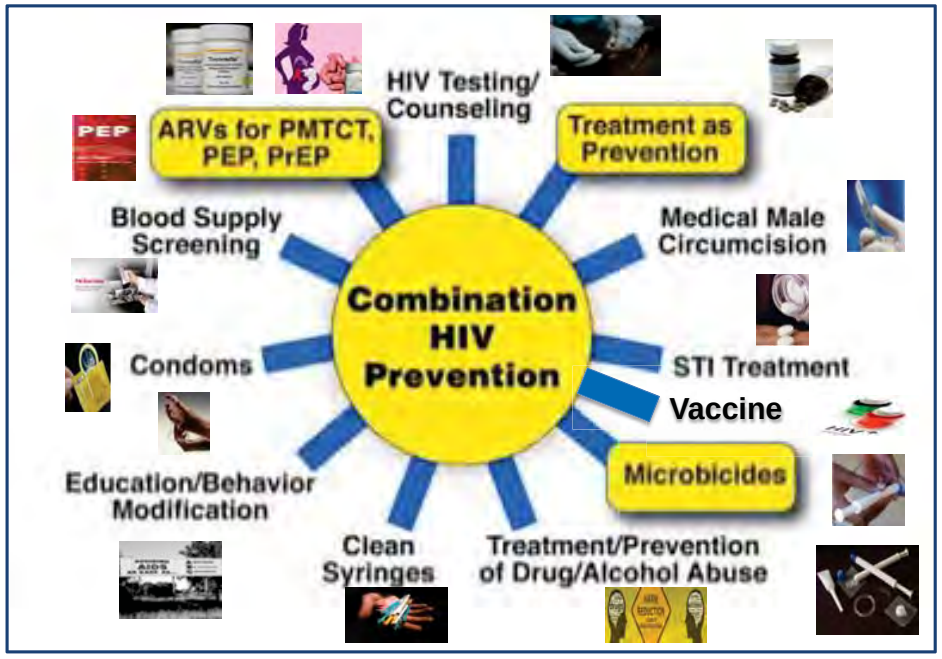
Ipergay : Event-Driven iPrEP

- ✓ 2 tablets (TDF/FTC or placebo) 2-24 hours before sex
- ✓ 1 tablet (TDF/FTC or placebo) 24 hours later
- ✓ 1 tablet (TDF/FTC or placebo) 48 hours after first intake



ARV-BASED BIOMEDICAL HIV PREVENTION

ral A s could reduce the ris of infection among high ris M M by up to , when used with a daily dosing strategy study or intermittently before and after intercourse i er ay study



องค์ประกอบของกลยุทธ์ตรวจเลือดและรักษาทันที

“Test and Treat”

การตรวจเลือด

ตรวจแต่เนิ่นๆ และตรวจเป็นประจำ **เพื่อรู้สถานะการติดเชื้อของตนเองให้เร็วที่สุด**

การรู้สถานะการติดเชื้อ เพื่อ**ลดโอกาสถ่ายทอดเชื้อไปให้คนอื่นโดยไม่ตั้งใจ**

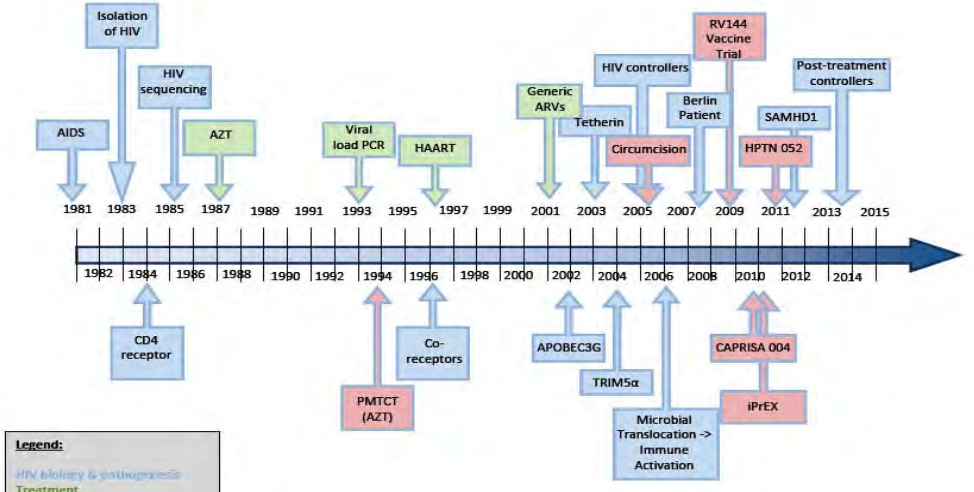
การรักษา

การรักษาด้วยยาต้านไวรัส เพื่อ**ลดปริมาณเชื้อไวรัสในเลือดและสารคัดหลั่ง**

ปริมาณเชื้อไวรัสในเลือดและสารคัดหลั่ง เป็นตัวชี้วัดสำคัญถึงโอกาสที่จะถ่ายทอดเชื้อให้คนอื่น **การกินยาต้านไวรัสจนกดเชื้อได้เต็มที่ → ลดโอกาสถ่ายทอดเชื้อให้คนอื่น**

ประโยชน์ของยาต้านไวรัส จึงมีทั้งกับผู้ติดเชื้อเอง (โดยเฉพาะผู้ที่ภูมิต่ำแล้ว) และกับชุมชน

Years of HIV Science
A ood E ample of ranslational Researc



F. Barré-Sinoussi, AL. Ross, JF Delfraissy (2013) Nature Reviews Microbiology

Key Challenges and Priorities in HIV/AIDS today

IMPLEMENTATION

- Test, treat and retain..
- Prevent new infections in uninfected people

SCIENTIFIC DISCOVERY

- Co-mortalities
- Vaccine discovery…
- Novel strategies to cure HIV-infected individuals on treatment (and prevent non infected people)…

THANK YOU FOR YOUR ATTENTION