

# Assessment and Management of Psychiatric Issues in the HIV Positive Patient

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# Disclosure

Author/royalties: American  
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AstraZeneca Pharmaceuticals

# Objectives

- Understand the mechanisms and manifestations of HIV infection of the central nervous system
- Describe the clinical presentations and differential diagnoses of HIV associated psychiatric comorbidities
- Understand the central role played by psychiatric issues in the assessment, presentation, and management of individuals with HIV
- Become familiar with special considerations in the use of standard psychiatric treatment modalities in the HIV-infected population

# Epidemiology and Overview

Source: Centers for Disease Control and Prevention.

*HIV Surveillance Report, 2011; vol. 23.*

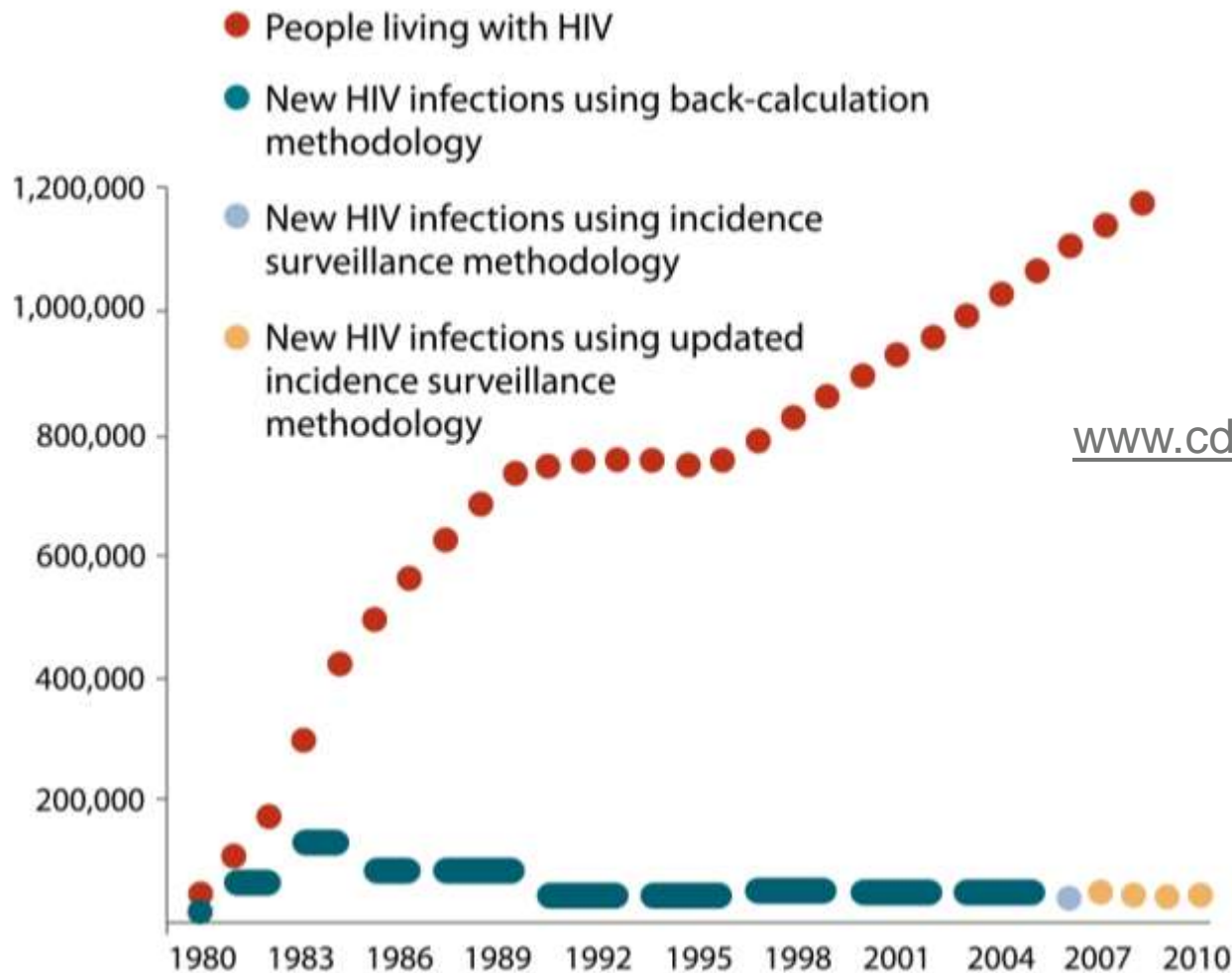
*<http://www.cdc.gov/hiv/topics/surveillance/resources/reports/>. Published February 2013.*



# Stages of HIV Infection

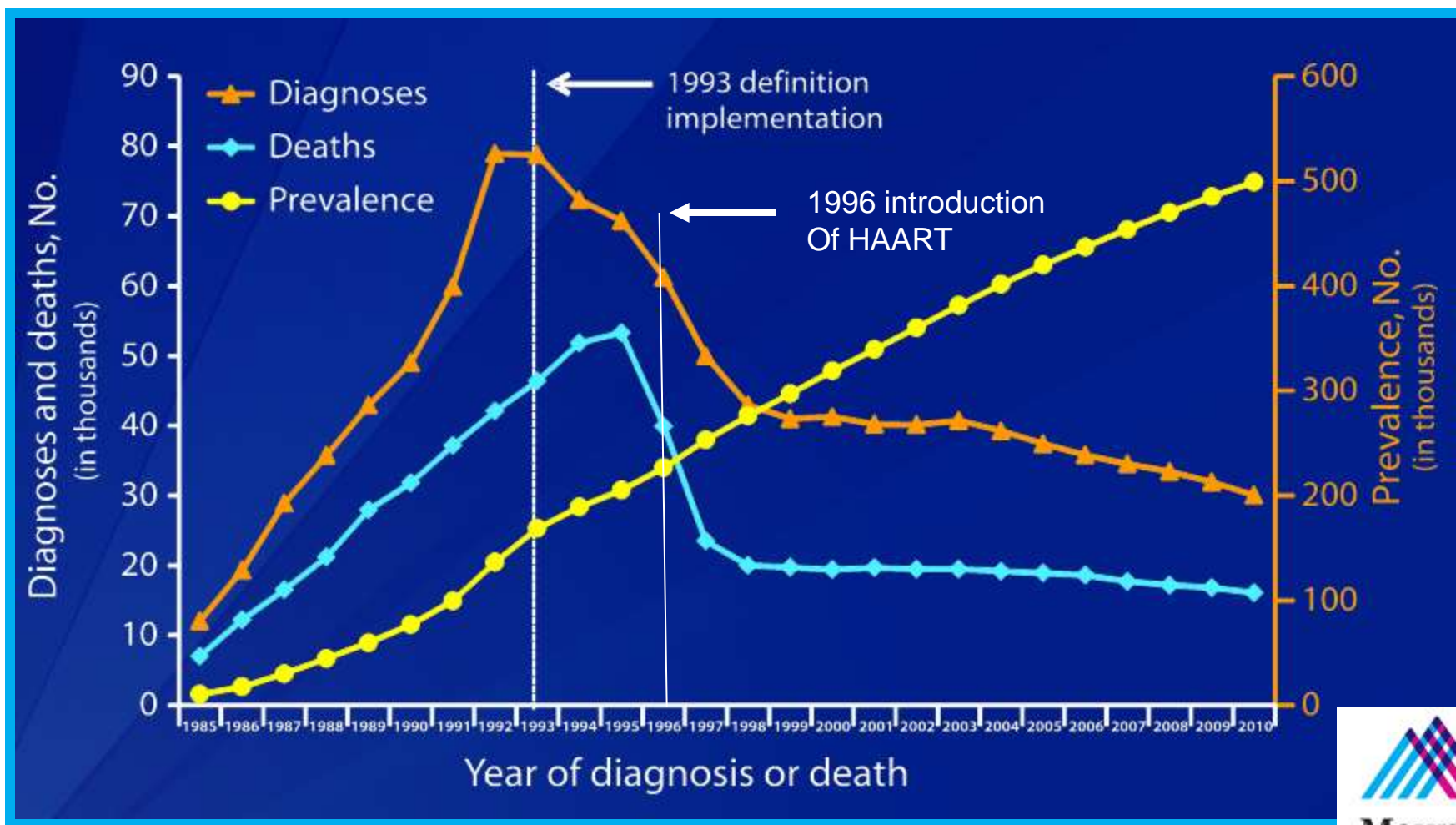
- **Stage 1:** No AIDS-defining condition + CD4  $\geq$ 500 cells/ $\mu$ L or CD4  $\geq$ 29%
- **Stage 2:** No AIDS-defining condition + CD4 200–499 cells/ $\mu$ L or CD4 14–28%
- **Stage 3 (AIDS):** AIDS-defining condition or CD4  $<$ 200 cells/ $\mu$ L or CD4  $<$ 14%
- **Stage unknown:** No reported information on AIDS-defining conditions & no information available on CD4 count or percentage

