

The History of the HIV Pandemic and Its Implications for the Future

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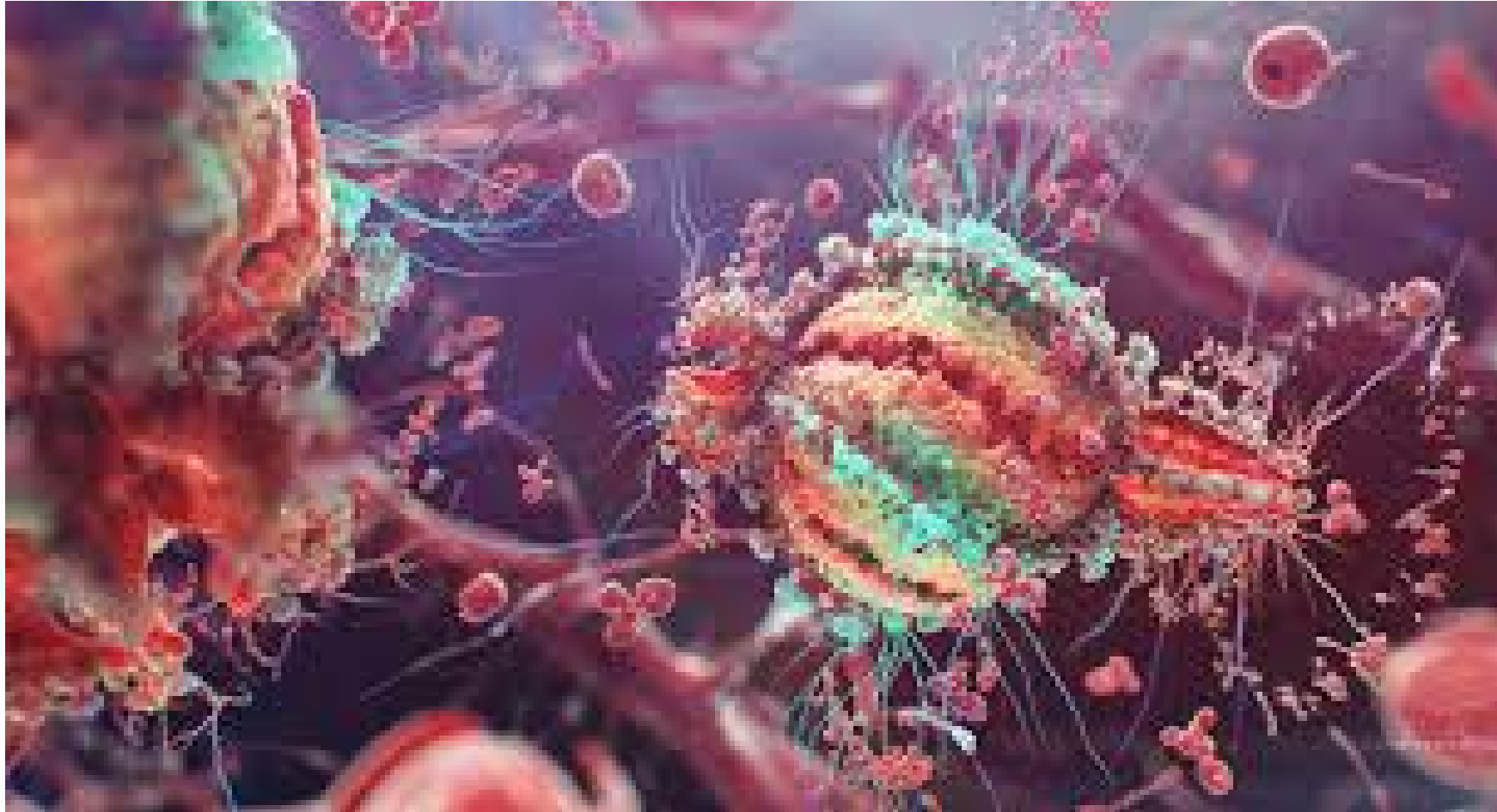
Disclosures

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Goals of the Talk

- Review the history of the HIV epidemic in the U.S. in terms of:
 - The Virus
 - Social Background and Impact of the epidemic
- Where we are today.
- What are the lessons?
- Where do we go from here?

The Virus



Timeline: The Virus

Peyton Rous MD (1879-1970)

1910 Peyton Rous discovered RSV (Nobel Prize 1966)



1983 HIV (HTLV III) identified as cause of AIDS

Timeline: The Virus

Common Chimpanzee (*Pan Troglodytes*, approx. 1920's)

1910 Peyton Rous discovers RSV (Nobel Prize 1966)



Timeline: The Virus

Kinshasa (early 20th century)

1910 Peyton Rous discovers RSV (Nobel Prize 1966)



Timeline: The Virus

Kinshasa (early 20th century)

1910 Peyton Rous discovers RSV (Nobel Prize 1966)



Timeline: The Virus

Robert Huebner (1914-1998)

1910 Peyton Rous discovers RSV (Nobel Prize 1966)



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1981 AIDS first described by Gottlieb et al

