

Tuberculosis, Hepatitis C, & HIV/AIDS

Considerations for Mental Health & Substance Abuse Professionals

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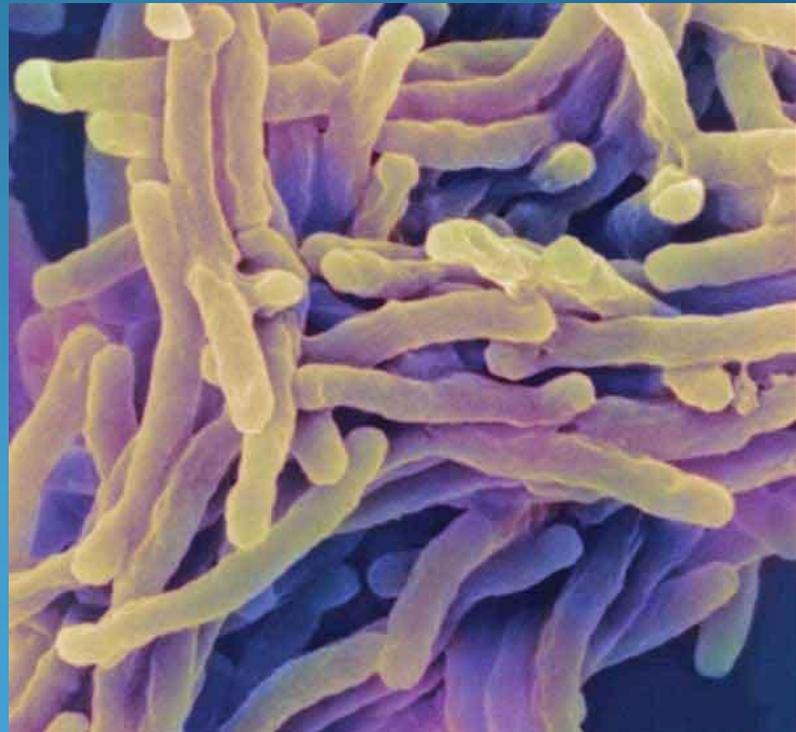
Clinical Therapist

OUHSC Infectious Diseases Institute

OBJECTIVES

- Identify symptoms of HIV/AIDS, Hepatitis C, and Tuberculosis.
- Identify methods of infection and transmission.
- Identify modalities of treatment and care.
- Understand cultural impact on spread of infectious diseases.
- Identify community resources for testing and treatment.

TUBERCULOSIS



TUBERCULOSIS: OVERVIEW

- Bacterial infection
- Most often found in lungs, but can spread through lymph nodes and bloodstream to **any** organ.
- Two types: Latent & Active
- Active TB bacteria cause tissue death in the infected organs, which can be fatal.
- Vaccine available, but with variable effectiveness

TUBERCULOSIS: THEN & NOW

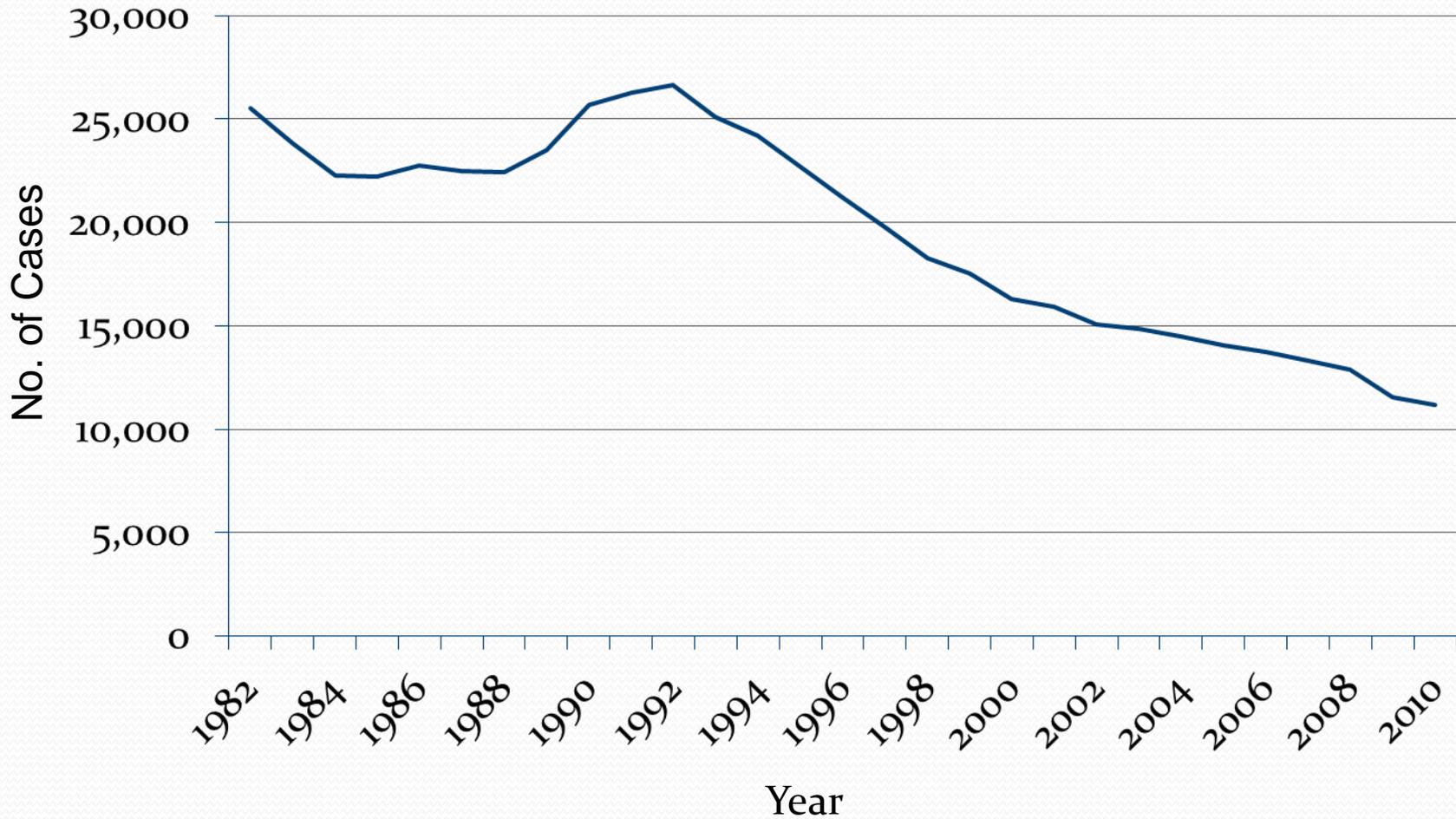
Then...

- Prior to the Industrial Revolution: Vampires?
- 19th century: Romantics & artists
- Early 20th century: Caused by masturbation?
- Mid 20th century: We can fight it with meds!
- Late 20th century: We've beat it!

TUBERCULOSIS: THEN & NOW

- ...but now it's making a comeback.
- Someone in the world is newly infected with TB every second.
 - ***But...*** infection rates *are* slowly decreasing worldwide.
- Medication-resistant strains of the bacteria have emerged.
 - Treatable with lengthy, expensive chemotherapy.
 - *Extensively drug-resistant (XDR)* TB strains are appearing

Reported TB Cases United States, 1982–2010*



*Updated as of July 21, 2011

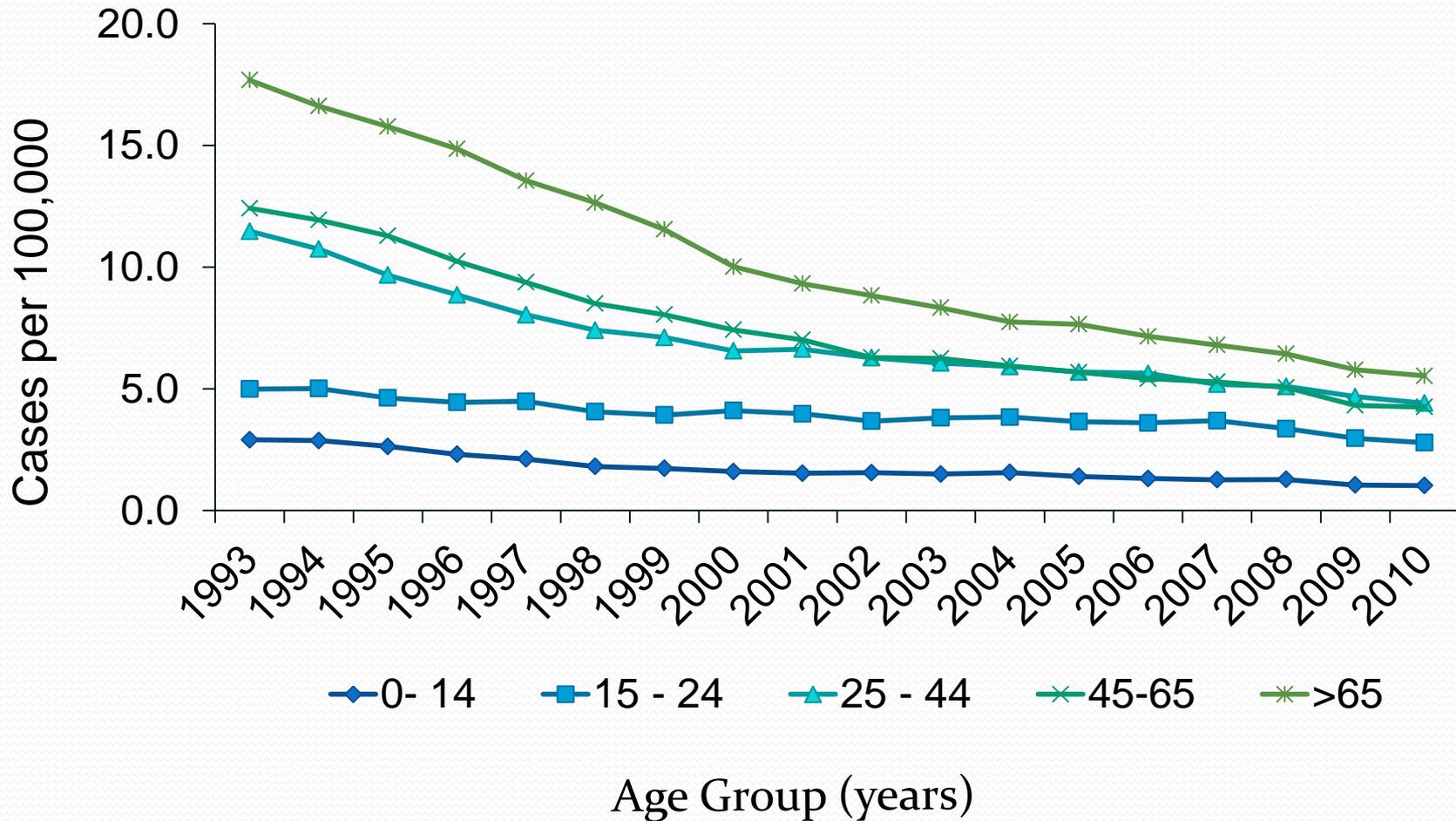
TB Morbidity

United States, 2005–2010

Year	No.	Rate*
2005	14,068	4.8
2006	13,732	4.6
2007	13,286	4.4
2008	12,905	4.2
2009	11,537	3.8
2010	11,182	3.6

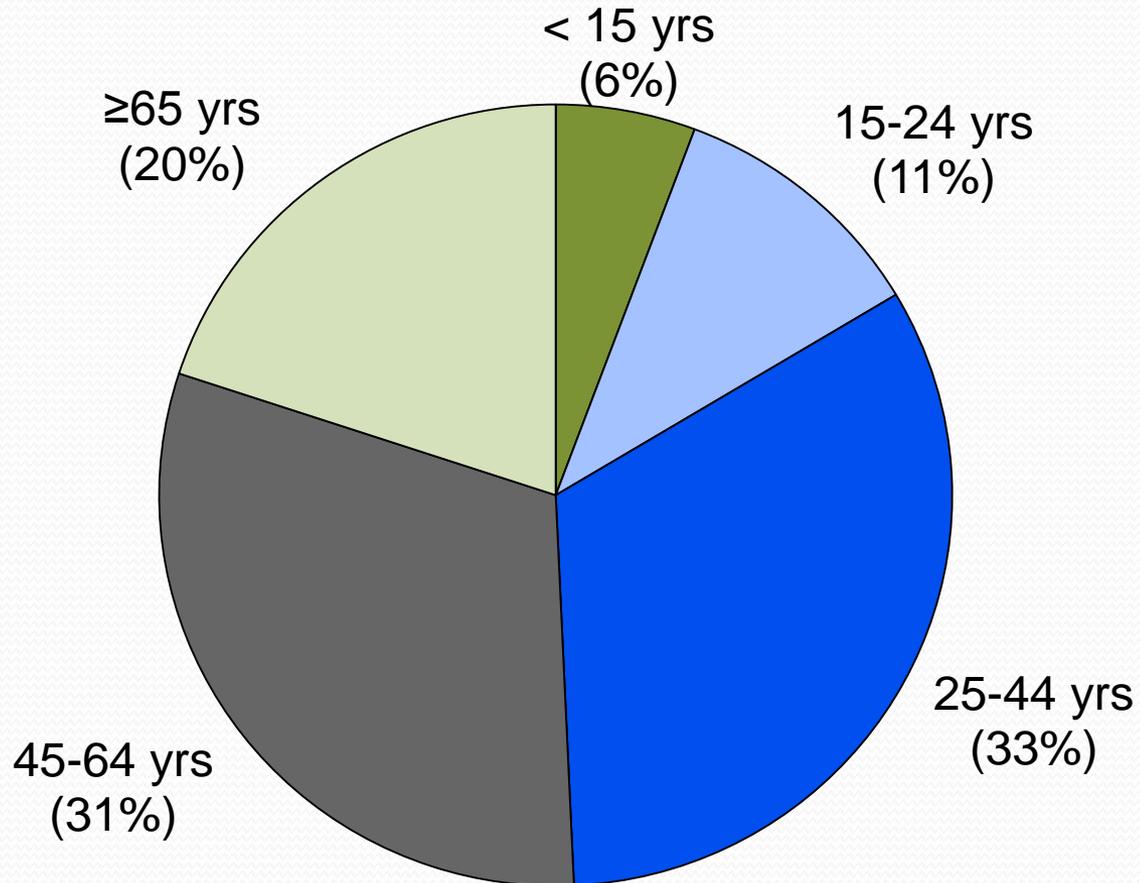
*Cases per 100,000. Updated as of July 21, 2011