# HIV Prevalence and Incidence, 1980-2010 in US



[www.cdc.gov/hiv/statistics](http://www.cdc.gov/hiv/statistics)

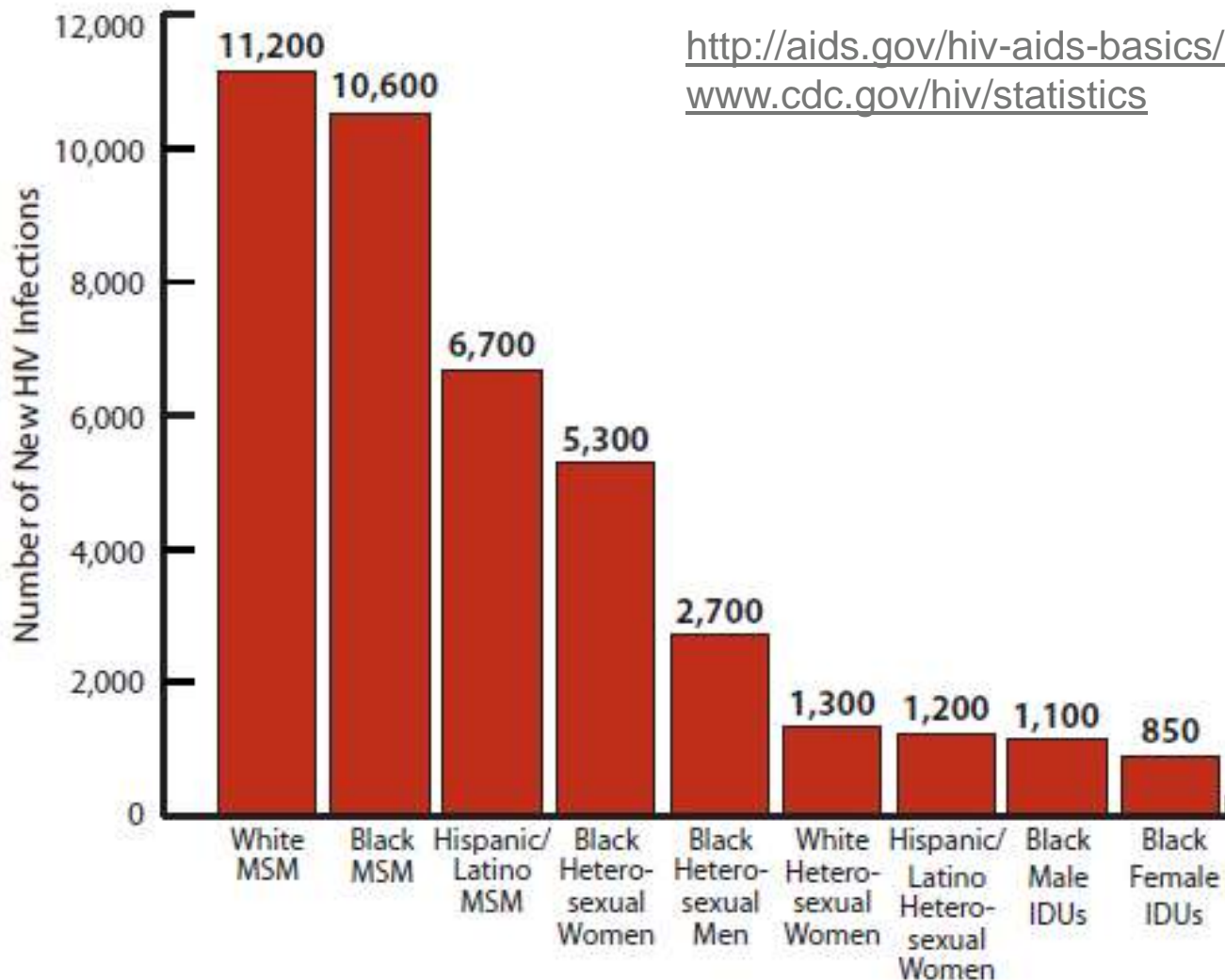
# Estimated Number of AIDS Cases, Deaths, and Persons Living with AIDS, 1985-2010: US and Dependent Areas



Source: CDC, 2011

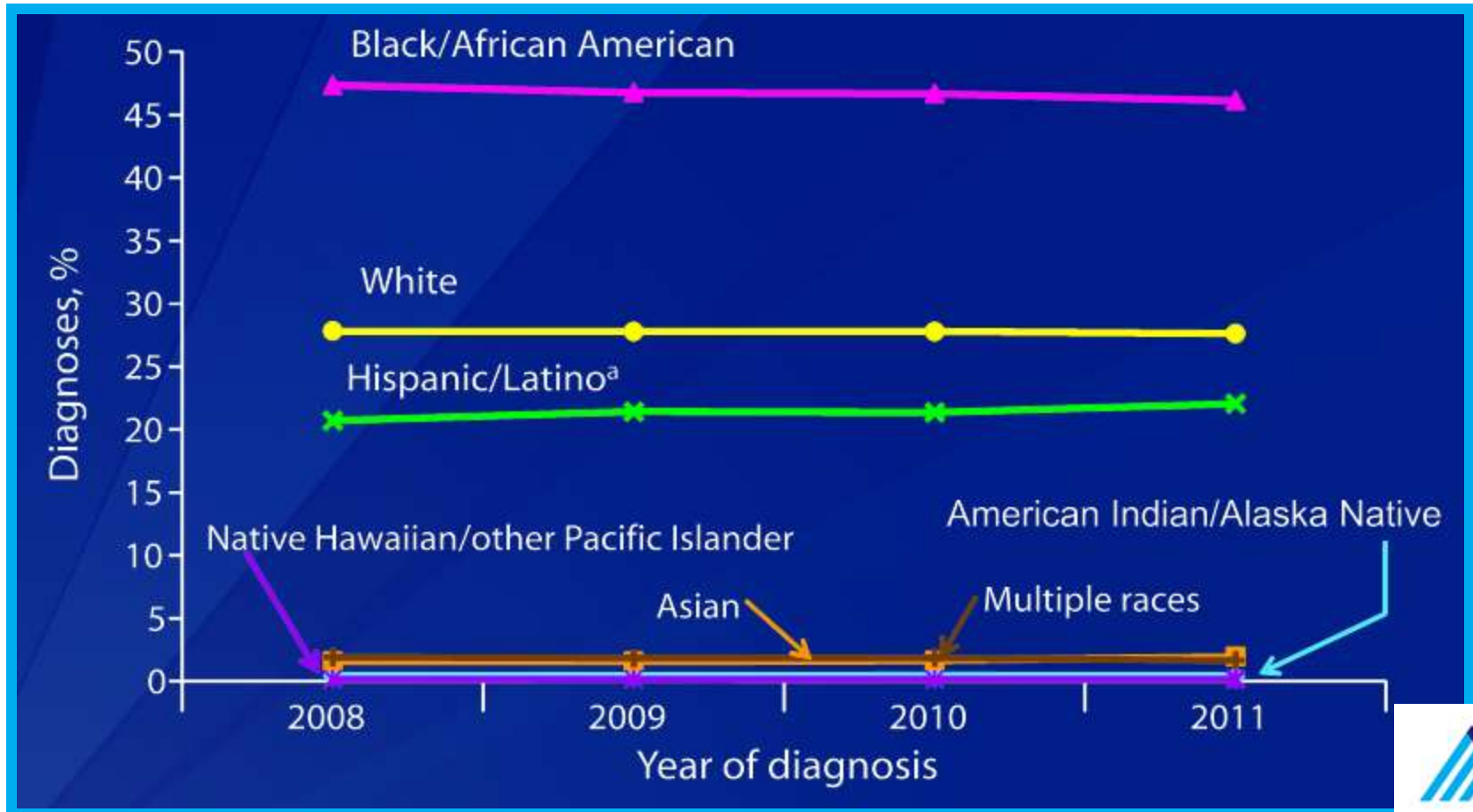
# Estimated New HIV Infections in the United States, 2010