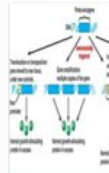


1983 HIV (HTLV III) identified as cause of AIDS

Timeline: The Virus

Drs. Baltimore, Temin and Dulbecco, Nobel Prize for Medicine 1975

1910 Peyton Rous discovers RSV (Nobel Prize 1966)



1975 Nobel Prize to Drs. Baltimore, Dulbecco, and Temin



1960's Robert Huebner working with Wallace Rowe describes oncogene theory



First documented case of HIV in human




1983 HIV (HTLV III) identified as cause of AIDS


Timeline: The Virus

AIDS is Reported 1981

Opportunistic infections such as pneumocystosis or malignancies such as Kaposi's sarcoma can signal the final stage of HIV infection, AIDS



1910 Peyton Rous discovers RSV (Nobel Prize 1966)



Kaposi's Lesions 1940's-1950's

Transmission of SIV to Humans (HIV)



1960's Huey Wallace describes the

RARE CANCER SEEN IN 41 HOMOSEXUALS

Outbreak Occurs Among Men in New York and California — 8 Died Inside 2 Years

By LAWRENCE K. ALTMAN.
Doctors in New York and California have diagnosed among homosexual men 41 cases of a rare and often rapidly fatal form of cancer. Eight of the victims died less than 24 months after the diagnosis, says a study.
The cause of the outbreak is unknown, and there is as yet no evidence of contagion. But the doctors who have made the

CENTERS FOR DISEASE CONTROL July 3, 1981 / Vol. 30 / No. 25

MMWR

Epidemiologic Notes and Reports
305 Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men — New York City and California
308 Cutaneous Larva Migrans in American Tourists — Martinique and Mexico
314 Measles — U.S. Military

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men — New York City and California

During the past 30 months, Kaposi's sarcoma (KS), an uncommonly reported malignancy in the United States, has been diagnosed in 26 homosexual men (20 in New York City [NYC]; 6 in California). The 26 patients range in age from 26-51 years (mean 39 years). Eight of these patients died (7 in NYC, 1 in California)—all 8 within 24 months after KS was diagnosed. The diagnoses in all 26 cases were based on histopathological examination of skin lesions, lymph nodes, or tumor in other organs. Twenty-five of the 26 patients were white, 1 was black. Presenting complaints from 20 of these patients are shown in Table 1.

Skin or mucous membrane lesions, often dark blue to violaceous plaques or nodules, were present in most of the patients on their initial physician visit. However, these lesions were not always present and often were considered benign by the patient and his physician.

A review of the New York University Coordinated Cancer Registry for under age 50 revealed no cases from 1970-1979 at Bellevue Hospital and 3 age group at the New York University Hospital from 1961-1979.

Sixteen KS patients had serious infections diagnosed after their initial visit. Six patients had pneumonia (4 biopsy confirmed as due to *Pneumocystis carinii* and one had necrotizing toxoplasmosis of the central nervous system. One of with *Pneumocystis* pneumonia also experienced severe, recurrent, herpes simplex infection; extensive candidiasis; and cryptococcal meningitis. The results of tests for cytomegalovirus (CMV) infection were available for 12 patients. All 12 had serologic evidence of past or present CMV infection. In 3 patients for whom culture was available, CMV was isolated from blood, urine and/or lung of all 3. Past infection with hepatitis B and hepatitis C were commonly reported.

TABLE 1. Presenting complaints in 20 patients with Kaposi's sarcoma

Presenting complaint	Number (percentage) of patients
Skin lesion(s) only	10 (50%)
Skin lesions plus lymphadenopathy	4 (20%)
Oral mucosal lesion only	1 (5%)
Inguinal adenopathy plus perirectal abscess	1 (5%)
Weight loss, fever, and pneumonia	2 (10%)
Weight loss, fever, and pneumonia (one due to <i>Pneumocystis carinii</i>)	2 (10%)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES / PUBLIC HEALTH SERVICE



Timeline: The Virus

Luc Montagnier reports that LAV may be the cause of AIDS (May 20th 1983)

1910 Peyton Rous discovers RSV (Nobel Prize 1966)

1960 Hu work Wall de on t

1981 AIDS

CDC

Timeline: The Virus

1985: First Licensed Blood Test



OUR NATION'S BLOOD SUPPLY
YOU CANNOT GET HIV FROM DONATING BLOOD. BLOOD COLLECTION PROCEDURES ARE HIGHLY REGULATED AND SAFE.

197
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Timeline: The Virus

1987: AZT is Approved

A Message From The Surgeon General


This brochure has been sent to you by the Government of the United States. In preparing it, we have consulted with the top health experts in the country.

I feel it is important that you have the best information now available for fighting the AIDS virus, a health problem that the President has called "Public Enemy Number One."

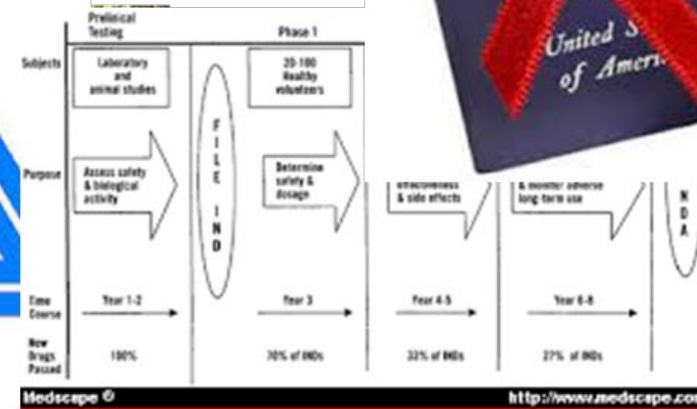
Stopping AIDS is up to you, your family and your loved ones.