TB Case Rates* by Age Group United States, 1993–2010

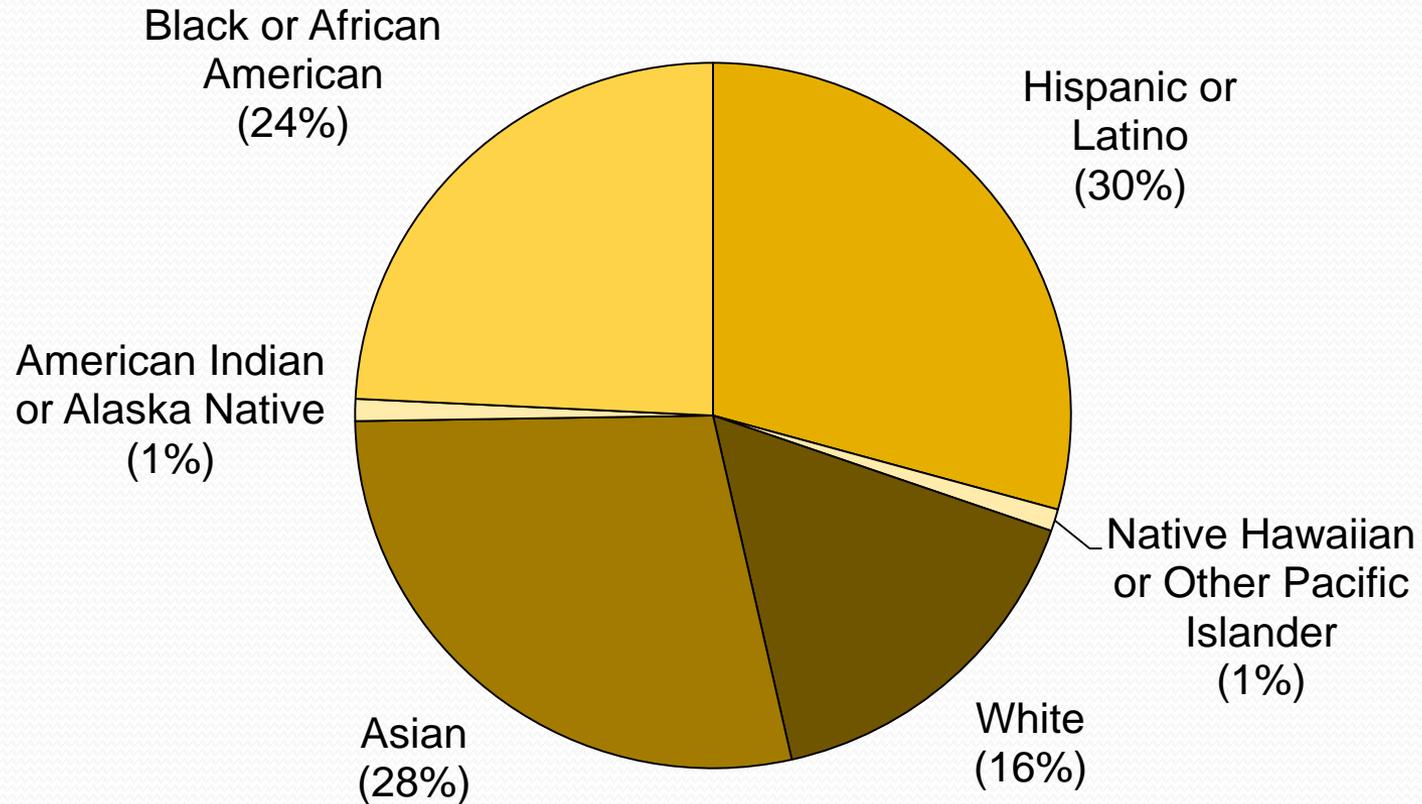


* Updated as of July 21, 2011

Reported TB Cases by Age Group, United States, 2010



Reported TB Cases by Race/Ethnicity* United States, 2010



*All races are non-Hispanic. Persons reporting two or more races accounted for less than 1% of all cases.

TUBERCULOSIS: SYMPTOMS

- **Latent**

- TB bacteria is in the body, but immune system is able to keep it from becoming active.
- Cannot spread Latent TB to others.
- Latent TB can develop into active TB.

- **Active**

- TB bacteria are growing and causing symptoms. If lungs are infected with active TB, the disease can be easily spread.

TUBERCULOSIS: SYMPTOMS

- **Latent:** No symptoms
- **Active:**
 - Cough that brings up thick, cloudy, and sometimes bloody mucus from the lungs (called sputum) for more than 2 weeks.
 - Tiredness and weight loss
 - Night sweats and a fever.
 - A rapid heartbeat.
 - Swelling in the neck (when lymph nodes in the neck are infected).
 - Shortness of breath and chest pain (in rare cases).

TUBERCULOSIS: DIAGNOSIS

- Tuberculin skin test
 - Only indicates presence of bacteria, not latent/active status
- Pulmonary TB:
 - Chest X-Ray
 - Mucus (sputum) sample from lungs
- Extrapulmonary TB:
 - Tissue biopsy
 - CT or MRI scan

TUBERCULIN SKIN TEST



<http://medicalpicturesinfo.com/tuberculosis-skin-test/>

Doctors compare lung x-rays of a patient with TB (left) and a healthy patient (right).

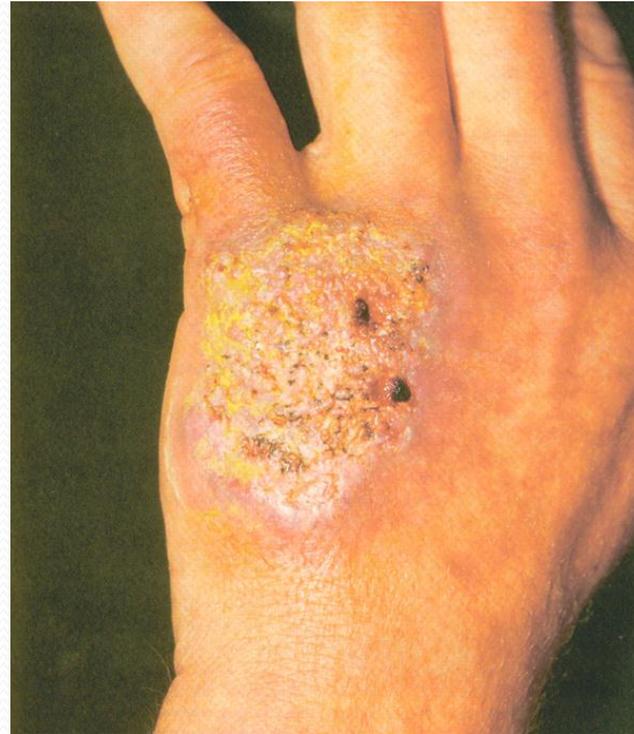


<http://www.clinicaladvisor.com/tuberculosis/slideshow/192/>

TUBERCULOSIS OF THE SKIN



http://duhscme.com/TB/images/module6_clip_image00210.gif



http://www.your-doctor.net/dermatology_atlas/rwx/rwx/Tuberculosis_verrucosa_cutis.jpg

EXTRAPULMONARY TUBERCULOSIS



Tuberculosis of Bovine Uterus

http://www.cfsph.iastate.edu/DiseaseInfo/ImageDB/TUB/TUB_004.jpg



Tuberculosis of the Kidneys

<http://medicalimages.allrefer.com/large/tuberculosis-in-the-kidney.jpg>

TUBERCULOSIS: TRANSMISSION

- TB bacteria are airborne and thus fairly contagious
- Requires more than a single, social contact with an infected person
- Only 10% of people infected with TB develop active TB; 90% of infections remain latent
 - 50% of active cases are eventually fatal
 - Both Active & Latent infections require medication treatment
- If untreated, each actively infected person will infect an average of 10-15 people annually.

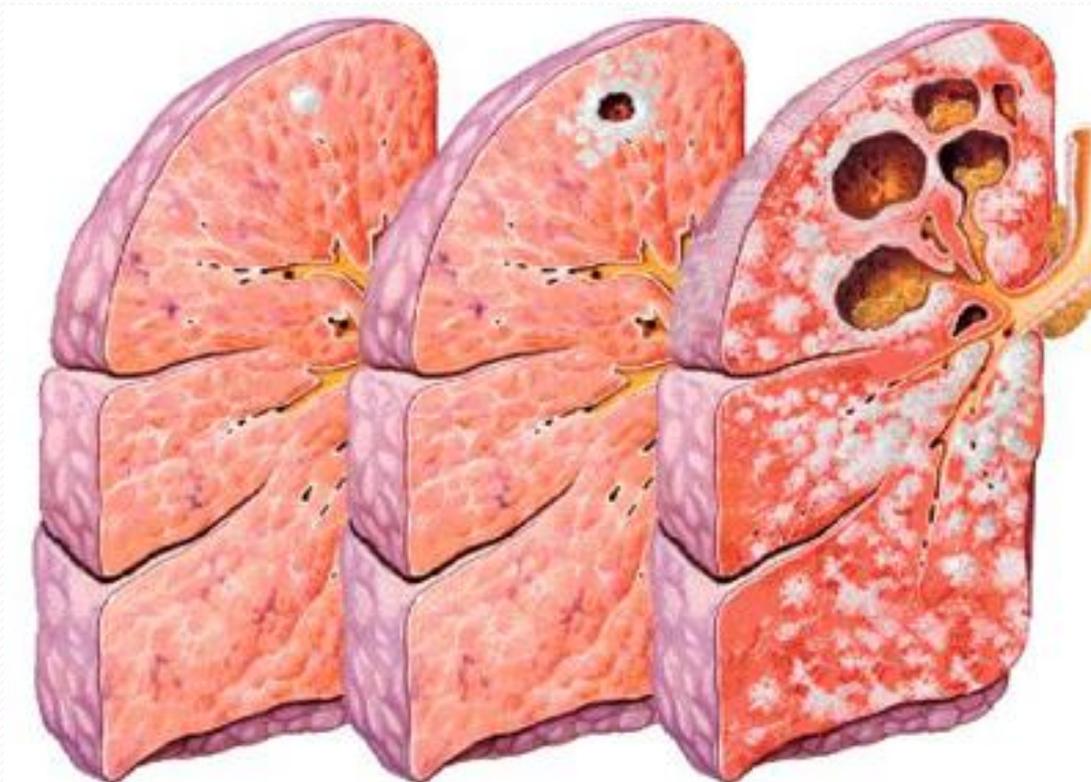
TUBERCULOSIS: RISK FACTORS

- Have HIV or another illness that weakens their immune system.
- Have close contact with someone who has active TB, such as living in the same house as someone who is infected with TB.
- Care for a patient who has active TB, such as doctors or nurses.
- Live or work in crowded places such as prisons, nursing homes, or homeless shelters, where other people may have active TB.
- Have poor access to health care, such as homeless people and migrant farm workers.
- Abuse drugs or alcohol.
- Travel to or were born in places where untreated TB is common, such as Latin America, Africa, Asia, Eastern Europe, and Russia.