<http://aids.gov/hiv-aids-basics/hiv-aids-101/statistics>  
[www.cdc.gov/hiv/statistics](http://www.cdc.gov/hiv/statistics)



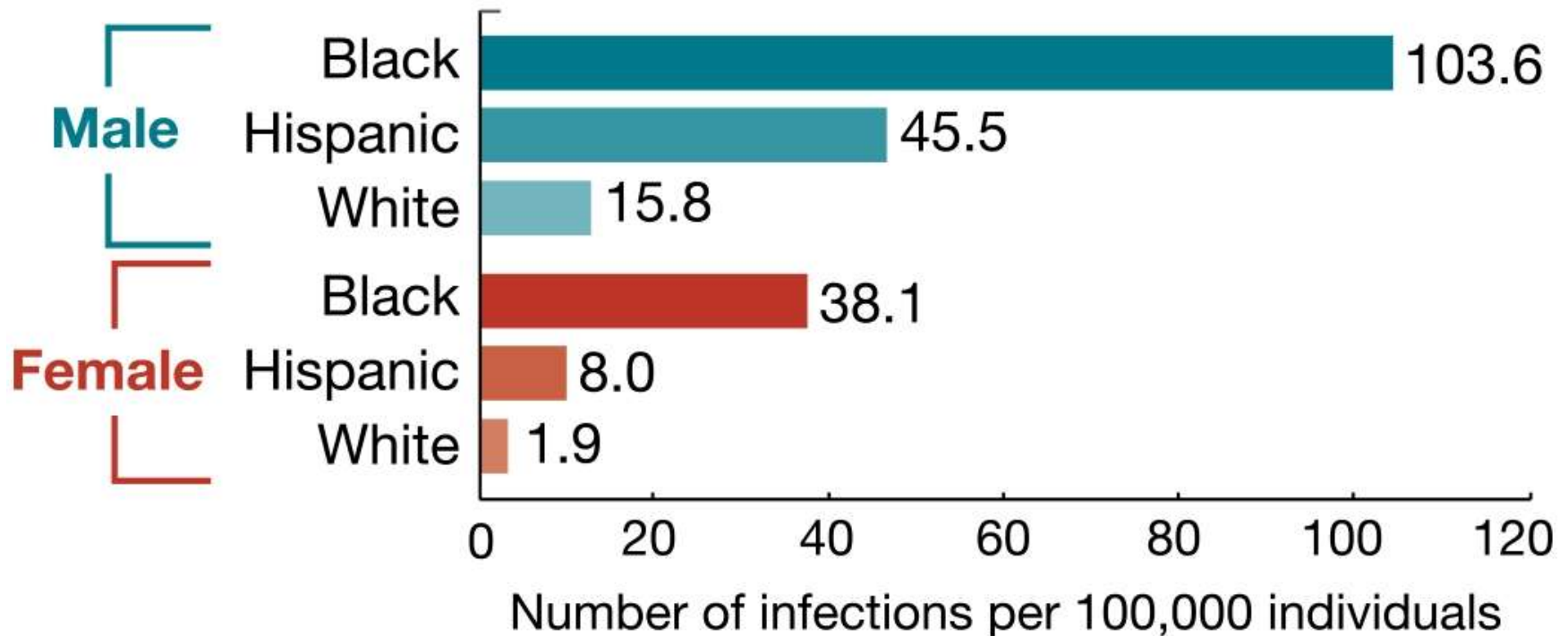


# New Diagnoses of HIV Infection among US Adults and Adolescents by Race/Ethnicity, 2008-2011

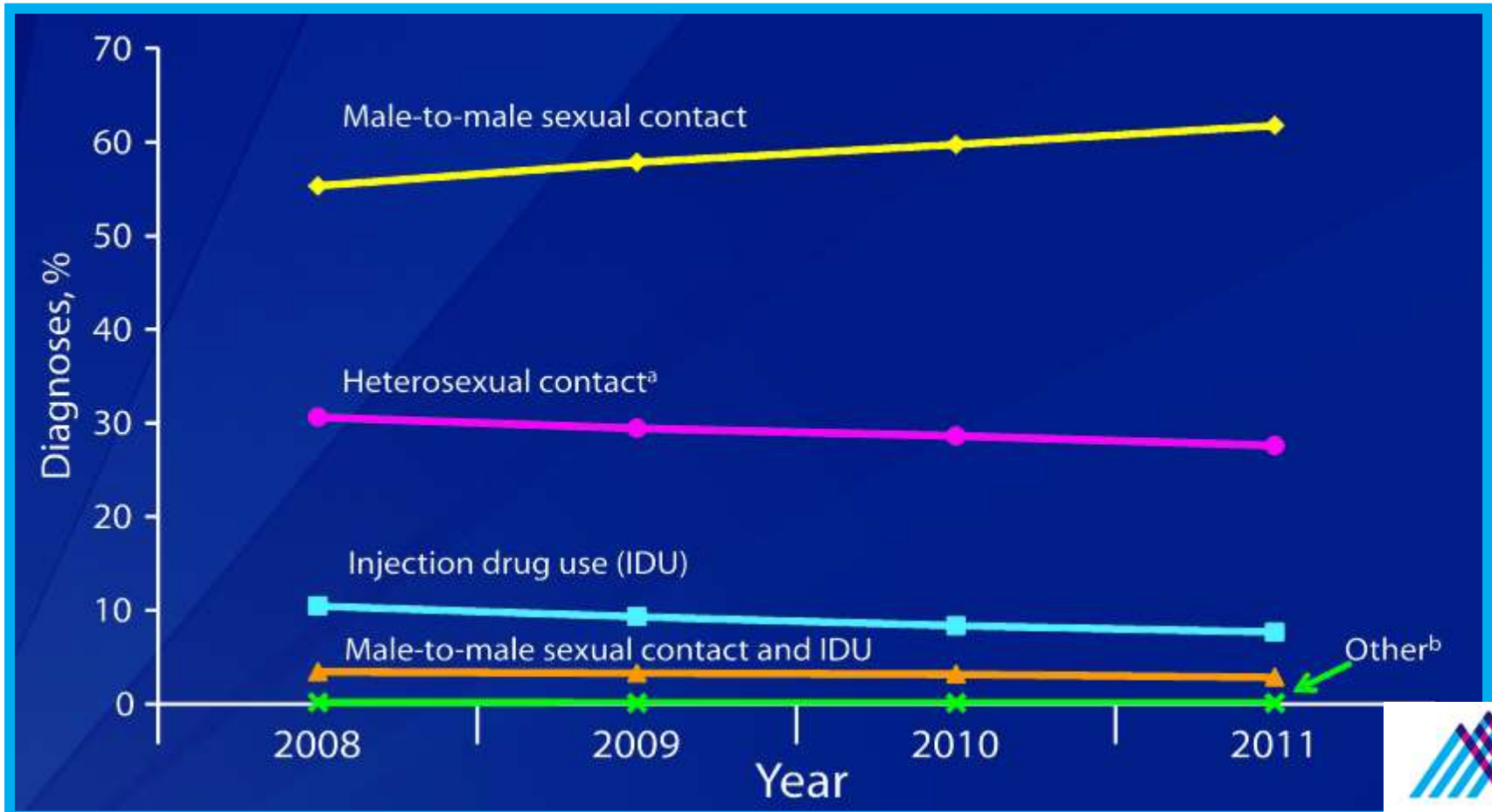


Source: CDC, 2011