Some of the issues involved in this brochure may not be things you are used to discussing openly. I can easily understand that. But now you must discuss them. We all must know about AIDS. Read this brochure and talk about it with those you love. Get involved. Many schools, churches, synagogues, and community groups offer AIDS education activities.

I encourage you to practice responsible behavior based on understanding and strong personal values. This is what you can do to stop AIDS.



Christy
C. Everett Koop, M.D., Sc.D.
Surgeon General

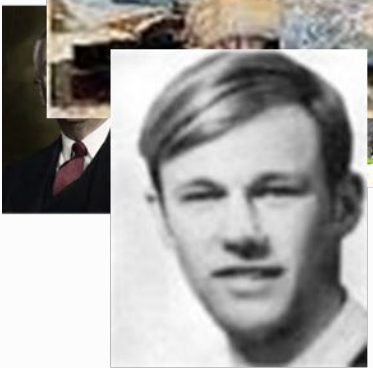
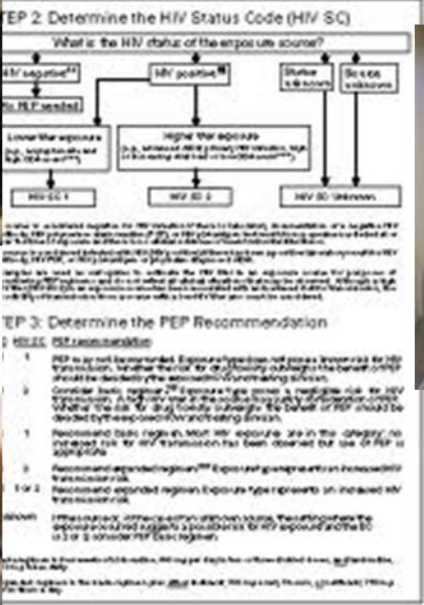


Timeline: The Virus

1988-91: Healthcare associated HIV

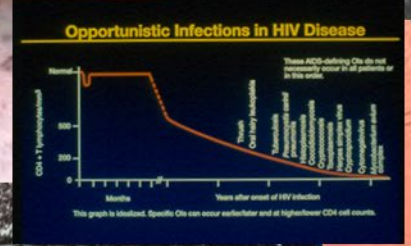


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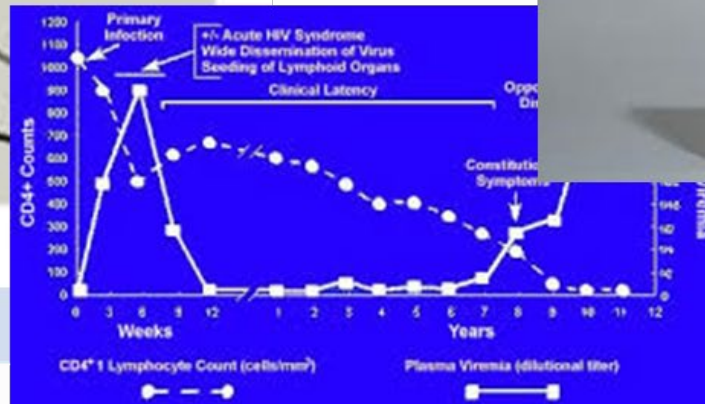
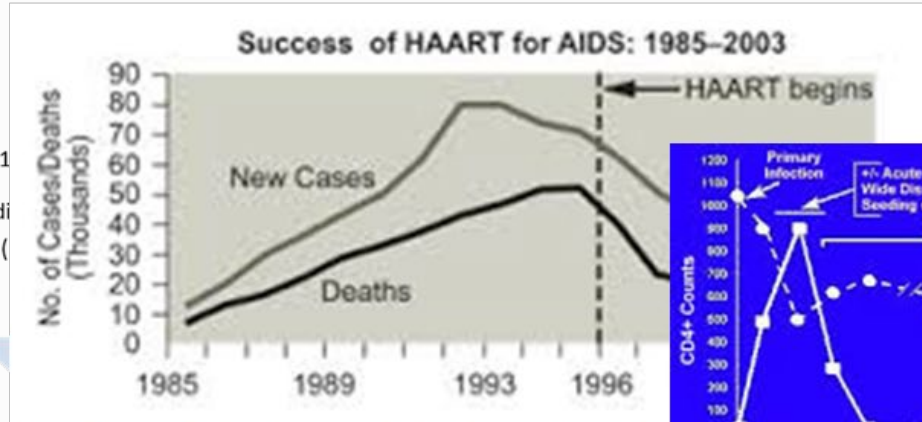
Timeline: The Virus

1985-1994: Untreatable Disease



Timeline: The Virus

1995-96: New Medications and Clinical Tools



1989

HIV Protease Inhibitors

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Amprenavir (APV)	Lopinavir (LPV)
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Atazanavir (ATV)	Fosamprenavir (FPV)