TUBERCULOSIS: TREATMENT

- **Latent:**
 - One antibiotic taken for 9 months
- **Active:**
 - Multiple (usually 4) antibiotics taken for at least 6 months
- **Importance of medication adherence!**
 - MDR-TB treatments

PROGRESSIVE APPEARANCE OF TUBERCULOSIS IN LUNG CAVITIES



Infección tuberculosa inicial en el lóbulo superior derecho

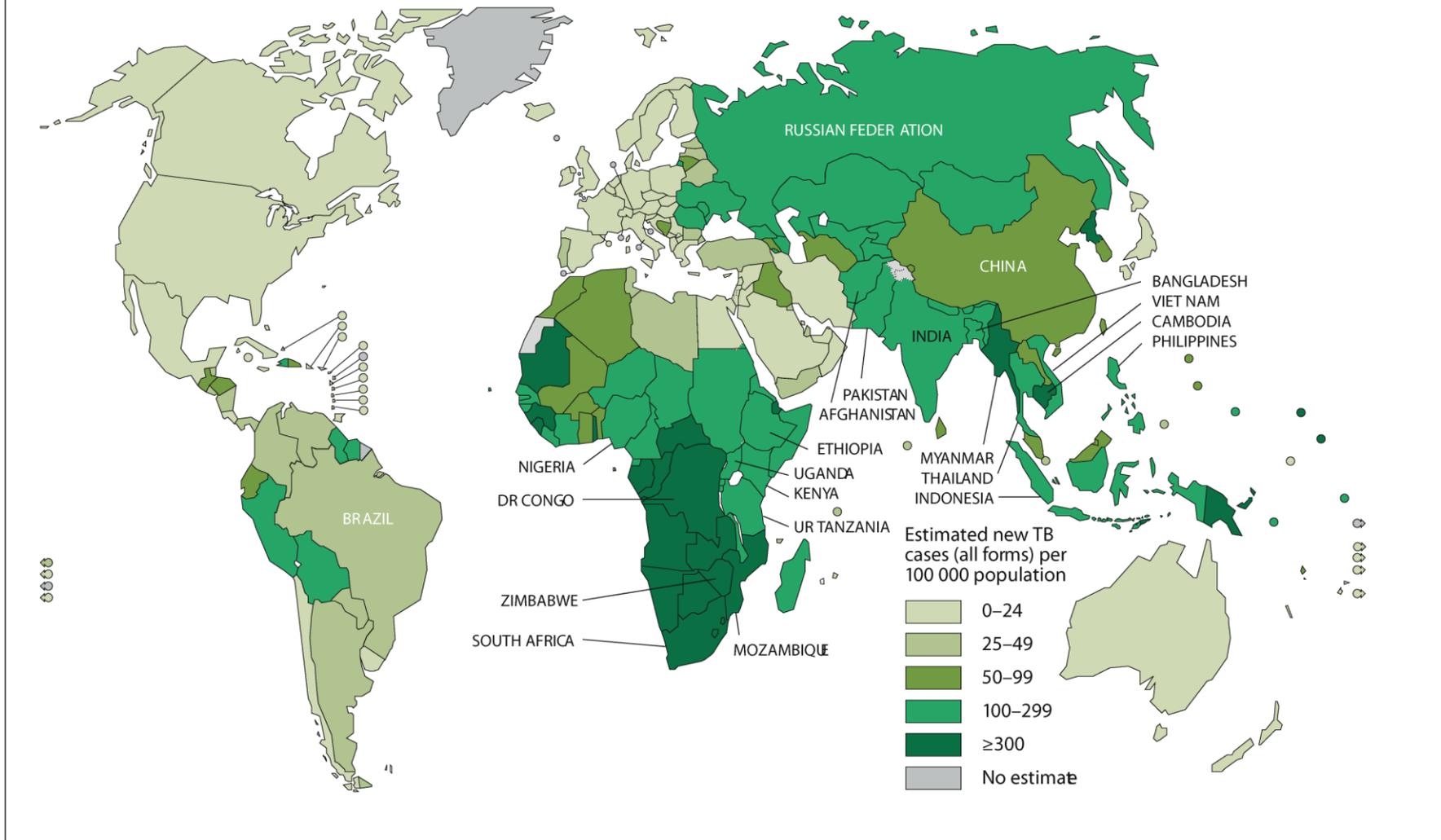
Placa inicial activa que progresa hacia una cavitación

Numerosas cavidades tuberculosas y erosión bronquial

TUBERCULOSIS: WORLDWIDE

- One-third of the world's population is currently infected with the TB bacteria.
 - Highest new infection rate: Africa
 - Most new infections: Southeast Asia
- In 2011, 8.7 million people fell ill with TB and 1.4 million died from TB.
- TB is considered to be one of the “Diseases of Poverty,” along with HIV/AIDS and malaria.

Estimated TB incidence rates, 2010



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Source: *Global Tuberculosis Control 2011*. WHO, 2011.



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TUBERCULOSIS ON THE DECLINE

- The world is on track to achieve the Millennium Development Goal to reverse the spread of TB by 2015.
- The TB death rate dropped 41% between 1990 and 2011.

<http://www.who.int/mediacentre/factsheets/fs104/en/index.html>

TUBERCULOSIS & HIV/AIDS

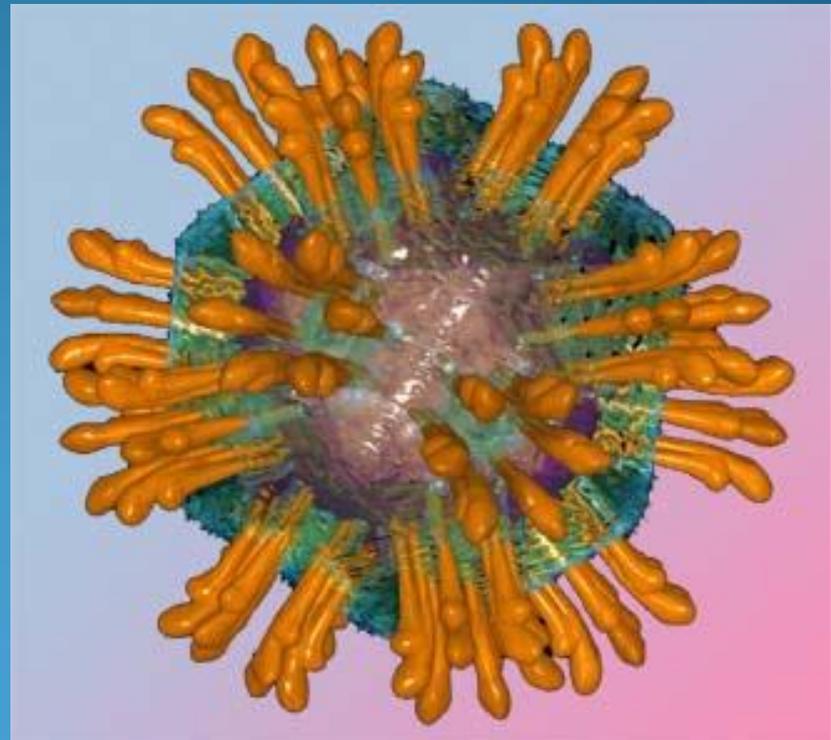
- Tuberculosis is an AIDS defining illness.
- Tuberculosis is a leading killer of people living with HIV causing one quarter of all deaths

**“When you find TB, test for HIV,
When you find HIV, test for TB.”**

FOR MORE INFORMATION ON TB

- **Oklahoma State Department of Health**
1000 NE 10th Street, Room 608
Oklahoma City, OK 73117-1299
Tel: 405-271-4060
Fax: 405-271-6680
<http://ads.health.ok.gov>
- Centers for Disease Control & Prevention
www.cdc.gov/tb

HEPATITIS C



HEPATITIS C: OVERVIEW

- Hepatitis C
 - Viral infection caused by contact with infected blood:
 - Mother-child infection rare, but possible
 - Also spread through sexual contact
 - Two subtypes:
 - Acute (first 6 months of infection)
 - Chronic
 - Can lead to permanent liver damage, cirrhosis, liver cancer, and liver failure.
 - Often undiagnosed until some liver damage has already occurred.

HEPATITIS C: SYMPTOMS & DIAGNOSIS

- Feeling very tired
 - Upset stomach
 - Stomach pain
 - Fever
 - Yellowish skin and/or eyes
 - Dark urine
 - Light-colored stools
-
- **The only way to know if you have Hepatitis C is to have a blood test.**

HEPATITIS C: TRANSMISSION

- Transmitted through the sharing of needles or other equipment to inject drugs.
- Passed through contact with infected blood (tattoos, needlestick injuries) and unscreened blood transfusions.
- Can also be transmitted sexually and mother to baby during pregnancy.

HEPATITIS C: RISK FACTORS

- Compromised/diminished immune system
- Injection drug use (55%)
- Exposure to infected sexual partner or multiple partners (20%)
- Occupational, hemodialysis, household, perinatal (10%)

PROGRESSION OF HCV

For every 100 people infected with the hepatitis C virus

75-85 will develop chronic HCV infection

60-70 will go on to develop chronic liver disease

5-20 will go on to develop cirrhosis over 20-30 years

1-5 will die from cirrhosis or liver cancer

LONG-TERM EFFECTS OF HCV

Severe liver damage can lead to:

- Problems with blood clotting
- Swelling stomach and ankles
- Not being able to think clearly
- Liver failure

The only treatment for liver failure is liver transplant.

LONG-TERM EFFECTS OF HCV: EDEMA



LONG-TERM EFFECTS OF HCV: JAUNDICE & ASCITES



HEPATITIS C: TREATMENT

- Interferon & Ribavirin
 - 48 weeks (discontinued if no response after 12 weeks)
- Injected intramuscularly, intravenously or subcutaneously
- Daily, weekly or three times a week
- Goal: Sustained Virologic Response (SVR)
 - 89% in mono-infection achieve SVR
 - 30% in HCV/HIV co-infection achieve SVR

INTERFERON: SIDE EFFECTS

- Flu-like symptoms
- Nausea
- Diarrhea
- Injection-site reaction
- Neuropsychiatric disorders
 - **Depression**, Suicide
 - Mood lability
 - “Brain Fog”

INTERFERON SIDE EFFECTS: DEPRESSION

- Assess before starting treatment
- Stabilize on antidepressant before treatment
- Establish care with counselor, psychiatrist, primary care giver before treatment
- Immediate evaluation if suicidal. May need to discontinue HCV treatment.

170-200 MILLION (M) CARRIERS WORLDWIDE



HEPATITIS C IN THE UNITED STATES

- 3.7 million infected in U.S.
- 25,000-35,000 new infections per year
- 8,000-10,000 deaths from HCV annually
- HCV-related deaths and liver transplants projected to triple in next decade

Figure 4.1. Reported and adjusted* number of acute hepatitis C cases — United States, 1992–2009

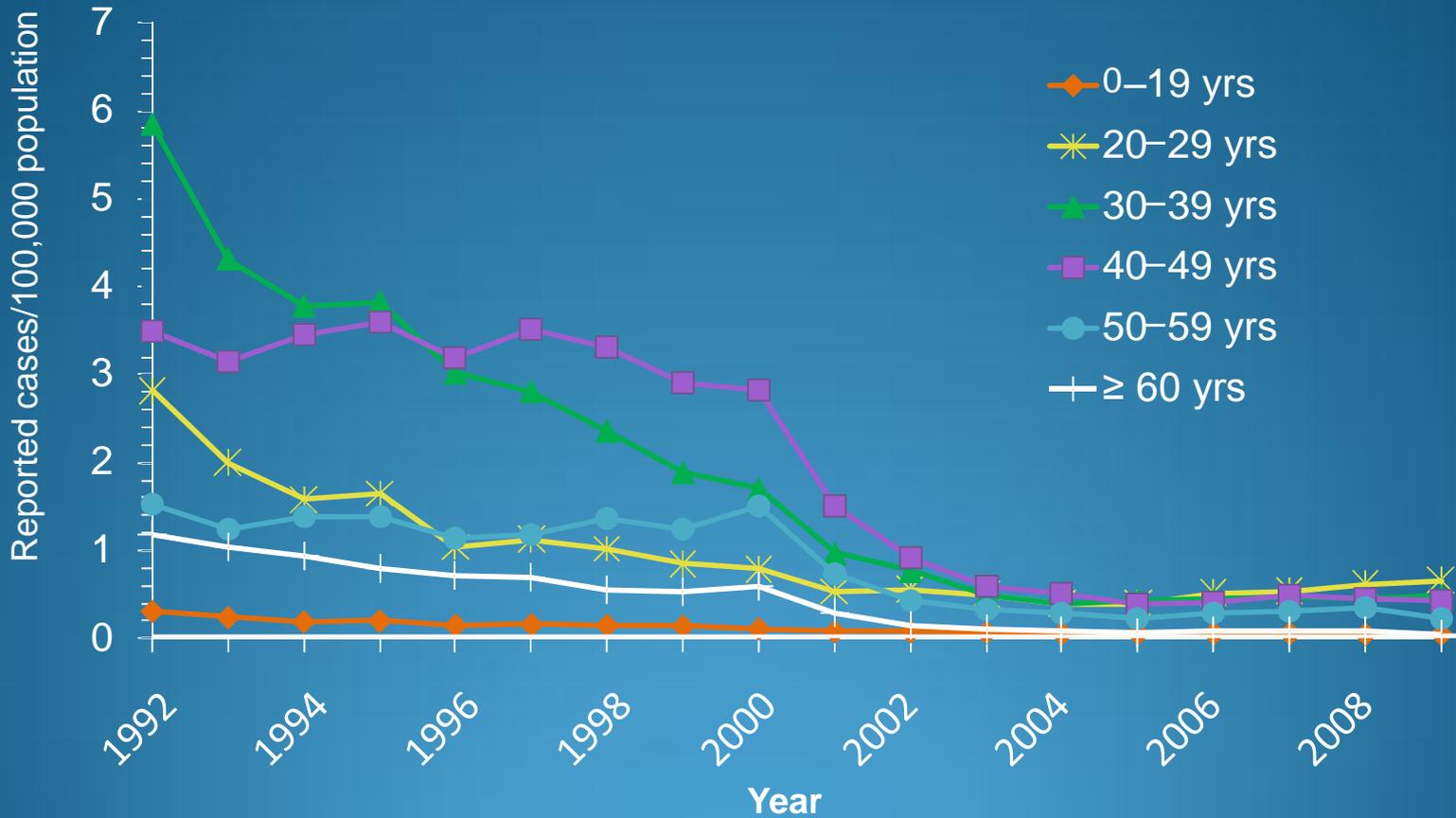


* Adjusted for underreporting.