# Estimated Rate of New HIV Infections, 2010

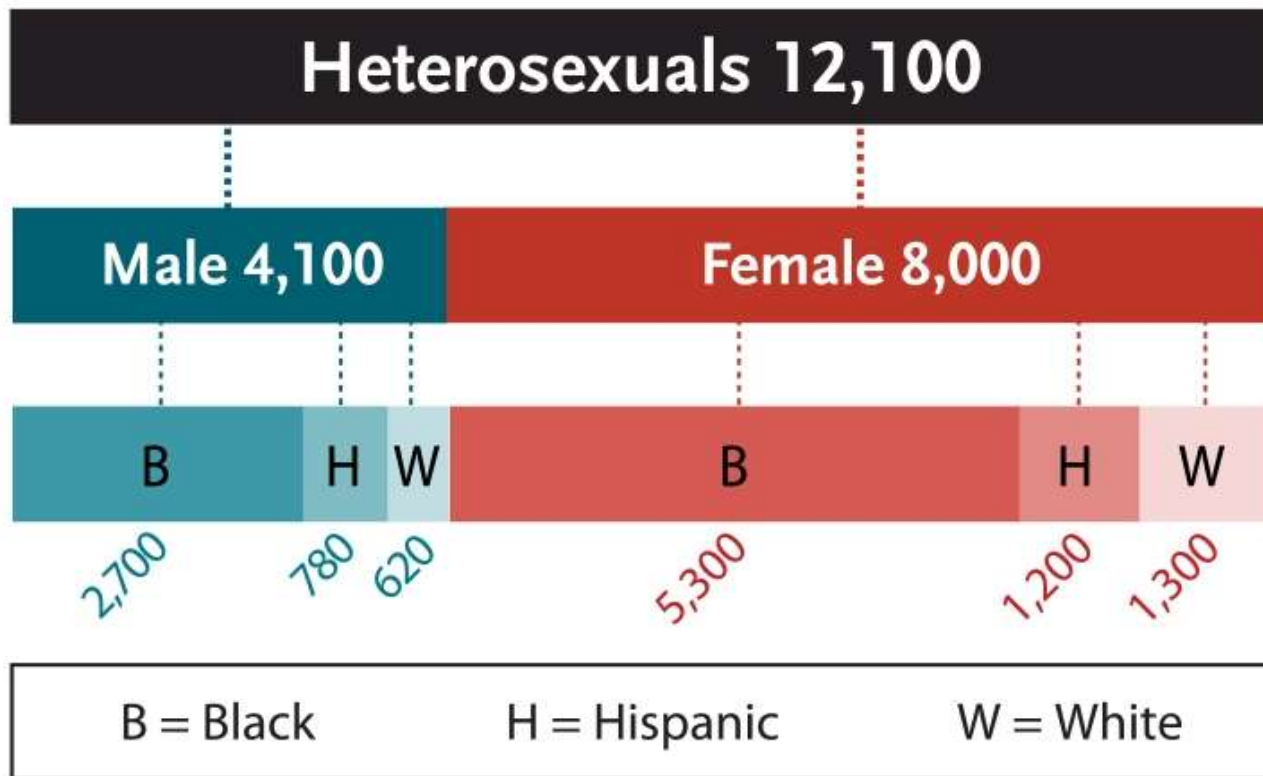


# New Diagnoses of HIV among Adults and Adolescents, by Transmission Category, 2008-2011: US and Dependent Areas

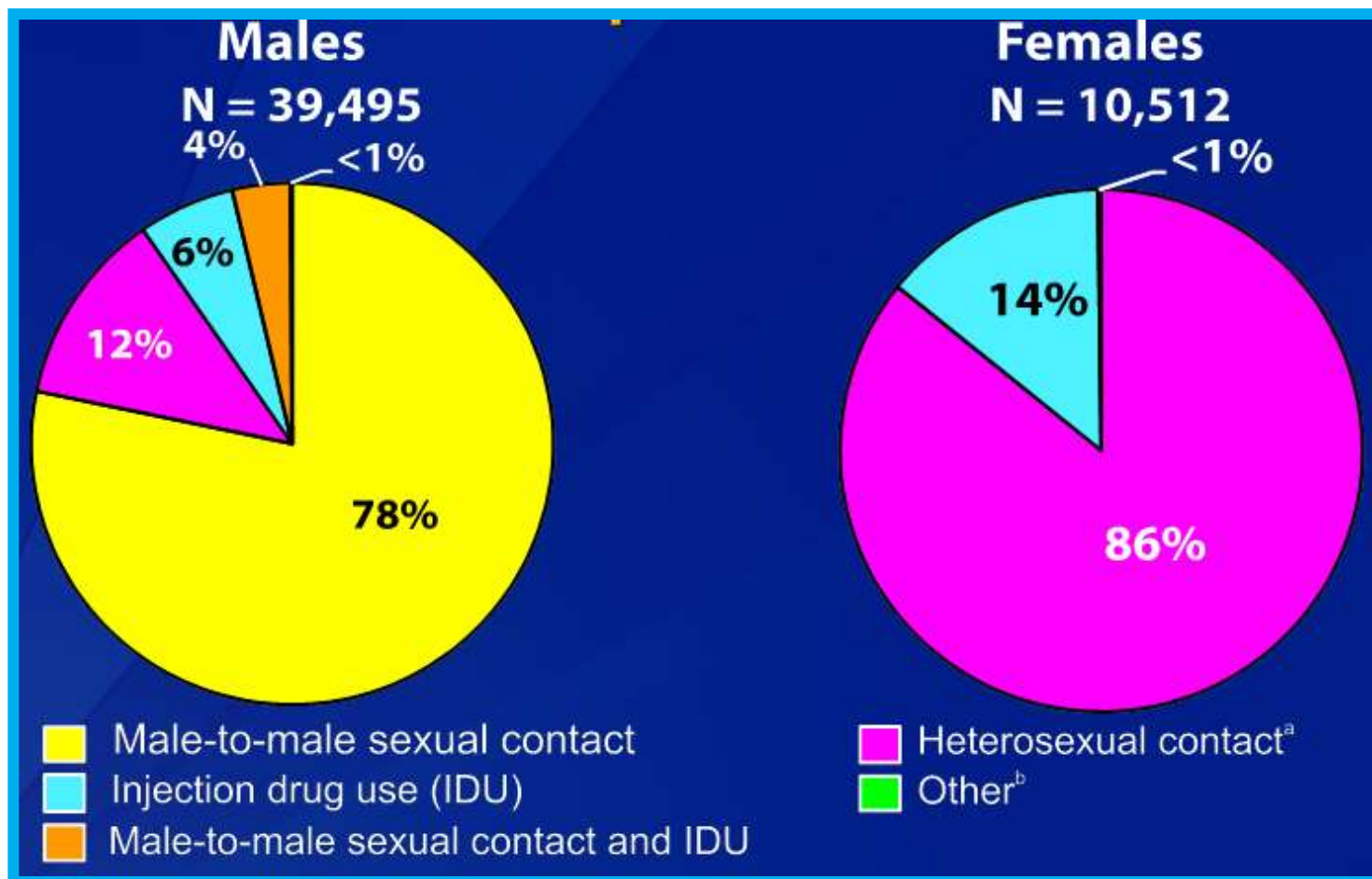


Source: CDC, 2011

# Estimated New HIV Infections Among Heterosexuals, 2010, by Gender and Race/Ethnicity



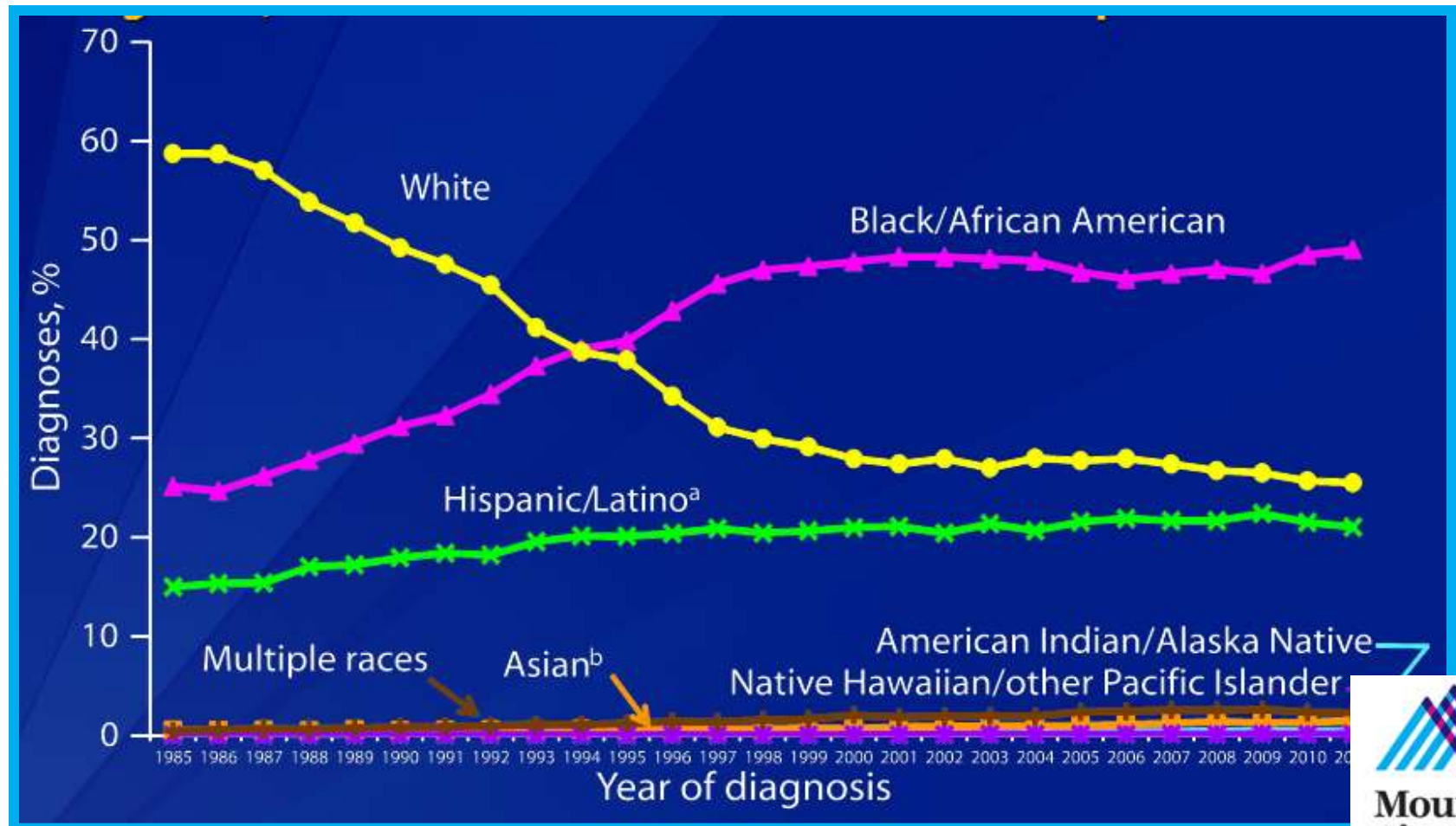