(HTLV III) identified as cause of AIDS

Timeline: The Virus

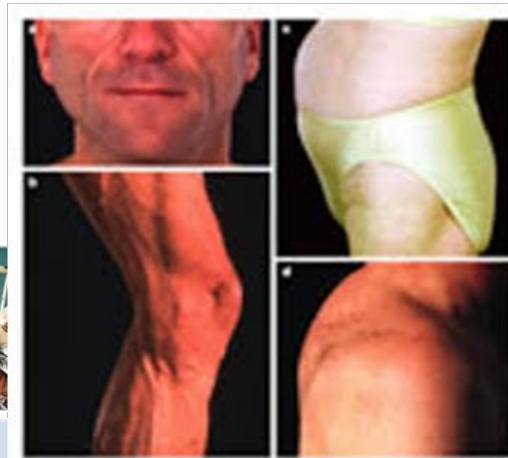
Late 90's to mid 2000's



discovers RSV
(Nobel Prize 1966)



of SIV to
Humans (HIV)



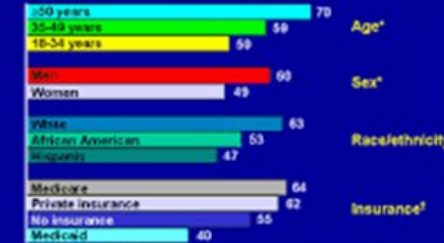
HIV DRUG CHART

Antiretroviral (ARV) options abound for both those who are new to HIV treatment and those who are experienced. This quick-reference chart compares available medication options, including dosing and dietary restrictions.

DRUGS	FOLD CHANGE	Cut-off ²	RESISTANCE ANALYSIS	NOTES
INSTI / NRTI mutations: 41L, 44D, 67K, 75M, 118L, 184V, 200Y, 210W, 212W/K, 214P, 215Y, 218R, 219H				
Raltegravir	12.6	1.2	5.8	MINIMAL RESPONSE
Etravirine	46.0	1.0	3.4	MINIMAL RESPONSE
Videxin	2.1	0.9	3.8	REDUCED RESPONSE
Delamanid	1.9	0.9	3.0	REDUCED RESPONSE
Efavirenz	4.9	0.8	1.8	MINIMAL RESPONSE
Etravirine	40.1	1.0	3.5	RESISTANT
Rilpivirine	2.1	0.9	3.5	MINIMAL RESPONSE
INSTI mutations: 98S, 103N				
Videxin	20.3	5.5		RESISTANT
Delamanid, Raltegravir	11.8	3.4		RESISTANT
PI mutations: 10L, 15V, 22R, 35D, 36L, 37D, 46L, 53L, 54V, 55R, 58L, 62V, 63P, 71V, 73T, 82A, 92H				
Atazanavir	179.8	3.9	4.5	MINIMAL RESPONSE
Cobicistat boosted	179.8	13.6	40.1	MINIMAL RESPONSE
Dolutegravir	35.1	1.3	7.3	MINIMAL RESPONSE
Elvitegravir boosted	179.8	3.4	26.5	MINIMAL RESPONSE
Lacipivirine boosted	9.3	1.3	15.4	REDUCED RESPONSE
Saquinavir	185.2	9.2	56.1	MINIMAL RESPONSE
Ritonavir boosted	183.6	2.2	30.9	MINIMAL RESPONSE
Aciclovir boosted	2.8	1.2	5.4	REDUCED RESPONSE Note 1
Truvada™ boosted	2.4	3.4	36.2	MAXIMAL RESPONSE Note 2

Patient Characteristics That May Affect ART Adherence

Adherent patients according to self-report measure (%)



HIV Cost and Service Utilization Study

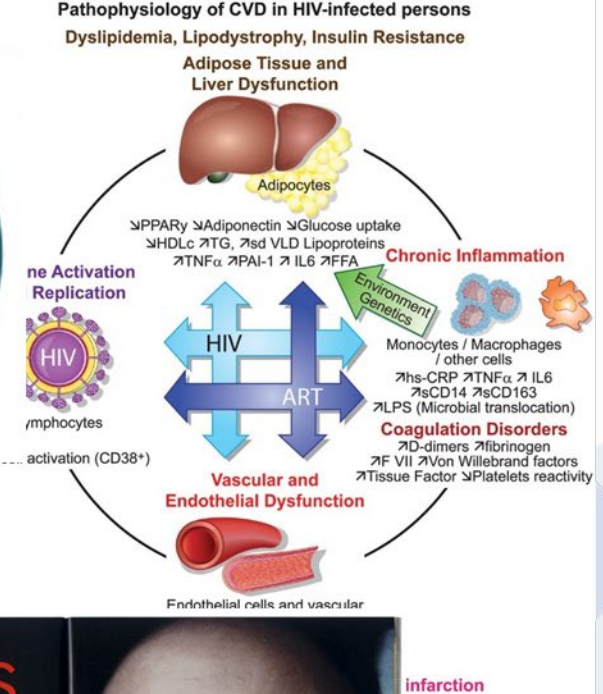
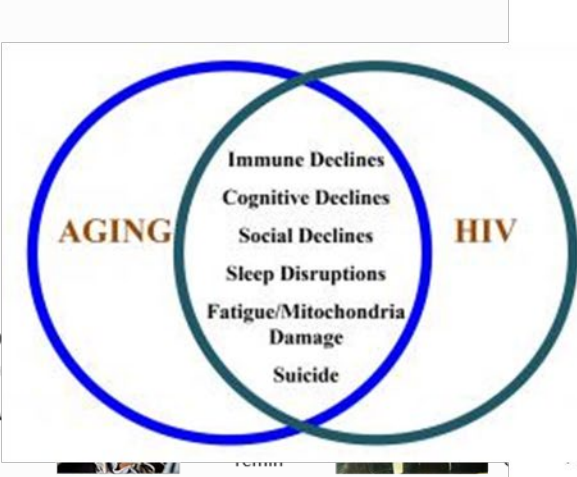
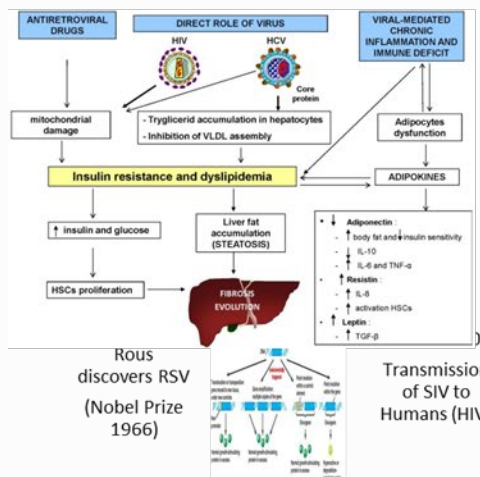
*P<.001, †P<.01.