Note: Until 1995, acute hepatitis C was reported as “acute hepatitis, non-A /non-B.”

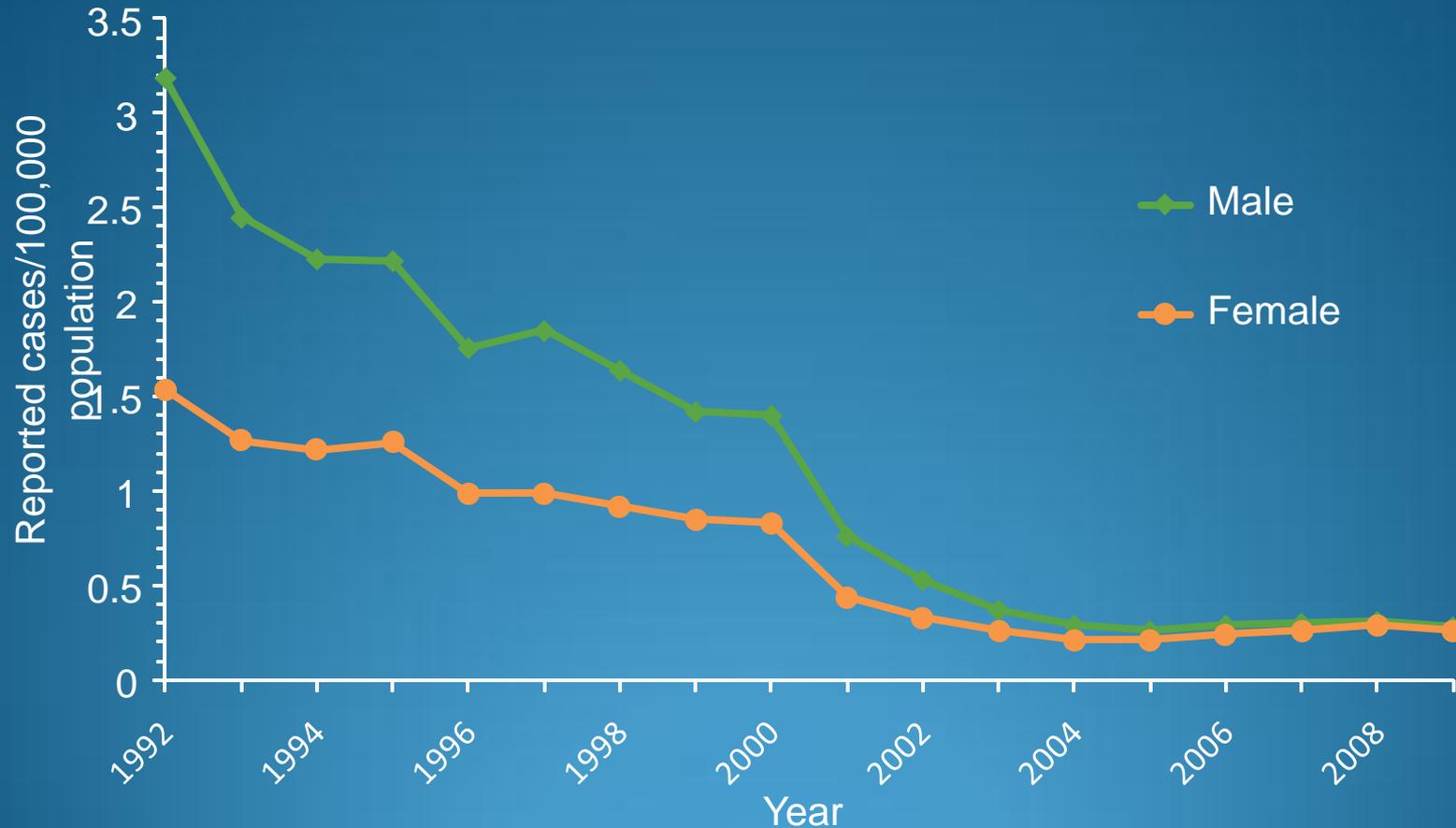
Source: National Notifiable Diseases Surveillance System (NNDSS)

Figure 4.2. Incidence of acute hepatitis C*, by age group — United States, 1992–2009



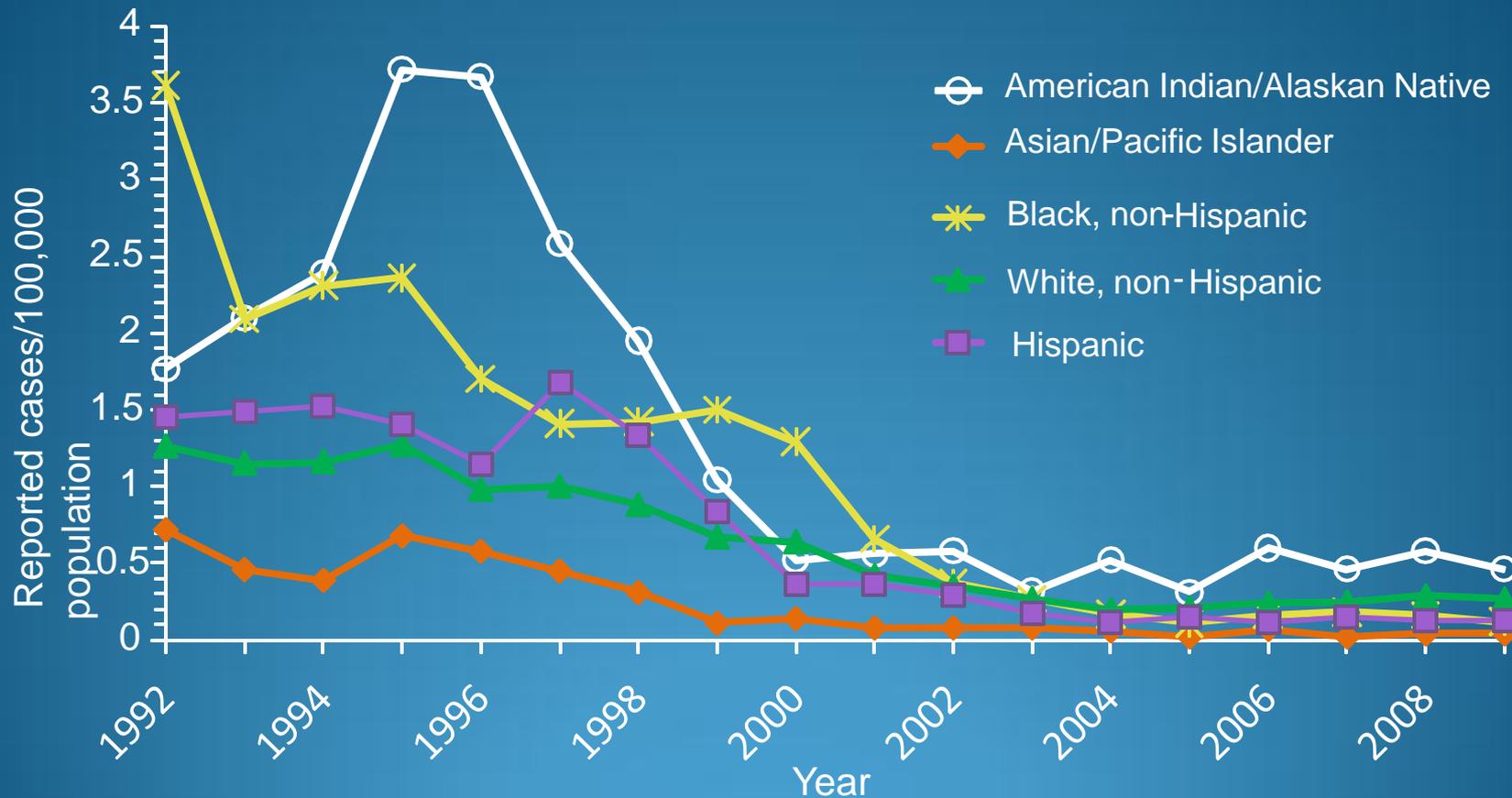
* Until 1995, acute hepatitis C was reported as “acute hepatitis, non-A /non B.”
 Source: National Notifiable Diseases Surveillance System (NNDSS)

Figure 4.3. Incidence of acute hepatitis C*, by sex — United States, 1992–2009



* Until 1995, acute hepatitis C was reported as “acute hepatitis, non-A /non-B.”
Source: National Notifiable Diseases Surveillance System (NNDSS)

Figure 4.4. Incidence of acute hepatitis C*, by race/ethnicity — United States, 1992–2009



* Until 1995, acute hepatitis C was reported as "acute hepatitis, non-A /non-B."

Source: National Notifiable Diseases Surveillance System (NNDSS)

PREVALENCE OF HEPATITIS C IN SELECTED SUBGROUPS IN THE UNITED STATES

- Injection drug users: 52-90%
- Hemophiliacs: 60-85%
- HIV-infected individuals: 30-40%
- Incarcerated HIV-infected: 50%
- MSM: 4-8%

CDC. MMWR. 1998; 47(No. RR-19):1-39.

NIH Consensus Development Conference Panel Statement Management of Hepatitis C, 2002

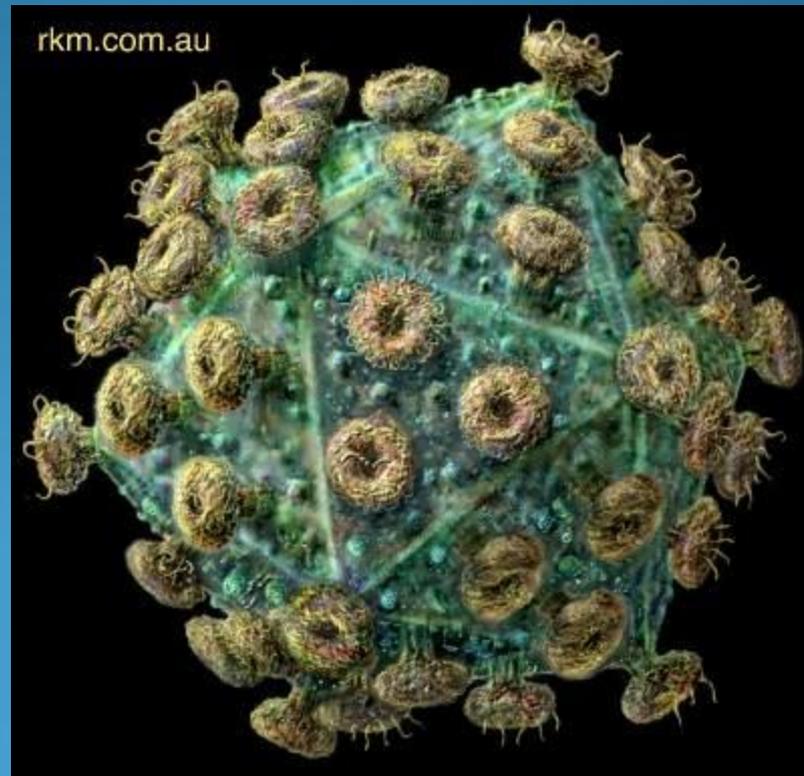
HEPATITIS C IN OKLAHOMA

- There are no dedicated Hepatitis C clinics in Oklahoma.
- An estimated 80,000 Oklahomans are infected with chronic HCV.
- State and federal funding for HCV in Oklahoma totals only approximately \$120,000.

HEPATITIS C RESOURCES

- **Janet Wilson, RN**
Adult Viral Hepatitis Prevention Coordinator
Oklahoma Dept of Health HIV/STD Service
1000 NE 10th Street, Room 609
Oklahoma City, OK 73104
(405) 271-9444 x56625
- **Oklahoma Transplant Center at OU Medical Center**
940 NE 13th Street
Oklahoma City, OK 73104
(405) 271-7498
outransplant.com
- **County health departments**

HIV/AIDS



HIV vs AIDS: OVERVIEW

- Viral infection
- **H**uman **I**mmunodeficiency **V**irus
- Virus infects and destroys a certain type of white blood cell (CD4+).
- Not the same as AIDS!
- Definitions:
 - CD4+ cells / CD4+ count 
 - Viral Load (VL) 

HIV vs AIDS: WHAT IS AIDS?