# Proportion of New HIV/AIDS Cases among US Adults and Adolescents, by Sex and Transmission Category 2011



Source: CDC, 2011

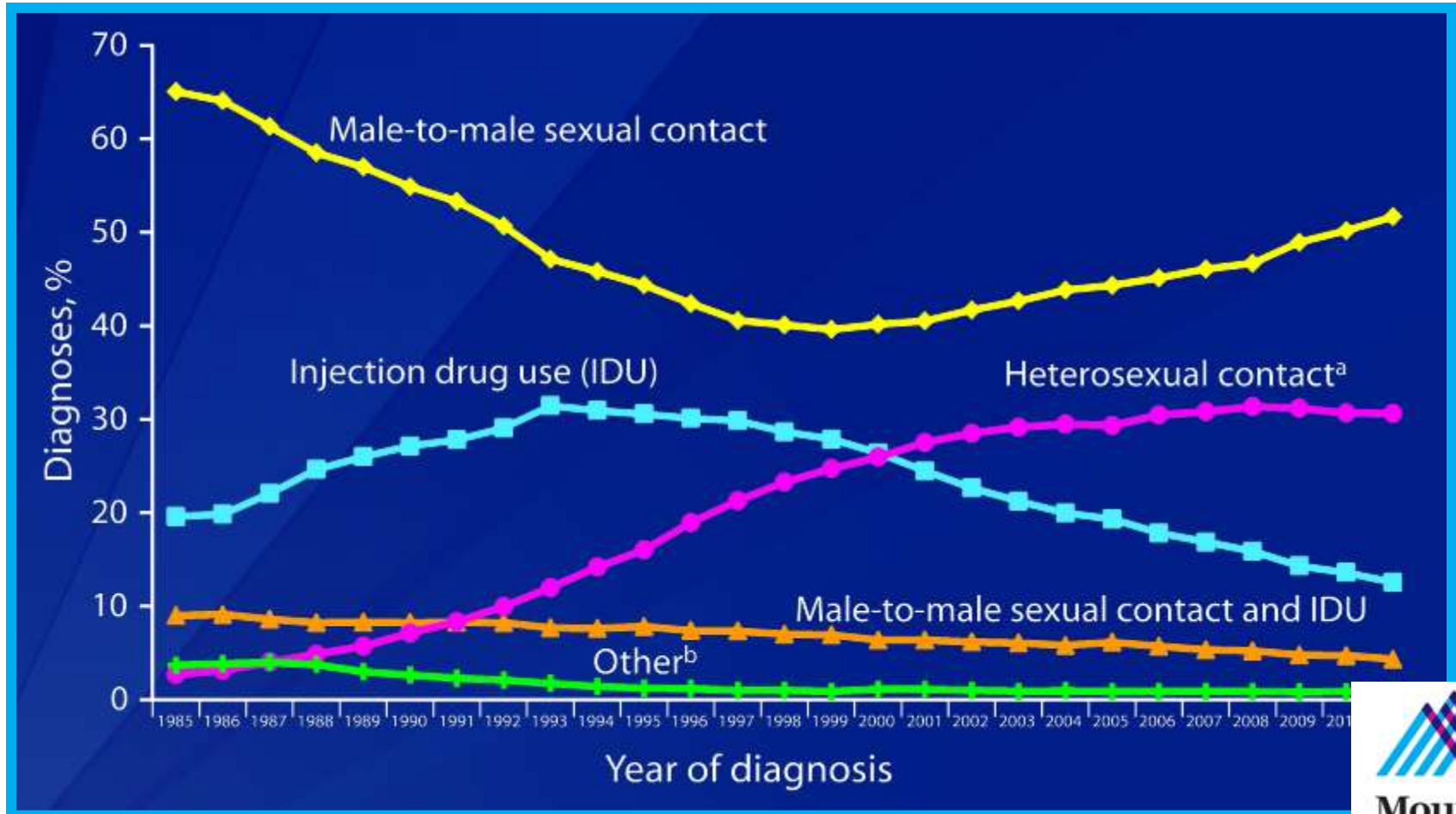


# Percentage of AIDS Classifications among U.S. Adults and Adolescents with HIV Infection, by Race/Ethnicity and Year of Diagnosis, 1985-2011