Wenger M, et al. 6th Conference on Retroviruses and Opportunistic Infections, January 31-February 4, 1999. Abstract 98.



Timeline: The Virus

2008 and beyond: inflammatory state, comorbidities and the "cure"



AIDS and US Society: Timing was Everything



The Social Political Fabric of AIDS

Background: The Civil Rights Movement

Civil Rights
Movement
1954



The Social Political Fabric of AIDS: The Civil Rights Movement



The Social Political Fabric of AIDS: The Civil Rights Movement



The Civil Rights Movement was a coalition of organizations, actions and political efforts that were directed at ending racial segregation and discrimination.

-Civil disobedience, marches, boycotts, sit-ins, pickets and riots were all directed at institutional proponents of racism

-Participants included community leaders, clergy, black citizens and northern "Freedom Riders".

-The Voting Rights Act was passed in 1964

The Social Political Fabric of AIDS: The Antiwar Movement

Civil Rights
Movement
1954



1960's

The Social Political Fabric of AIDS: The Antiwar Movement



Vietnam
Antiwar
Protest
1960's



The
Term
"AIDS"
is first
used.
1982



The Social Political Fabric of AIDS: The Antiwar Movement

Civil Rights
Movement
1954



used.
1982



The Social Political Fabric of AIDS: The Antiwar Movement

U.S. Troop Statistics:

Source: Dept. of Defense

8,744,000 - Total number of U.S. Troops that served worldwide during Vietnam

3,403,000 served in Southeast Asia

2,594,000 served in South Vietnam

The total of American servicemen listed as POW/MIA at the end of the war was 2,646. As of April 10, 2015, 1,627 soldiers remain unaccounted for.

U.S. Deaths:

Battle: 47,434

Non-Battle: 10,786

Total In-Theatre: 58,220

1.3 million - Total military deaths for all countries involved

1 million - Total civilian deaths



- As the Vietnam war involvement increased, a coalition of students, faculty, celebrities and physicians, among others, organized against the war effort.
 - The draft was a radicalizing phenomena.
 - Acts of public disobedience and defiance became common as television brought the war home to families in the States.

1966 Muhammad Ali

"I aint got no quarrel with the Vietcong"

World Heavyweight champion Muhammad Ali comes out against the Vietnam War



The Social Political Fabric of AIDS: Gay Rights

Civil Rights
Movement
1954



Stone
Riots
1969



Vietnam
Antiwar
Protest
1960's



The Social Political Fabric of AIDS: Gay Rights

Civil Rights
Movement
1954



The Social Political Fabric of AIDS: Gay Rights

Civil Rights
Movement
1954



The Social Political Fabric of AIDS: Gay Rights

Civil Rights
Movement
1954



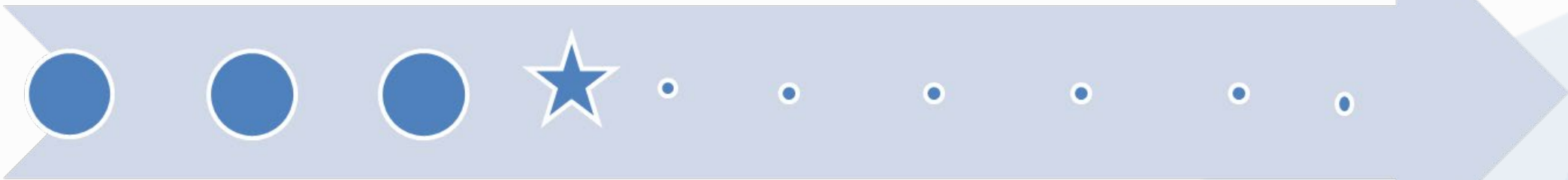
- Stonewall Riots: June 28, 1969 in Greenwich Village in response to a police raid of a gay bar. Three days of rioting followed with the first open displays of affection between gay men and women.
 - The Gay Liberation Front was started in NYC next month.
 - The first gay newspaper is started in NYC.
 - One year later the first Gay Pride parade was held.