- **Acquired Immune Deficiency Syndrome**
 - Final stage of HIV infection
 - Over time (especially if left untreated), HIV will eventually weaken the immune system so much that the person will become sick with types of infections known as opportunistic infections.
- **Considered to have AIDS when:**
 - CD4+ count is below 200 (or less than 15% of total lymphocytes)
And / Or
 - Has one or more opportunistic infections

SOME OPPORTUNISTIC INFECTIONS

■ Fungal Infections

- Candidiasis (oral and esophageal) (e.g. thrush)
- Cryptococcus
- Histoplasmosis

■ Bacterial Infections

- MAC
- Tuberculosis (TB)
- Salmonellosis

■ Pneumonias

- Bacterial
- Pneumocystis carinii (PCP)

■ Wasting Syndrome

■ Viral Infections

- CMV
- Herpes (longer than 1 month)
- Hepatitis
- Epstein Barr
- Genital Wart
- Molluscum

■ Parasitic Infections

- Toxoplasmosis
- Cryptosporidium
- Isosporiasis

■ Cancers

- Kaposi's Sarcoma (KS)
- Lymphoma

CANDIDIASIS (THRUSH)



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KAPOSI'S SARCOMA



HISTORY OF THE AIDS EPIDEMIC IN THE USA

- June, 1981: 5 young gay men in Los Angeles with *Pneumocystis carinii* pneumonia reported
- 26 gay men with Kaposi's sarcoma and/or PCP reported several weeks later
- Similar syndrome reported in injection drug users

HISTORY OF AIDS

- 1982: CDC notes similar syndrome in hemophiliacs and Haitians
- New disease is called gay-related immunodeficiency syndrome
- September, 1982: CDC publishes case definition using the term “AIDS”

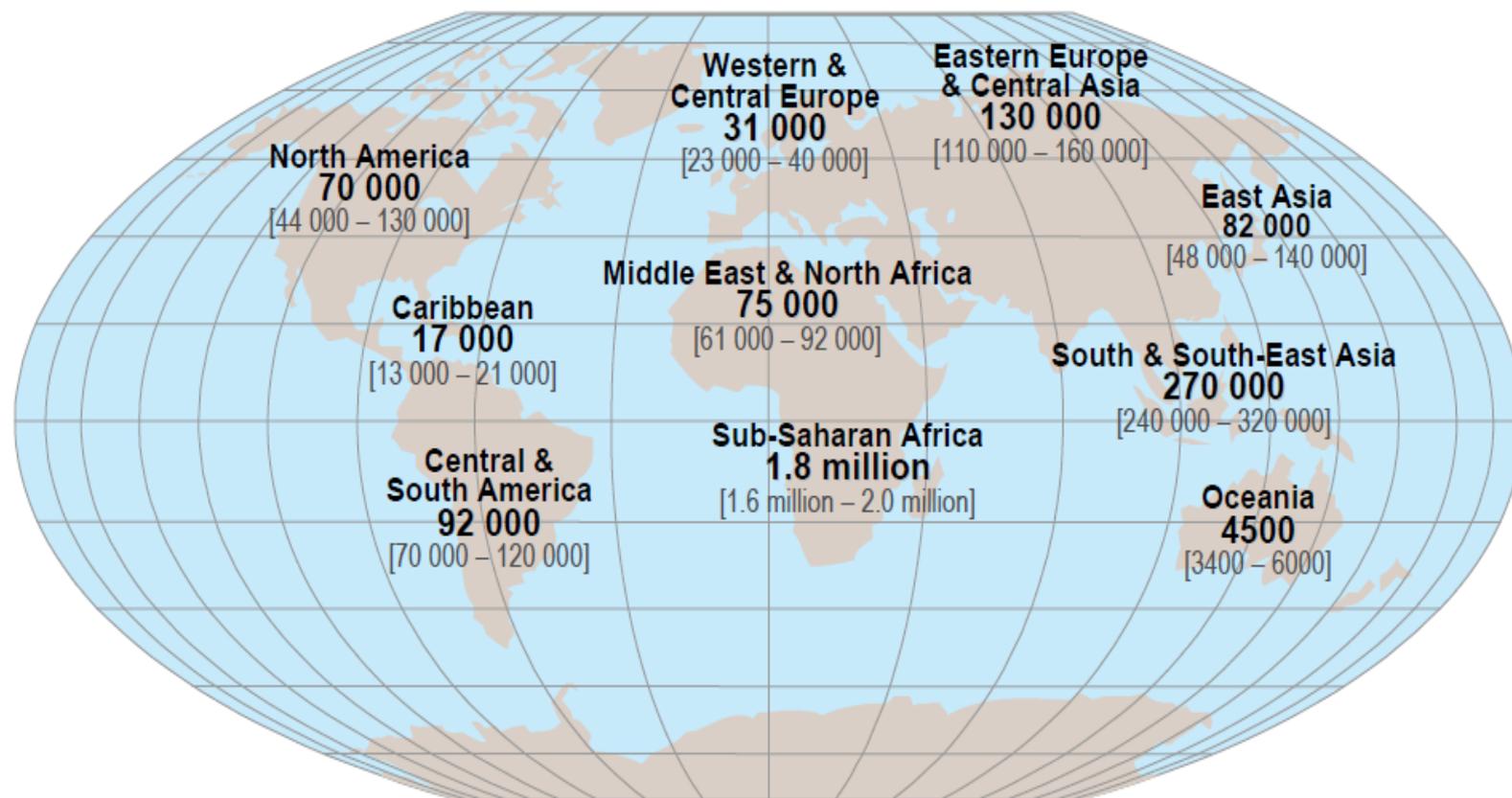
HISTORY OF AIDS

- 1983: human immunodeficiency virus first isolated in France
- 1984: HIV linked to AIDS
- 1986: HIV-2 discovered in west Africa

THE EARLY EPIDEMIC

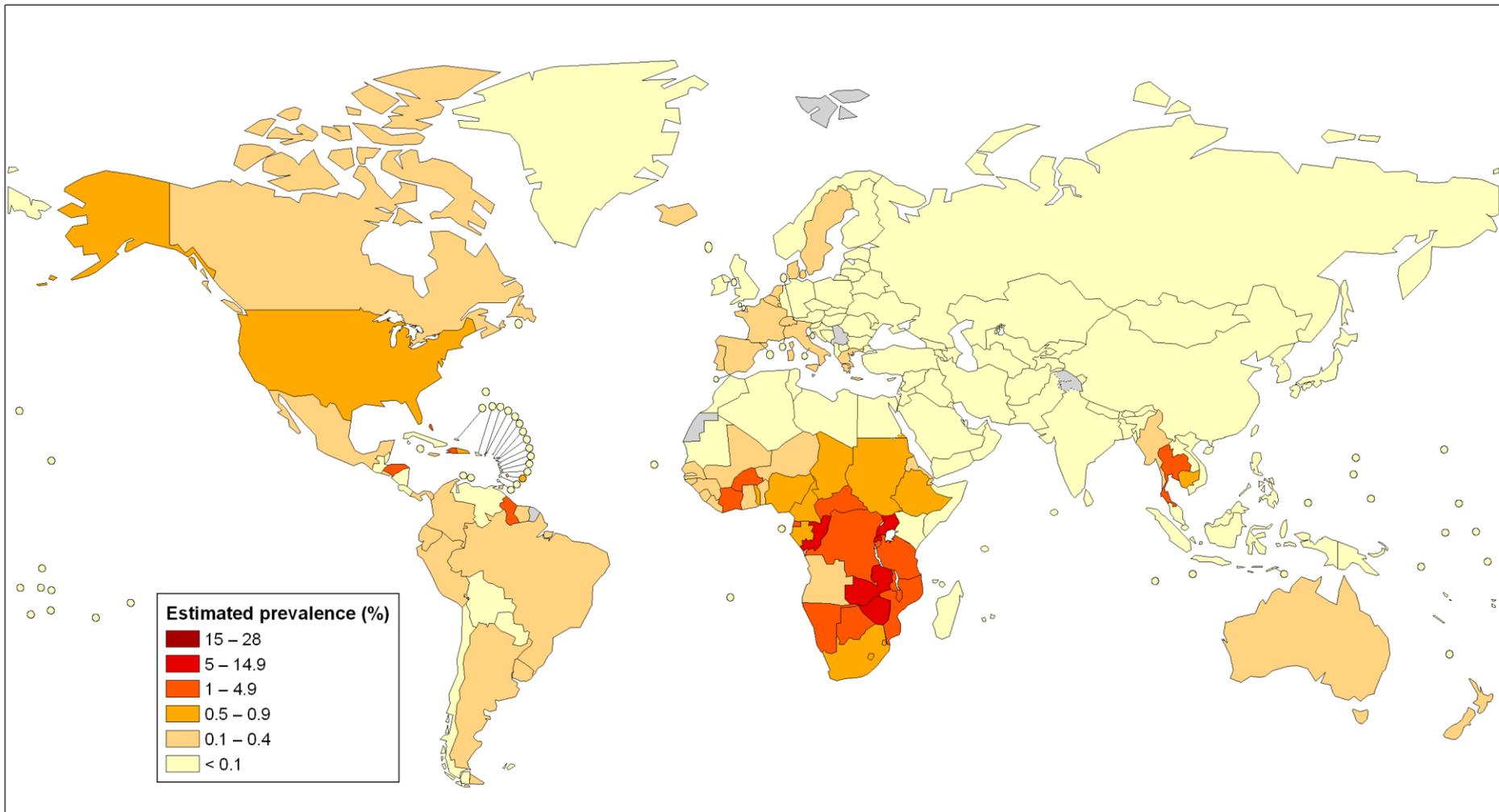
- Late 1981: 100 cases reported to CDC
- Early 1983: 1,000 cases
- Late 1980's: all states report cases
- 1989: 100,000 cases
- 1995: 500,000 cases

Estimated number of adults and children newly infected with HIV | 2009



Total: 2.6 million [2.3 million – 2.8 million]

HIV estimated prevalence among population aged 15–49 years (%), 1990



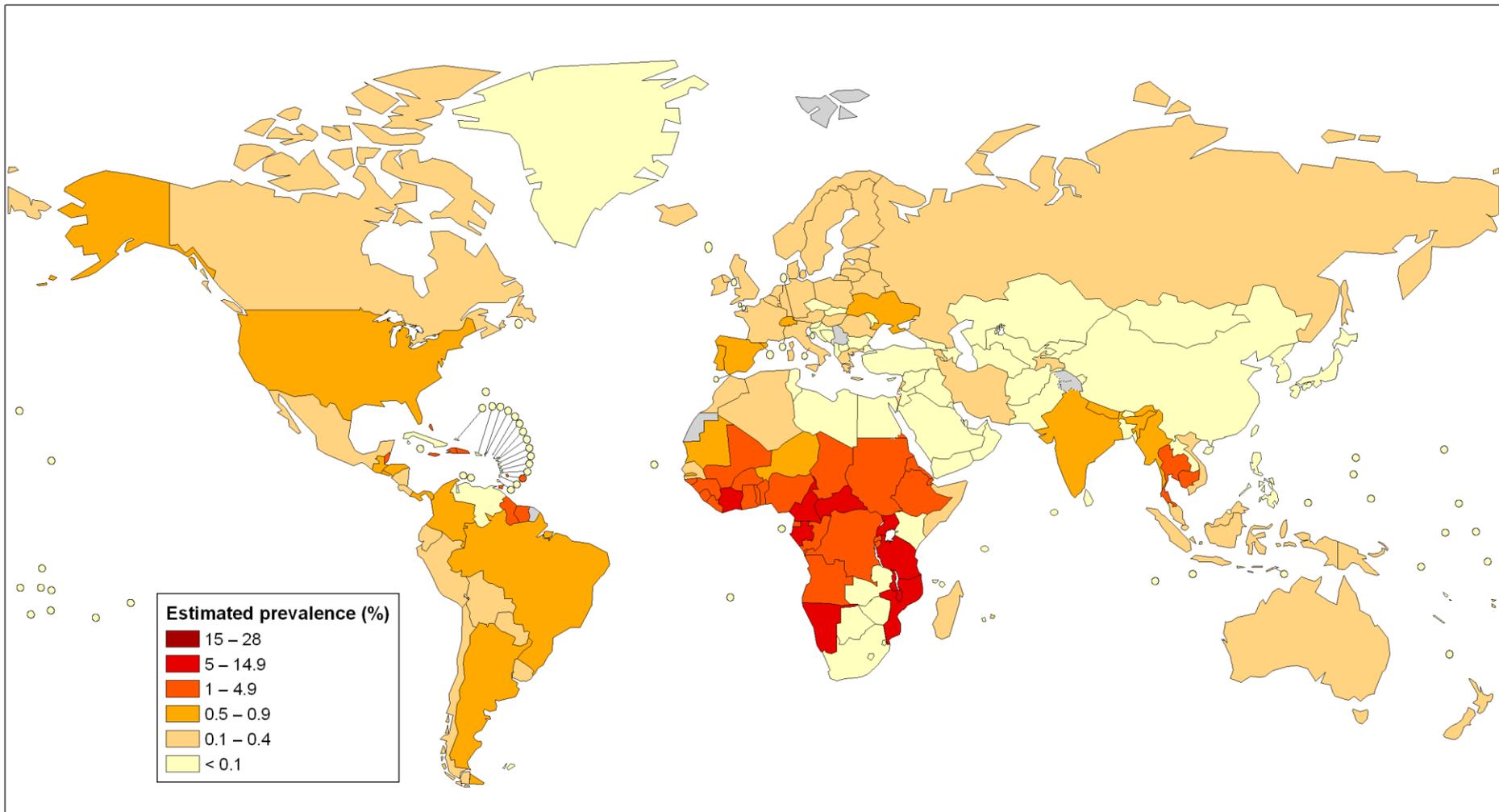
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Data Source: UNAIDS/World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization



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HIV estimated prevalence among population aged 15–49 years (%), 2000



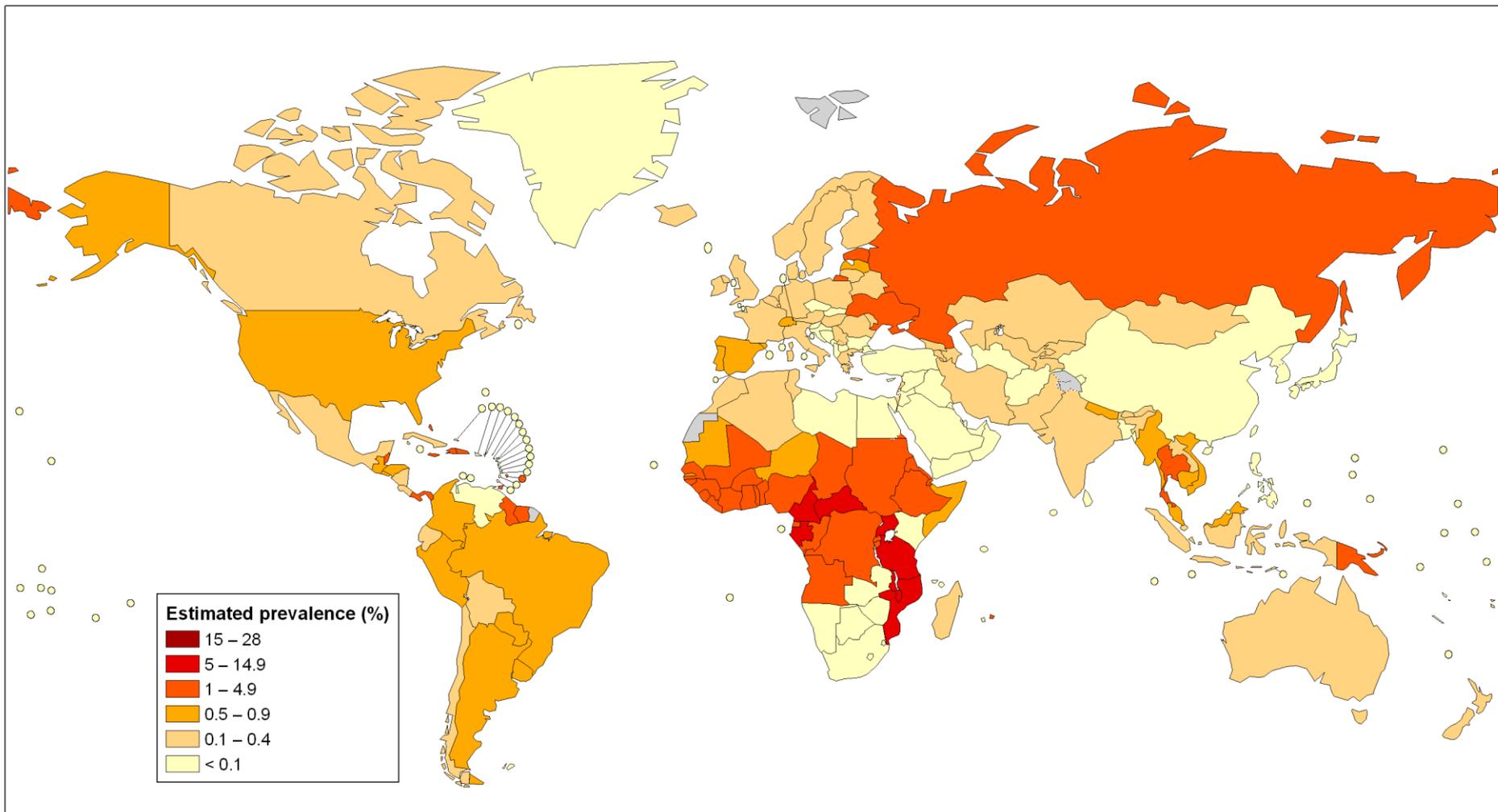
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HIV estimated prevalence among population aged 15–49 years (%), 2007



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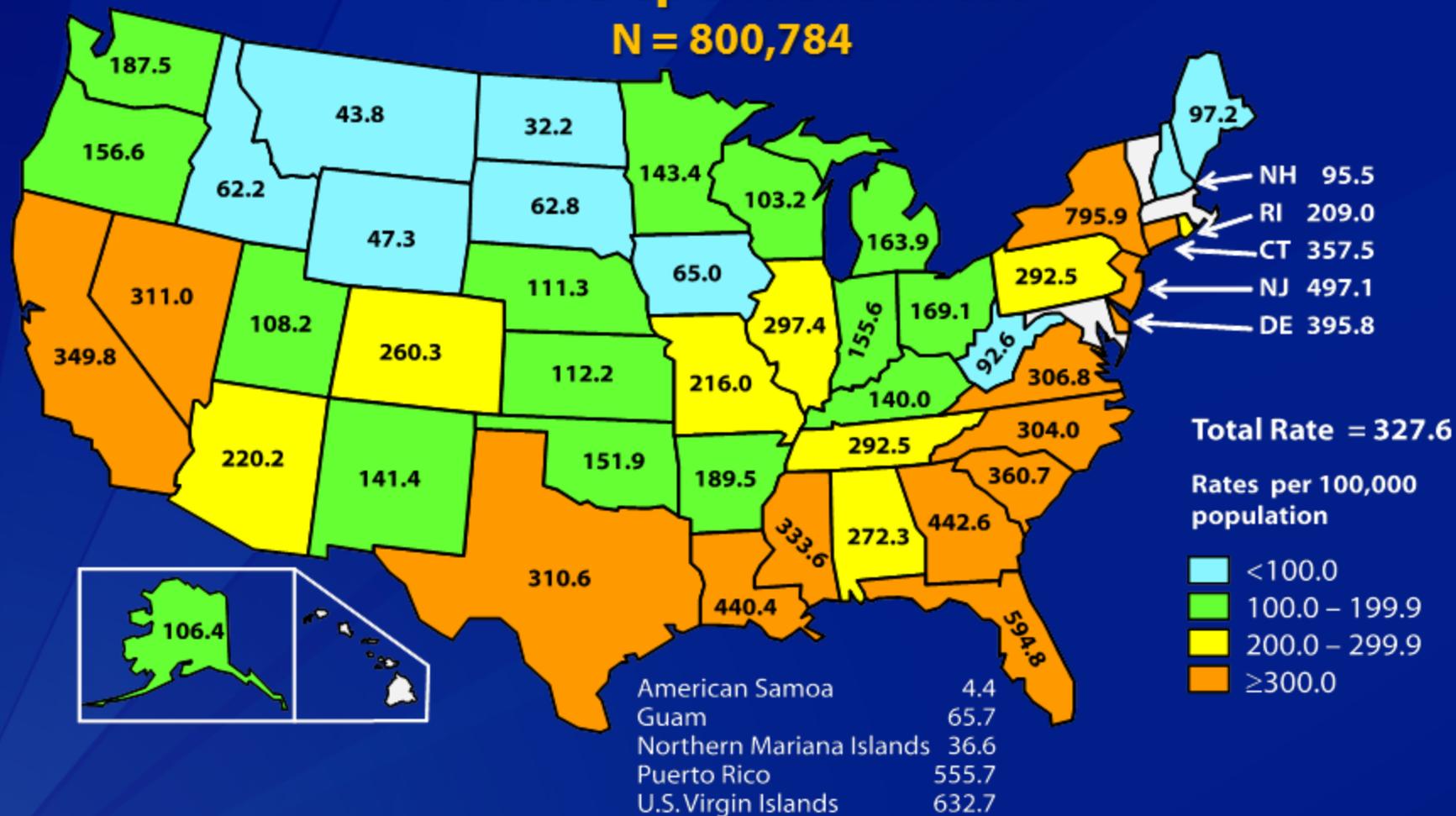
Data Source: UNAIDS/World Health Organization
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Rates of Adults and Adolescents Living with a Diagnosis of HIV Infection, Year-end 2009—46 States and 5 U.S. Dependent Areas

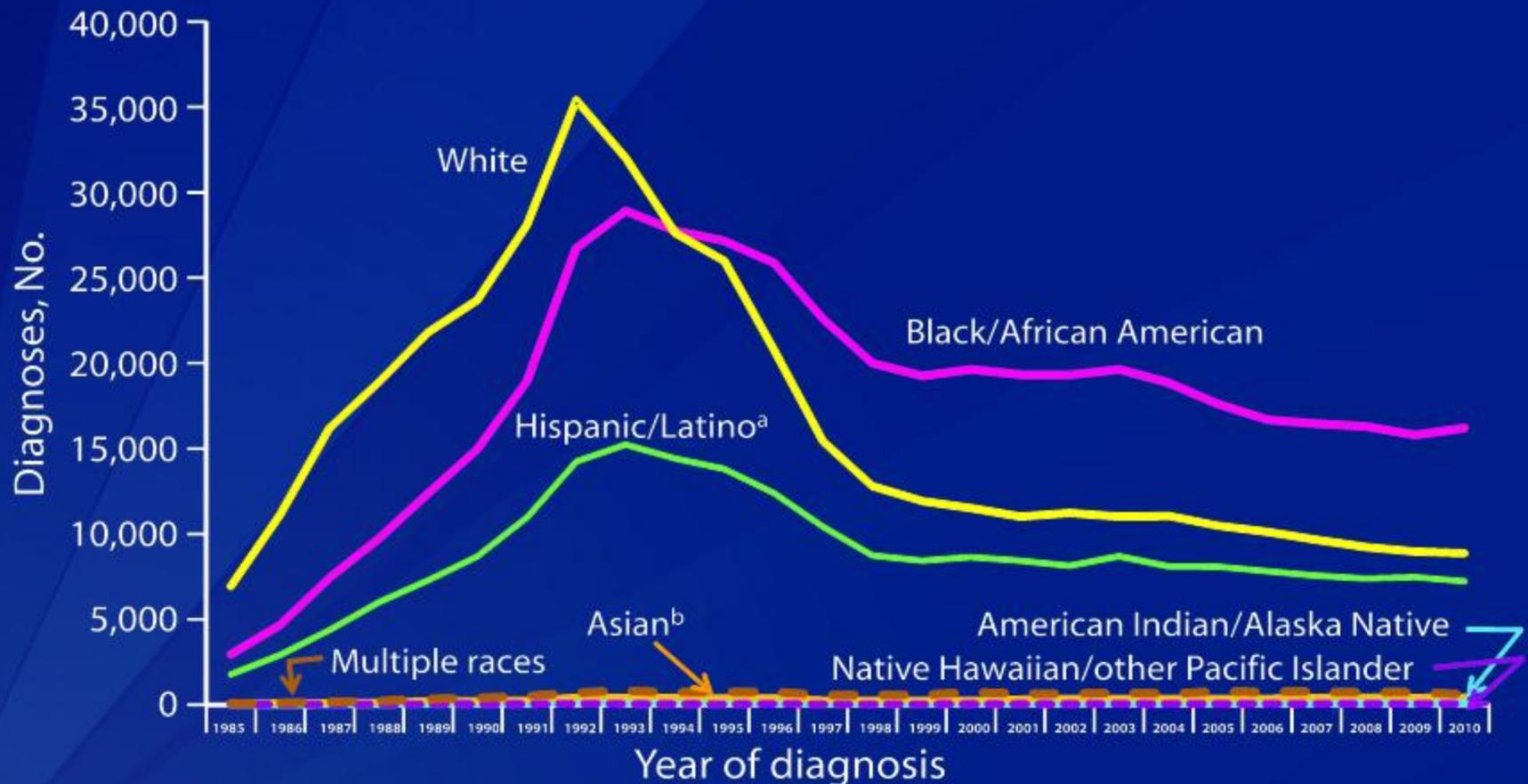
N = 800,784



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.