Source: CDC, 2011

# Percentage of AIDS Classifications among U.S. Adults and Adolescents with HIV Infection, by Transmission Category and Year of Diagnosis, 1985-2011



# Why HIV Psychiatry?

*Psychiatric issues play a central role in HIV epidemic*

- HIV as multisystem disease
  - CNS infection → neuropsychiatric symptoms
- Psychiatric disorders as vectors of HIV transmission
- Psychiatric issues a/w worse outcomes
- HIV as chronic illness
- Neuropsychiatric side effects of treatment

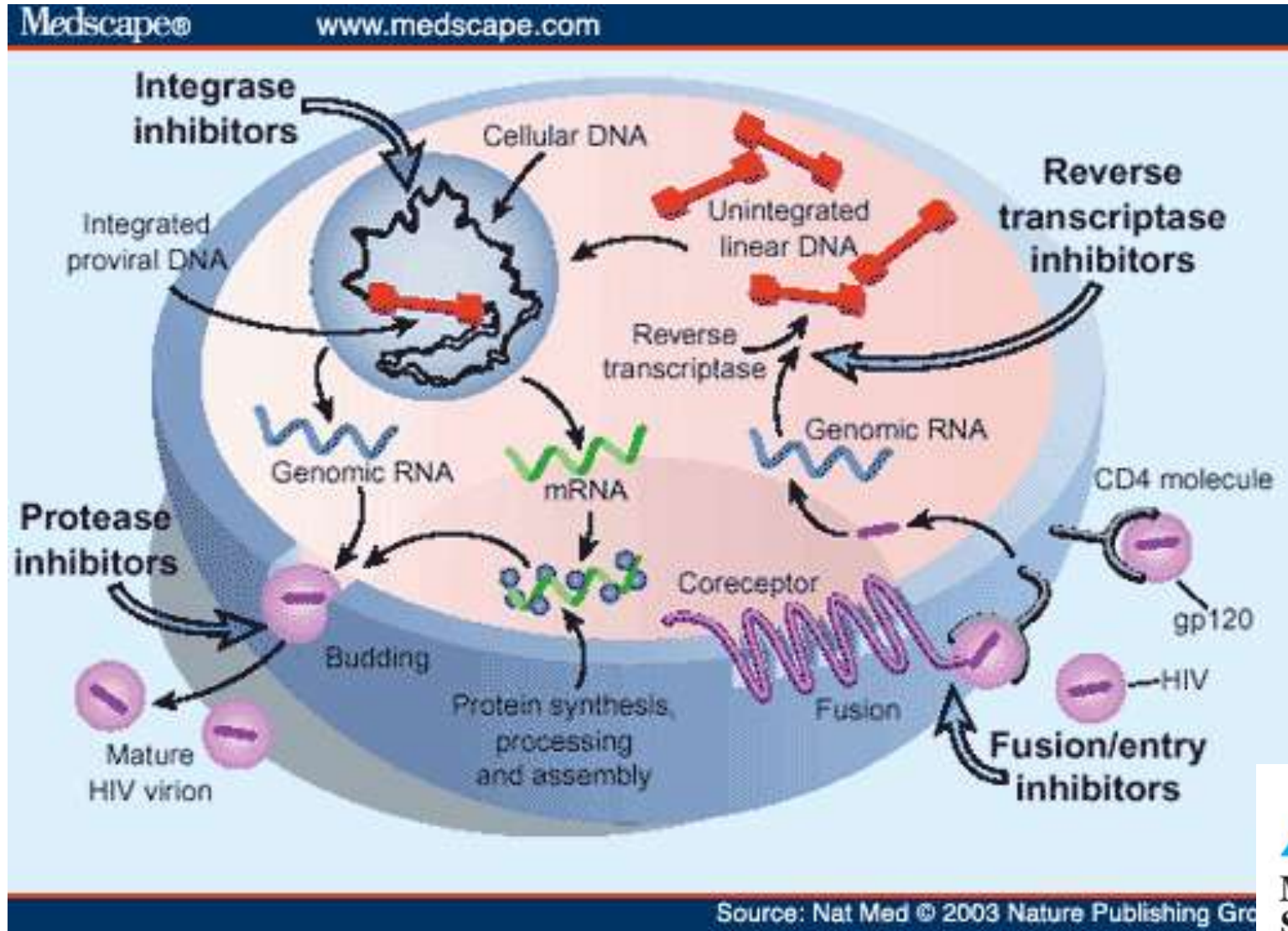


# HIV Life Cycle & Drug Targets



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# HIV Life Cycle & Drug Targets



# Antiretroviral Therapy: 1987

Zidovudine (AZT)

# Antiretroviral Therapy: 2014

## ***Nucleoside Reverse Transcriptase Inhibitors***

Abacavir (Ziagen)  
Didanosine (Videx EC)  
Emtricitabine (Emtriva)  
Lamivudine (Epivir)  
Stavudine (Zerit)  
Tenofovir (Viread)  
Tenofovir/Emtricitabine (Truvada)  
Zidovudine (Retrovir, AZT)  
Lamivudine/Zidovudine (Combivir)  
Abacavir/Lamivudine (Epzicom)

## ***Entry Inhibitors***

Maraviroc (Selzentry)

## ***Non- Nucleoside Reverse Transcriptase Inhibitors***

Delavirdine (Rescriptor)  
Efavirenz (Sustiva)  
Etravirine (Intelence)  
Nevirapine (Viramune)  
Ralpivirine (Edurant)

## ***Combination Products***

Atripla (efavirenz, emtricitabine, tenofovir)  
Complera (emtricitabine, rilpivirine, tenofovir)  
Stribild (elvitegravir, cobicistat, emtricitabine, tenofovir)

## ***Fusion Inhibitors***

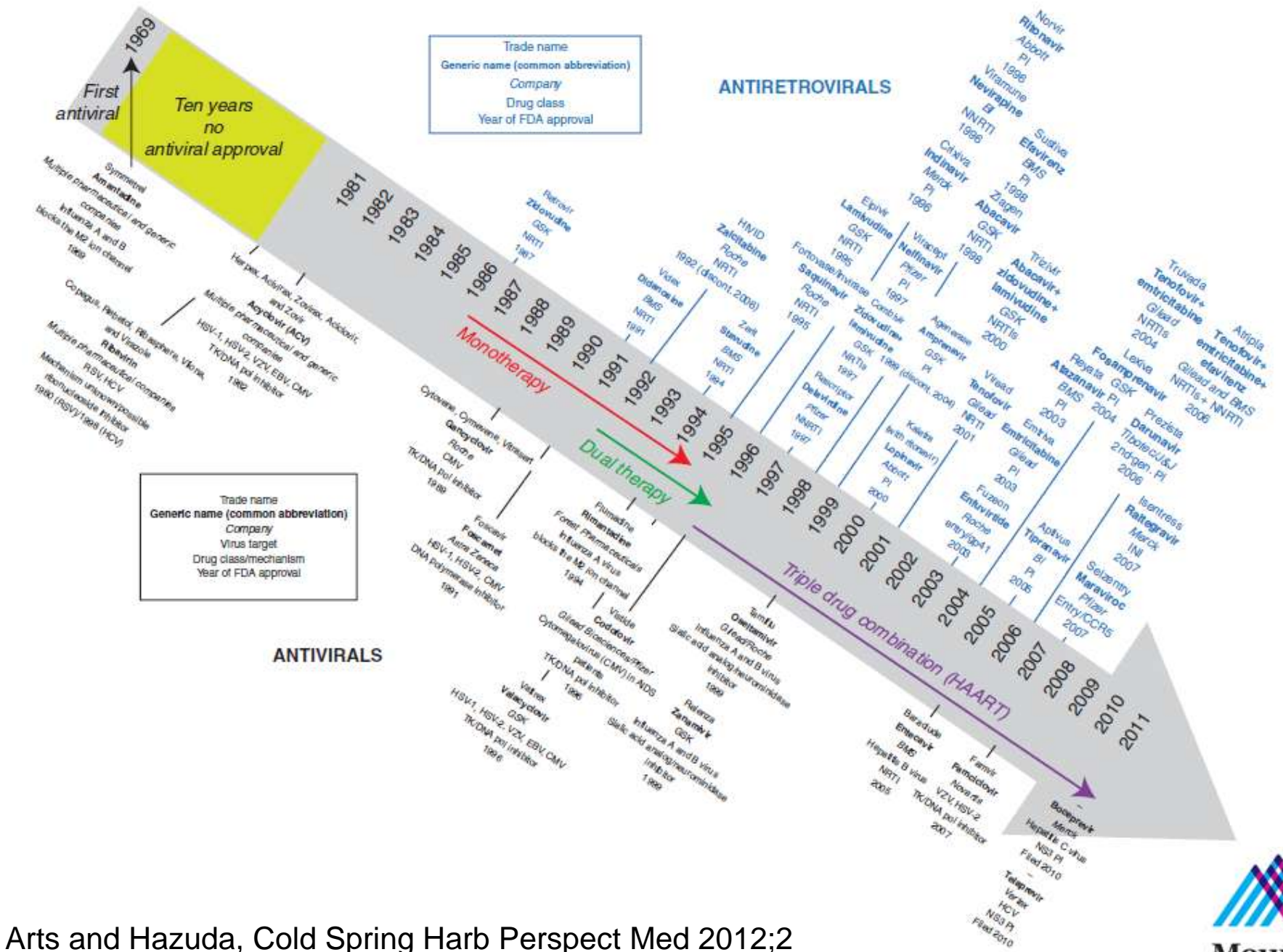
Enfuvirtide (Fuzeon)