The Social Political Fabric of AIDS: The New Disease

Civil Rights
Movement
1954



Stonewall
Riots
1969



Vietnam
Antiwar
Protest
1960's



The Social Political Fabric of AIDS

1981

Civil Rights
Movement
1954

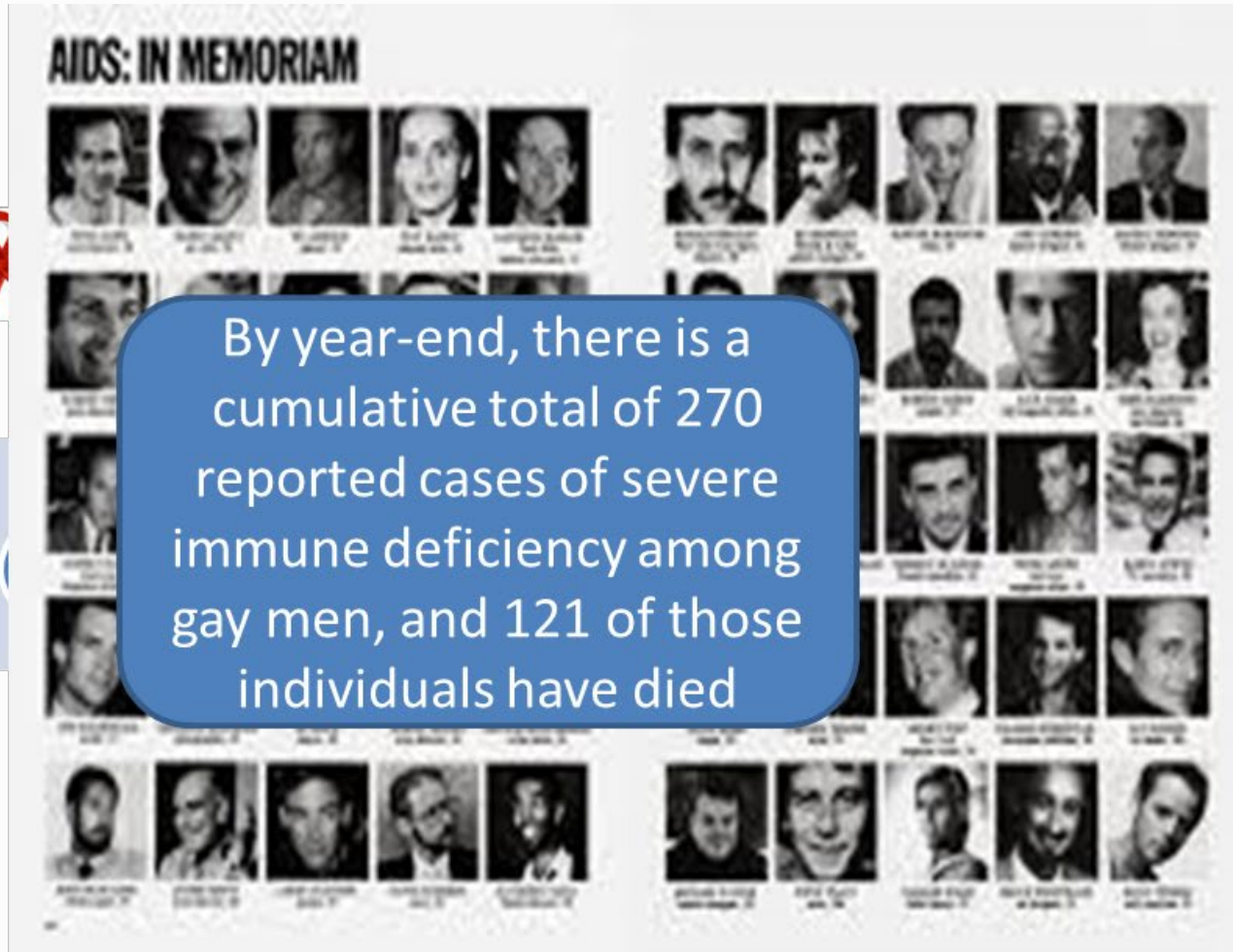


Stonewall
Riots
1969



By year-end, there is a cumulative total of 270 reported cases of severe immune deficiency among gay men, and 121 of those individuals have died

Vietnam
Antiwar
Protest
1960's



1982

The Social Political Fabric of AIDS: 1982-1984

On July 25, 1983, San Francisco General Hospital opens the first dedicated AIDS ward in the U.S. It is fully occupied within days

Civil Rights
Movement
1954

In January 1982, first American AIDS clinic is established in S.F.

In October, 1984 San Francisco officials order bathhouses closed due to high-risk sexual activity occurring in these venues.

On December 10, 1982, CDC reports a case of AIDS in an infant who received blood transfusions. The following week, the *MMWR* reports 22 cases of unexplained immunodeficiency and opportunistic infections in infants.

On January 7, 1983 CDC reports cases of AIDS in female sexual partners of males with AIDS.