Numbers of AIDS Diagnoses among Adults and Adolescents, by Race/Ethnicity and Year of Diagnosis, 1985–2010—United States and 6 U.S. Dependent Areas



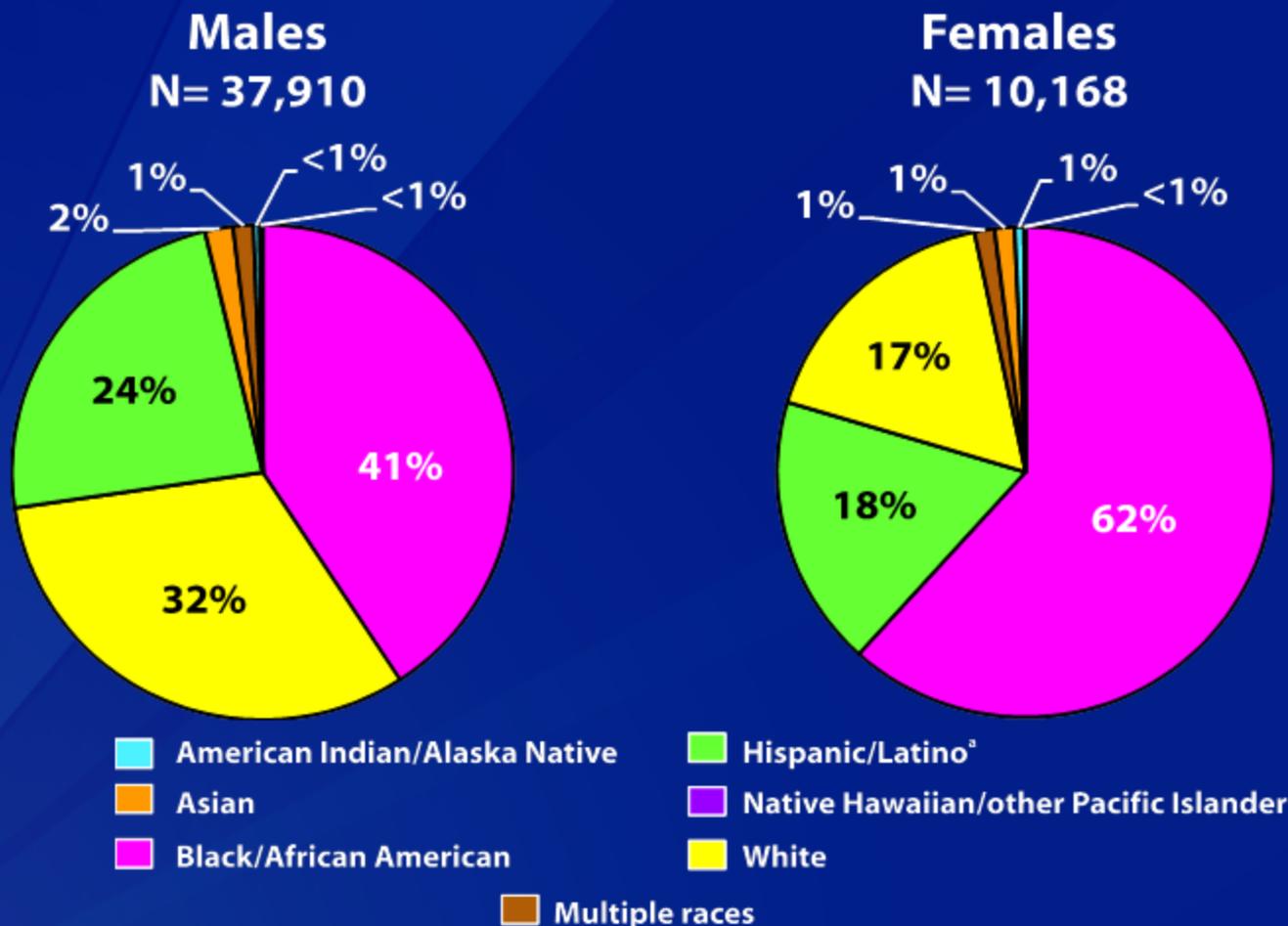
Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

^a Hispanics/Latinos can be of any race.

^b Includes Asian/Pacific Islander legacy cases.



Diagnoses of HIV Infection among Adults and Adolescents, by Sex and Race/Ethnicity, 2010—46 States and 5 U.S. Dependent Areas

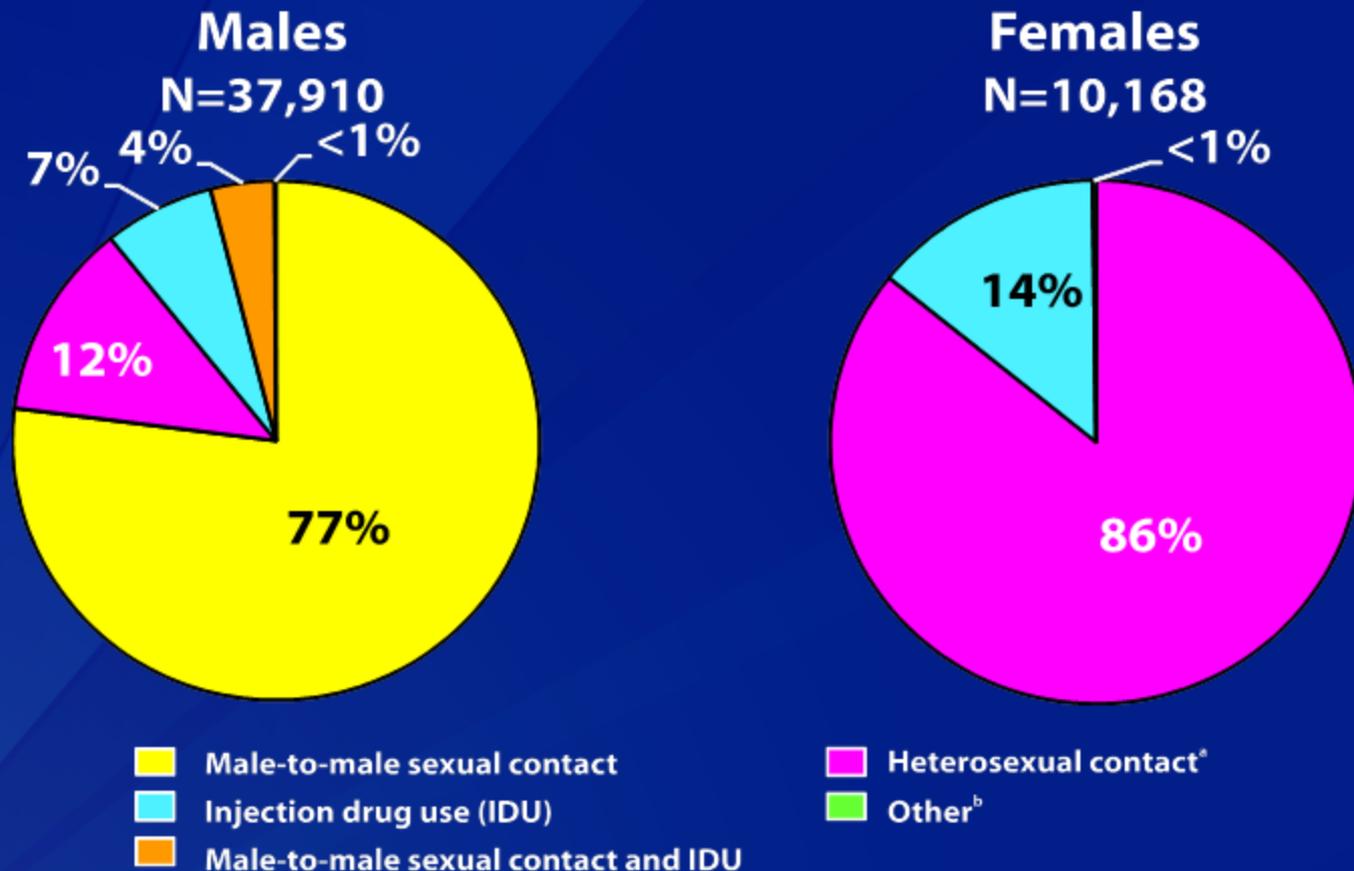


Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

* Hispanics/Latinos can be of any race.



Diagnoses of HIV Infection among Adults and Adolescents, by Sex and Transmission Category, 2010—46 States and 5 U.S. Dependent Areas



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays and missing risk-factor information, but not for incomplete reporting.

^a Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

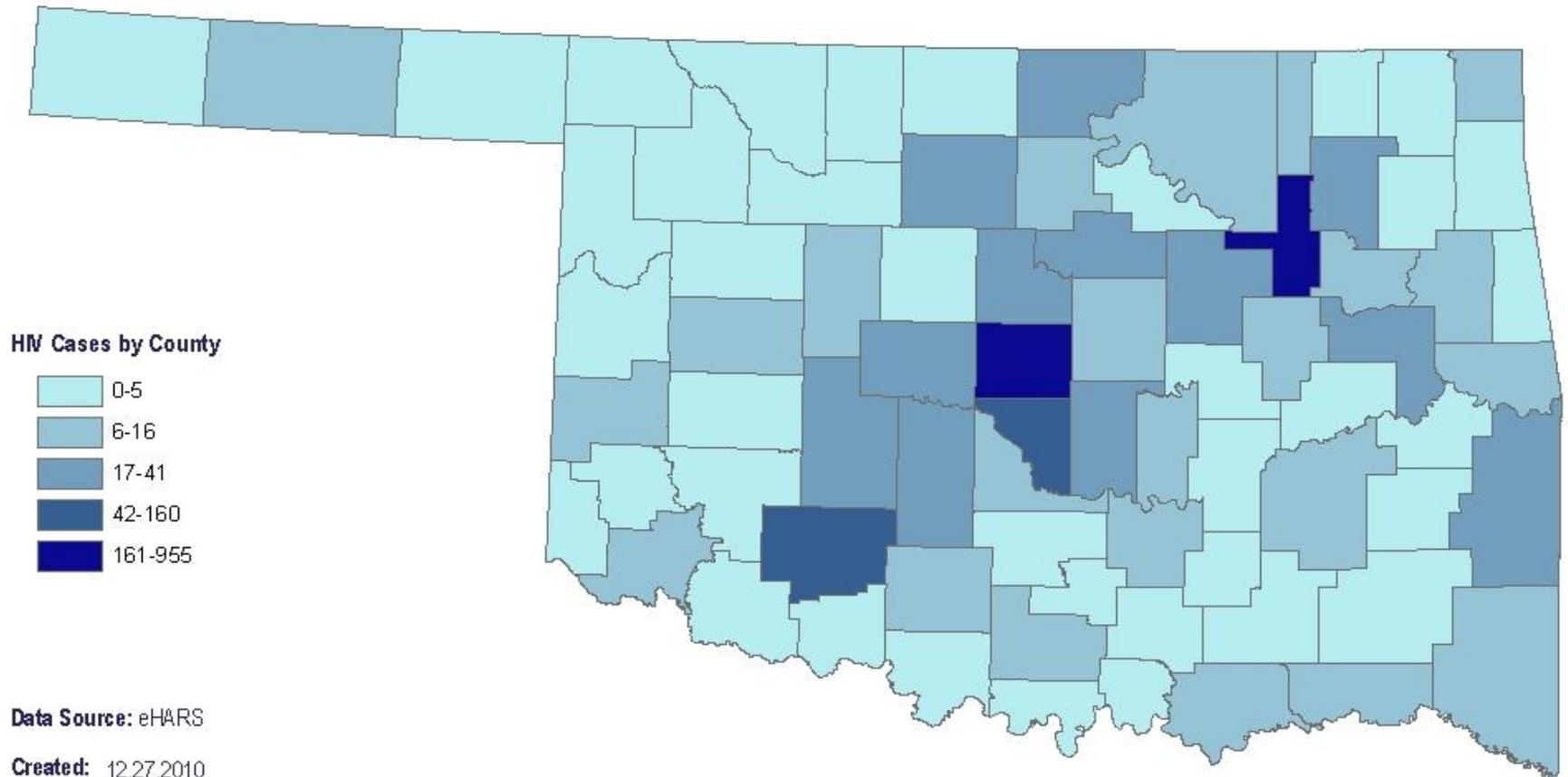
^b Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.