## ***Protease Inhibitors***

Atazanavir (Reyataz)  
Darunavir (Prezista)  
Fosamprenavir (Lexiva)  
Amprenavir (Agenerase)  
Indinavir (Crixivan)  
Lopinavir/Ritonavir (Kaletra)  
Nelfinavir (Viracept)  
Ritonavir (Norvir)  
Saquinavir (Invirase)  
Tipranavir (Aptivus)

## ***Integrase Inhibitors***

Raltegravir (Isentress)  
Dolutegravir (Tivicay)  
Elvitegravir (part of Stribild)





# HIV Infection of the Central Nervous System

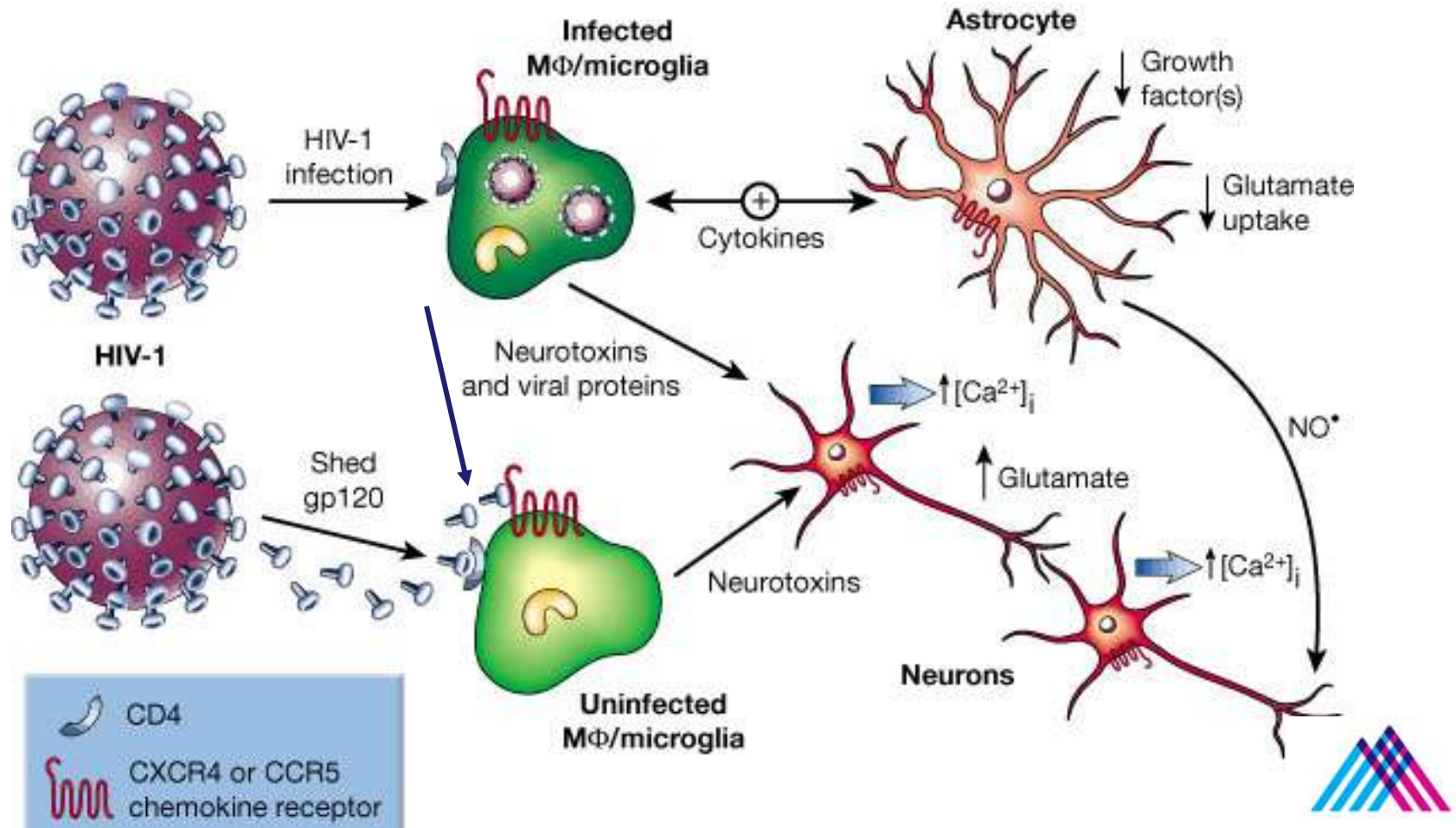


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# HIV Infection of the CNS

- HIV invades CNS within hours to days via infected monocytes (differentiate into macrophages)
- Cell free virus also enters CNS by infecting endothelial cells of blood brain barrier
- Infected macrophages infect other cells in CNS by direct contact
- Neurons are not directly infected
- Get further CNS viral replication in microglia and macrophages
- Direct & indirect neuronal damage occurs
  - Virally infected cells secrete neurotoxic inflammatory substances
  - Viral particles/proteins are directly neurotoxic
- HIV prefers subcortical structures- 1<sup>st</sup> basal ganglia
- CNS is independent reservoir of HIV replication

# Model of HIV-related Neuronal Damage





# Neuropsychiatric Syndromes: HIV-Associated Neurocognitive Disorder (HAND)

- **HIV-associated dementia (HAD)**
  - Acquired impairment in  $\geq 2$  cognitive domains
  - $>2$  SD from age-adjusted population norms
  - Caused by HIV
  - Marked impairment in ADLs
- **Mild neurocognitive disorder (MND)**
  - Similar to HAD except  $\geq 1$  SD from population norms with *some* impairment in ADLs
- **Asymptomatic neurocognitive impairment (ANI)**
  - Same neurocognitive impairment as MND but no impairment in ADLs

# Neuropsychiatric Syndromes: HIV Associated Dementia (HAD)

## Motor

- Unsteady gait/loss of balance
- Leg weakness
- Dropping things
- Tremors/poor handwriting
- Poor fine motor skills