The Social Political Fabric of AIDS: 1985-1987

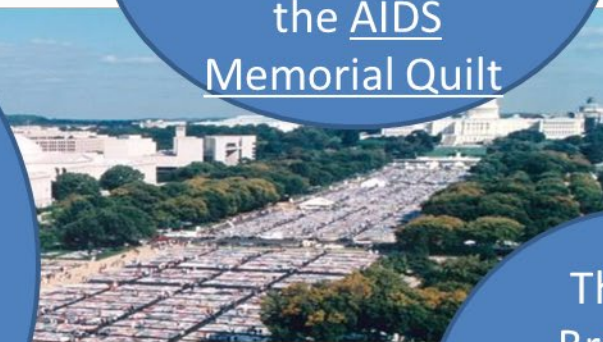
Civil Rights
Movement
1954



Act Up
organizes

AIDS activist
Cleve Jones
creates the first
panel of
the AIDS
Memorial Quilt

Ryan White, an Indiana teenager who contracted AIDS through contaminated blood products used to treat his *hemophilia*, is refused entry to his middle school. He goes on to speak publicly against AIDS stigma and discrimination



The Ray
Brothers'
home is
burned down
by angry
neighbors



The Social Political Fabric of AIDS: 1987-1988

Civil Rights
Movement
1954

1987
Larry Kramer
founds the AIDS
Coalition To
Unleash Power
(ACT UP)



On October 11, 1988, ACT UP protests at FDA headquarters about the drug-approval process. Eight days later, FDA announces new regulations to speed up drug approvals.

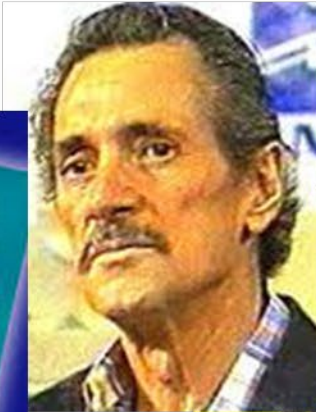


President
Reagan
first
speaks
AIDS
1982



The Social Political Fabric of AIDS: 1988-1994

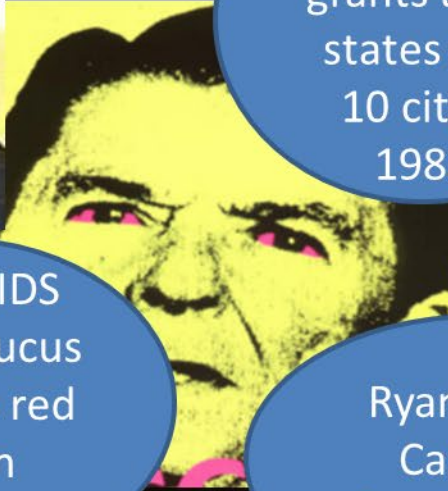
1994 AIDS becomes the leading cause of death for all Americans ages 25 to 44.



First AIDS planning grants to 11 states and 10 cities
1988



Visual AIDS artists caucus launches red ribbon
1991



Ryan White Care Act funded
1990



Magic
1991

Nureyev
1993



Pediatric AIDS Foundation
1988

"All is fine use 198

54% of people with AIDS By 1991, more



The Social Political Fabric of AIDS

1995 and beyond: more policy, global focus, HAART and prevention

Civil Rights Movement
1954

June 1995:
first PI is approved



1998 With the leadership of the CBC, Congress funds the Minority AIDS Initiative



By the end of 1995, 500,000 cases of AIDS have been reported in the U.S

Nashville Connection



Middle Tennessee Response to the AIDS Epidemic

- 1983: Lifestyles Health Clinic opened at MHD
- 1985: Nashville CARES is founded
- 1990: VU hires 3 physicians to develop HIV program: VU; VA and MHD
- 1991: Community AIDS Partnership
- 1992: The Mayor's Task Force on the Financial Impact of the HIV Epidemic on Healthcare Institutions in Middle Tennessee
- 1994:
 - January 1: TennCare begins
 - February 1: The Comprehensive Care Center Open
- 1995: Rogers ID service is started
- 1997: Statewide COE network
- 1999: OC3 opens
- 2000: Clinical Trials Unit moves to CCC
- 2010: CCC becomes the VCCC and moves to OHO



VCCC Services

- Clinical and Laboratory Evaluation (Primary Care, Colposcopy, Obstetrics and HIV)
- Psychiatric Care and Mental Health Services
- Clinical Pharmacy Services and Patient Assistance Program
- High Resolution Anoscopy (HRA) clinic.
- Nutrition Services
- Case Management
- New Patient Navigation
- Transitions of Care Case Management
- Coordination of Home Care, Hospice, Infusion Transfusion Services
- Clinical Trials Access
- Inpatient Care Direction
- On-call Services

VCCC Operations and Staff

- **Operations:**
- Over 10,000 patients enrolled
- Over 3,900 active patients
- Over 1,400 visits per month
- Approximately 300 new patients per year
- Approximately 30-40 pregnant women per year
- **Staff:** 4 ID attendings; ID Fellows, 5 Part time ID MD's 1 psychiatrist; 5 Nurse Practitioners; 6 RN's; 5 LPN's; 7 social services staff; 1 pharmacist, 2 mental health therapists; 3 PSR's; 1 dietitian and 6 administrative staff