OKLAHOMA

- 300 cases diagnosed in Oklahoma in 2010
- 8,462 cumulative cases of HIV/AIDS at the end of 2010 (AIDS: 5,449; HIV: 3,013)
- Oklahoma ranks 20th for the number of persons living with HIV/AIDS
- Oklahoma ranks 25th for number of new diagnoses

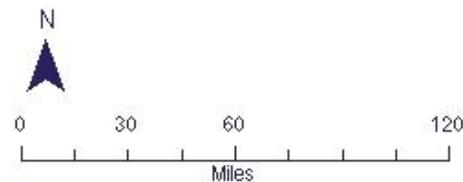
Prevalence Estimates for HIV Cases by County of Diagnosis Oklahoma 2009



Data Source: eHARS

Created: 12.27.2010

Projection/Coordinate System: USGS Albers Equal Area Conic

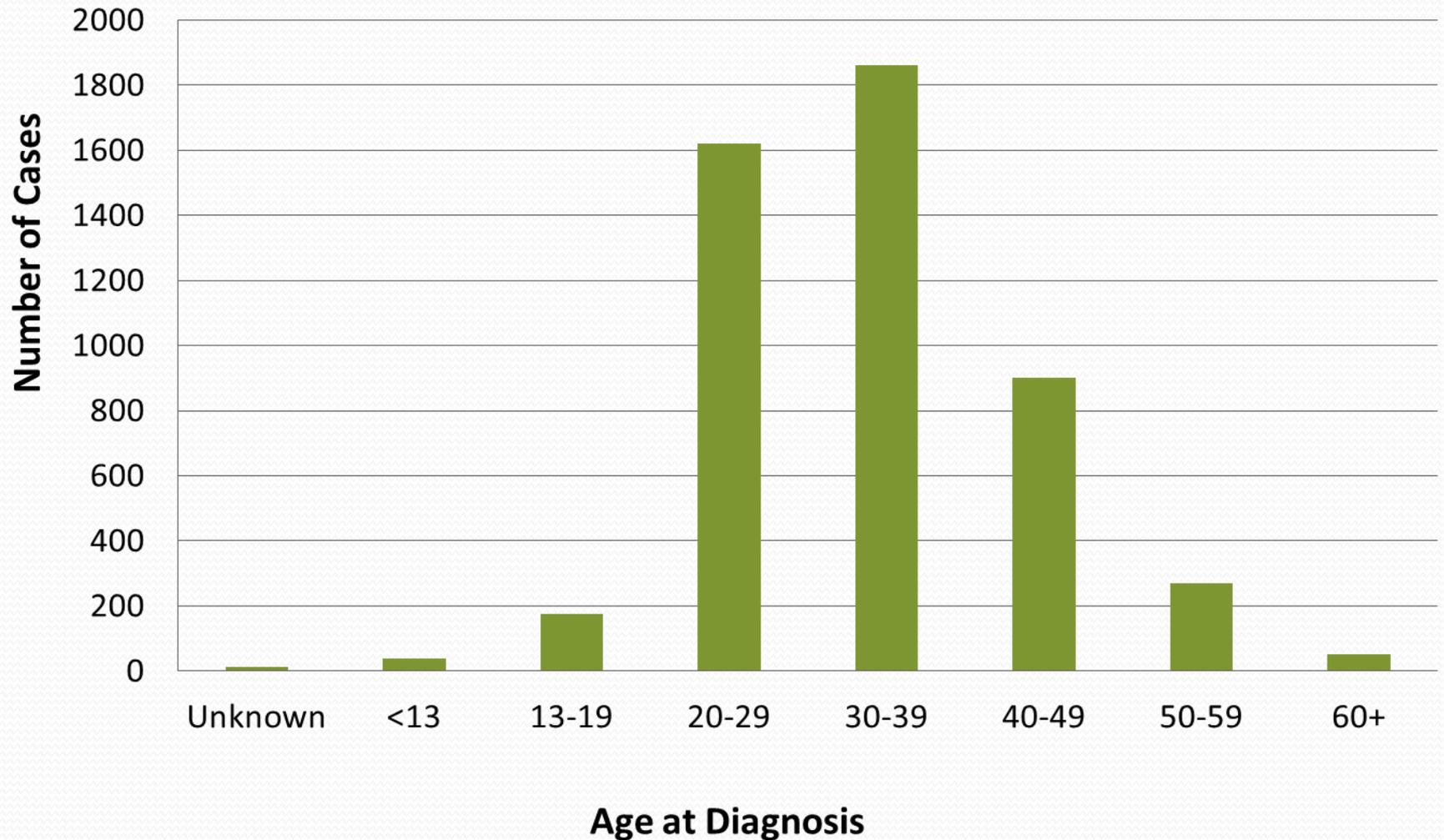


Disclaimer: This map is a compilation of records, information and data from various city, county and state offices and other sources, affecting the area shown, and is the best representation of the data available at the time. The map and data are to be used for reference purposes only. The user acknowledges and accepts all inherent limitations of the map, including the fact that the data are dynamic and in a constant state of maintenance.



Surveillance & Analysis Division
HIV/STD Service
Oklahoma State Department of Health

HIV/AIDS Prevalence in Oklahoma by Age Group as of 2009



HIV: TRANSMISSION

- Primarily transmitted 3 ways:
 - Unprotected anal and vaginal intercourse
 - Injecting drugs with contaminated needles and/or equipment
 - Infected mother to infant

HIV: MYTHS ABOUT TRANSMISSION

- Casual contact (hugging, shaking hands)
- Coughing/sneezing
- Sharing food or utensils
- Dry kissing
- Donating blood
- Mosquito or other insect bites

HIV: RISK FACTORS

- Injecting drugs or steroids, during which equipment (such as needles, syringes, cotton, water) and blood were shared with others.
- Having unprotected vaginal, anal, or oral sex (that is, sex without using condoms) with men who have sex with men, multiple partners, or anonymous partners.
- Exchanging sex for drugs or money.
- Being diagnose with, or been treated for, hepatitis, tuberculosis (TB), or a sexually transmitted disease (STD) such as syphilis.
- Having received a blood transfusion or clotting factor during 1978–1985.
- **Have had unprotected sex with someone who has any of the risk factors listed above.**

HIV: SYMPTOMS

- HIV infection is symptomatic in 40%-90% of cases.
 - Symptoms appear 2-4 weeks after exposure
 - Illness is non-specific and mononucleosis- like
 - Clinical illness lasts 1-4 weeks
- Because people may not go to the doctor for symptoms, HIV often goes undiagnosed until the person develops an opportunistic infection.

WHY IS HIV TESTING SO IMPORTANT?

Of the 1+ million HIV-infected persons in the U.S., 21% are unaware of their status.

HIV: TESTING

- Who should be tested?
 - CDC recommends routine screening for everyone aged 13-64 years in all healthcare settings.
 - Healthcare settings include:
 - Emergency departments
 - Urgent care clinics
 - Primary care settings
 - Inpatient services
 - Corrections health-care facilities
 - TB clinics
 - STD clinics
 - Substance use clinics
 - Public health clinics
 - Community clinics

HIV: TESTING

- At least annually for all persons at high risk of HIV infection:
 - Injection-drug users (IDUs)
 - Sex partners of IDUs
 - Persons who exchange sex for money or drugs
 - Sex partners of HIV infected
 - Men who have sex with men (MSM)
 - Heterosexuals who themselves or their sex partners have had >1 sex partner since last HIV test
- Before new sexual relationship

HIV: TESTING

- Traditional Testing (blood draw)
 - Blood is drawn, sent to the lab
 - Results in approx 2 weeks
 - Highly accurate
- Rapid Testing (finger stick or oral swab)
 - Can be completed virtually anywhere, thus reducing number of people who do not receive their results.
 - Small sample is taken
 - Results in 20 minutes
 - Highly accurate negative; preliminary positive

HIV: TESTING

- If rapid test is preliminary positive...
 - Retest
 - Blood draw for confirmation
- Each blood draw sample has 3 tests run on it prior to confirming a positive result.

HIV: TREATMENT

- HAART (Highly-Active Anti-Retroviral Therapy)
 - Often consists of combination of several medications
 - Adherence is **very** important!
 - Viral mutations & development of resistance
 - Side effects can be very difficult, such as
 - Chronic diarrhea
 - Nausea
 - Abnormal distribution of body fat
- If AIDS, additional treatment may be necessary to address OIs and/or other health problems.

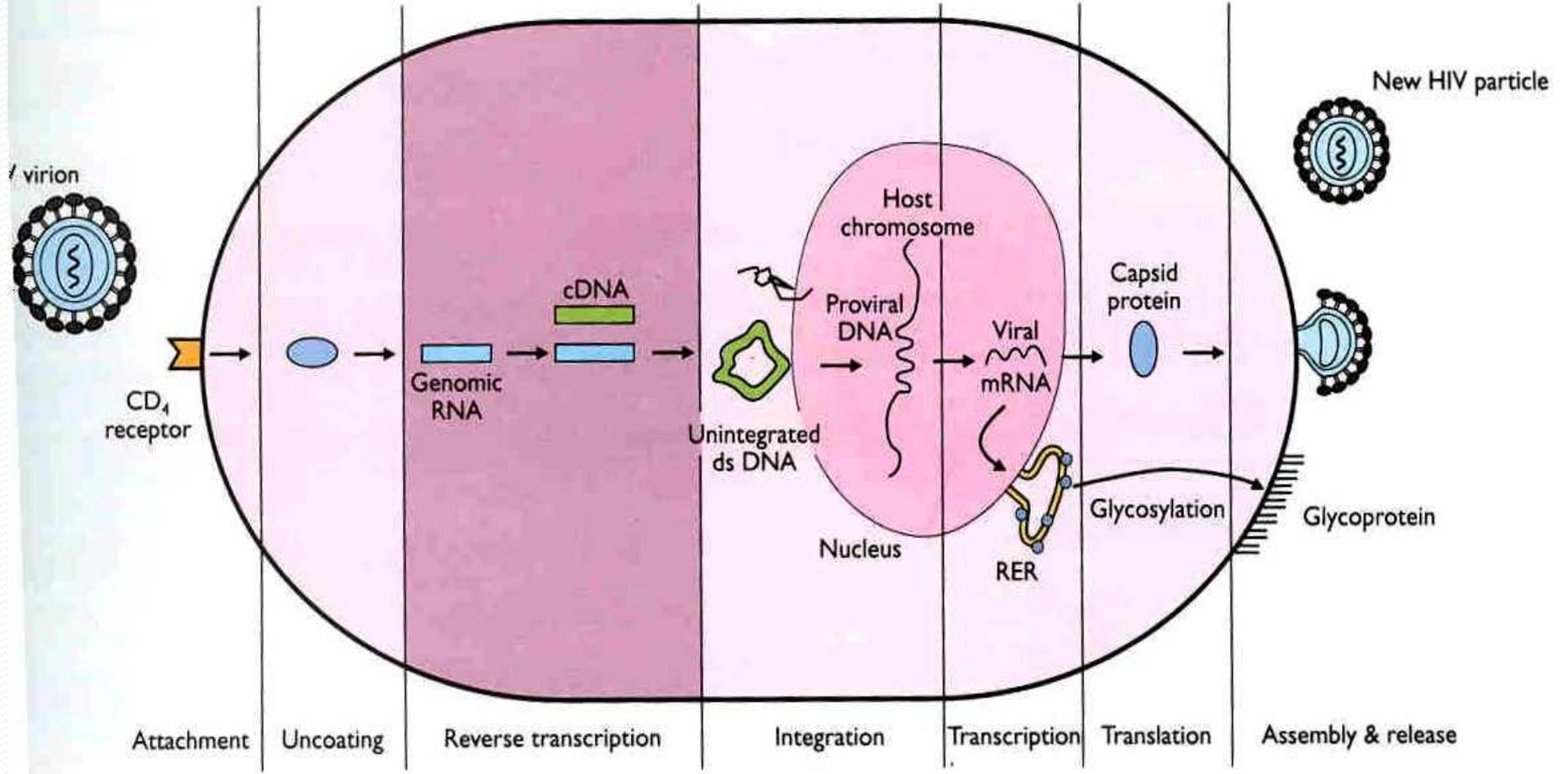
GUIDELINES FOR ANTIRETROVIRAL THERAPY

- CDC recommends beginning ART:
 - Have had AIDS-defining illness or CD4 <350
 - CD4 between 350 and 500
 - Regardless of CD4 if also have HBV & need Tx
- If CD4 >500, the panel is divided.

HIV: ANTIRETROVIRAL CLASSES

- Nucleoside reverse transcriptase inhibitors (NRTI)
- Non-nucleoside reverse transcriptase inhibitors (NNRTI)
- Protease inhibitors
- Fusion inhibitors
- Integrase inhibitors
- Entry inhibitors

Life cycle of the human immunodeficiency virus



HIV: LIMITS TO TREATMENT

- Adherence issues
 - Access to care
 - Cost
 - Side effects
 - Multiple pills a day
- Transmittal of resistance

HIV: CONTRIBUTING FACTORS

- Negative variables
 - Poverty
 - Abuse
 - Incarceration
 - Drugs
- Culture
- Lack of comprehensive sex education

POVERTY

- **2012 Federal Poverty Level: \$11,170** for a single person
- 5,952 Kids homeless in OK (*Daily Oklahoman: 3/11/09*)
- 444,035 Oklahomans received food stamps in Feb 2009
 - An increase of 6.4% from a year earlier. (*Daily Oklahoman: 3/17/09*)
- In 2007 the Salvation Army provided assistance to 121,000 Oklahomans; that figure jumped to 125,977 in 2008 (*Daily Oklahoman: 1/8/09*)
- 1192 unduplicated clients surveyed in the IDI in 2011:
 - 611 had incomes at or below the Federal Poverty Level above (51%).
 - 216 at or below 200% of Federal Poverty Level
 - 294 unknown

RESOURCES

OU Health Sciences Center

Infectious Diseases Institute

711 Stanton L. Young Blvd., Suite 430

Oklahoma City, OK 73104

(405) 271-6434

OSU College of Osteopathic Medicine

Houston Parke Clinic

635 West 11th

Tulsa, OK 74127

(918) 382-5058