VCCC Outcomes

- 86% of patients seen at the VCCC in 2020 achieved undetectable virus
- >500 Uninfected babies born to HIV infected mothers since 1999
- Percent of 2020 patients with medical office visits who were screened for:
 - Drug and alcohol: 100%
 - Mental illness: 100%
 - HIV risk reduction: 100%
- Percent of 2020 Ryan White patients who received:
 - Cervical Pap smears if indicated: 90%
 - PCP prophylaxis: 98%
 - HBV and HCV screening: 100%
 - TB screening: 93%
- 549 patients referred to the clinical trials group in 2019
- Over 50,000 healthcare providers trained through SE AETC program each year,

VCCC Outcomes

- 86% of patients seen at the VCCC in 2020 achieved undetectable virus
- >500 Uninfected
- Percent of 2020 or:
 - Drug and alcohol use
 - Mental illness
 - HIV risk reduction
- Percent of 2020
 - Cervical Pap
 - PCP prophylaxis
 - HBV and HCV
 - TB screening
- 549 patients referred
- Over 50,000 healthcare providers trained through the VCCC program each year,

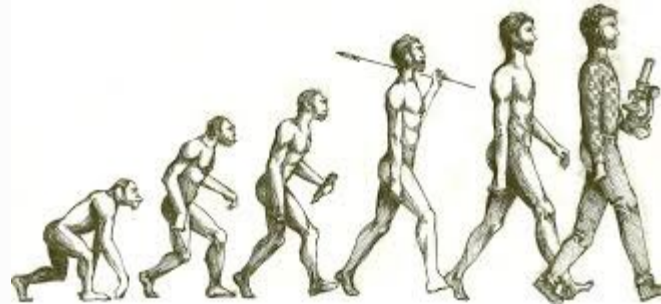
The establishment, development and success of the VCCC is the result of collaboration between the medical and business communities as well as funding support from federal grants. Political leadership was essential.

OK... so what now?

Lesson #1

■ Science Works:

- AIDS described in 1981, pathogen identified in 1984, treatment options begin in 1994. Now chronic disease.



- COVID-19 described in December 2019; effective vaccines available in November 2020 .

Lesson #1

■ Science Works:

- AIDS described in 1981, pathogen identified in 1984, treatment of AIDS has improved but it is still a chronic disease.

We are living in a time when a significant portion of the population does not “trust” science or experts.

- COVID-19 described in early 2020, pathogen identified in early 2020; effective vaccines available in November 2020.

Lesson #2

▪ Activism Works:

- New FDA approval process, pressure to lower prices, patient involvement in research program.



Lesson #2

▪ Activism Work

- New FDA and patient involvement

Activism now may include movements focused on amplified prices, patient rumors and theories. Political manipulation may hide behind a “activist” stance.

prices, patient



Lesson #3

- Healthcare providers can do more than provide medical care: lead, advocate and participate.



Lesson #3

- Healthcare providers can do more than provide medical care.



Leading as an expert can now result in being targeted and attacked.



What we have learned from the HIV pandemic and what is its relevance in 2022?

- The response to the challenges of the HIV pandemic depended on scientific developments, activism and social/political changes .
- In 2022 the rules have changed: political polarization and manipulation facilitated by social media herding complicates getting the message out and makes it more difficult to speak and act clearly.

What we have learned from the HIV pandemic and what is its relevance in 2022?

- The response to the challenges of the HIV pandemic depended on the social/political context and
- In 2022, we are finally beginning to come to grips with the realization that health disparities are the legacy of racism, poverty and wealth disparity. Wealth determines health and our healthcare system is driven by business principles. It is more difficult to speak and act clearly.

HIV in 2022

- So, enjoy being on the right side of history, on the right team.
- Be aware of the economic, political and cultural forces behind health in the U.S.
- Remember it is a privilege to work with your colleagues.
- Find your driver and use that as motivation to get through the tough days when “the dragon wins”.



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Relevance in 2022

▪ Find Your Driver

▪ Pablo A., Perth Amboy NJ 1985

- 322 IV insertions
- 14 hospital admissions
- 11 months of hospital stay
- 60 phlebotomies
- 32 chest x-rays
- 5 CT scans of head
- 3 abdominal CT scans
- 6 bronchoscopies
- 8 intubations
- 4 lumbar punctures
- 3 bone marrows
- 5 cycles of chemo
- 2 lymph node bx

Relevance in 2022

■ Find Your Driver

- Pablo
- 322 IV i
- 14 hosp
- 11 mon
- 60 phle
- 32 ches
- 5 CT so
- 3 abdom
- 6 bronch

If Pablo were to present with his HIV infection today, he would have labs drawn, be started on a pill to treat HIV and his wife would be started on PrEP. He would raise his kids and live out his life.

Questions or Comments?



AETC Program National Centers and HIV Curriculum

- **National Coordinating Resource Center** – serves as the central web –based repository for AETC Program training and capacity building resources; its website includes a free virtual library with training and technical assistance materials, a program directory, and a calendar of trainings and other events. Learn more: <https://aidsetc.org/>
- **National Clinical Consultation Center** – provides free, peer-to-peer, expert advice for health professionals on HIV prevention, care, and treatment and related topics. Learn more: <https://nccc/ucsf.edu>
- **National HIV Curriculum** – provides ongoing, up –to-date HIV training and information for health professionals through a free, web –based curriculum; also provides free CME credits, CNE contact hours, CE contact hours, and maintenance of certification credits. Learn more: www.hiv.uw.edu

Thank You!

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