## Affective

- Apathy
- Mania, new psychosis
- Irritability
- Risk factor for suicide

## Cognitive

- Poor visuospatial memory
- Poor visuomotor coordination
- Poor complex sequencing
- Impaired attention/concentration
- Impaired verbal memory
- Mental slowing

## Behavioral

- Psychomotor slowing
- Personality change
- Social withdrawal

# Epidemiology of HAND

- Pre-HAART: up to 40% prevalence of dementia
- Post-HAART: HAD uncommon but milder neurocognitive impairment common; 20-85% prevalence
- CHARTER Study<sup>1</sup>
  - HAD: 2%
  - MND: 25%
  - Any HAND diagnosis: 50%



# Risk Factors for HAND

- Low current CD4 count
- Nadir CD4 count
- High plasma or CSF viral load
- Anemia (?)
- Co-infection with Hepatitis C
- Extremes of age
- IVDU
- Metabolic & Cardiovascular factors

# Screening for HAND

- Assess neurocognitive function early in *all* HIV patients
- Screen every 6-12 months if higher-risk patients, every 12-24 months in lower-risk patients
- Screen immediately if evidence of clinical deterioration or major change in clinical status
- Many proposed brief screens
- Neuropsychological testing if available or for selected patients
- Use screens with clinical information & risk profiles
- Assess adherence
- Psychosocial history + functional assessment

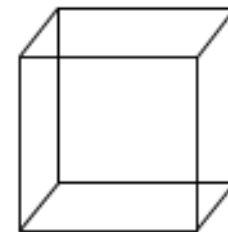
# HIV Dementia Scale

Brief but sensitive screening instrument  
(sensitivity 80%, specificity 91%, PPD 78%)

## Max Score

- (6) Psychomotor speed (timed written alphabet)
- (4) Memory (recall of 4 words at 5 minutes)
- (4) Attention (antisaccadic eye movements)
- (2) Construction (timed cube copy)

Score  $\leq 10$  indicates possible HAD

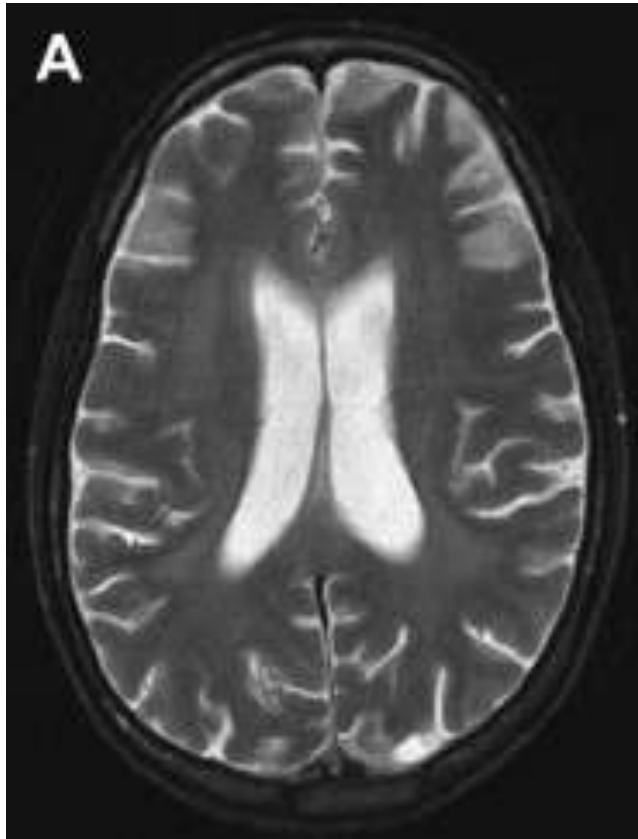


# Work-up for the HIV patient with Neurocognitive Impairment

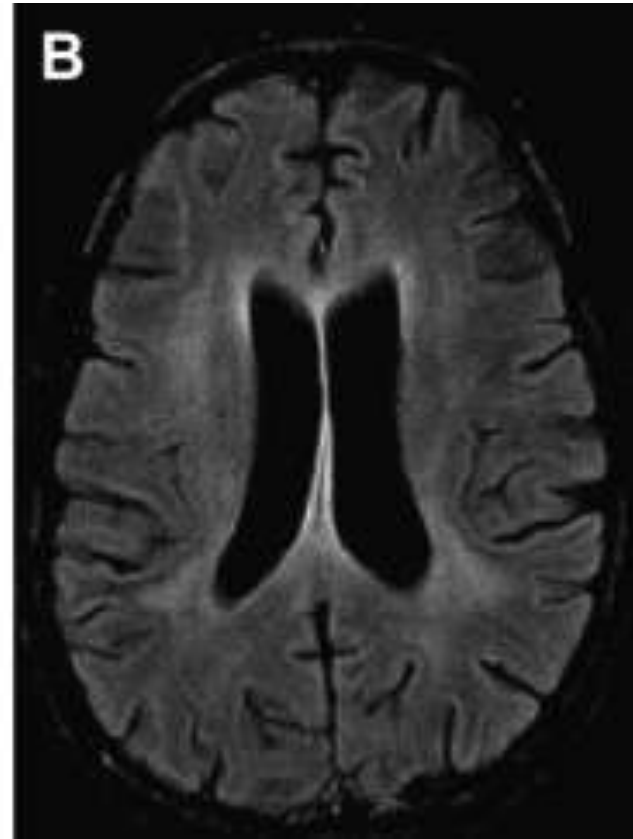
- Thorough medical and neurological history
- Developmental history
- Substance use- past and present
- Psychiatric assessment (depression, anxiety, PTSD)
- Neurological examination
- Laboratory studies: CD4 cell count, HIV RNA, RPR, HCV Antibody, TSH, testosterone profile, metabolic panel, hepatic function tests, B12, folate
- CSF Analysis
- Brain MRI

Modified from The Mind Exchange Working Group; CID 2013:56

# HIV Dementia: Neuroimaging



MRI-T2




MRI-FLAIR



# Management of HAND

- Combination ARV therapy
- Assess and improve adherence to ARVs
- Must decide if brain penetration is a crucial component in the design of future HIV therapy
- Treat co-morbidities (Hepatitis C, cardiovascular risk factors)
- Monitor frequently, especially if higher risk

# Management of HIV Dementia: Antiretrovirals and CNS penetration

	Increasing CNS Penetration 		
	0	0.5	1
<b>nRTIs</b>	Didanosine Tenofovir Adefovir Zalcitabine	Emtricitabine Lamivudine Stavudine	Abacavir Zidovudine
<b>NNRTIs</b>		Efavirenz	Delavirdine Nevirapine
<b>PIs</b>	Nelfinavir Ritonavir Saquinavir Saquinavir/r Tipranavir/r	Atazanavir Fosamprenavir Indinavir Atazanavir/r	Amprenavir/r Fosamprenavir/r Indinavir/r Lopinavir/r Darunavir
<b>Other</b>	Enfuvirtide	Raltegravir Elvitegravir	Maraviroc

Adapted from Smurzynski et al AIDS. 2011 January 28; 25(3): 357–365.

# Management of HAND: Adjunctive Pharmacological Treatment

- Minocycline
- Memantine
- Cholinesterase inhibitors
- Lithium
- Valproic Acid
- SSRIs
- Psychostimulants
- Modafinil

# Management of HIV Dementia: Non-pharmacological

- Simplify complex tasks (ex- drug regimens)
- Use pill boxes, diaries, timers
- Repeat information
- Write out instructions
- Educate caregivers and patients
- Maintain orientation cues
- Keep environment familiar
- Structured routines and activities
- Cognitive stimulation

# Additional CNS Complications Accompanying HIV Infection

- Infectious: CMV, syphilis, HSV, TB, toxoplasmosis, progressive multifocal leukoencephalopathy (PML), fungal
- Oncological: Lymphoma, metastatic disease
- Endocrine/Nutritional: thyroid, addison's, B12 deficiency, anemia
- Drug intoxication or withdrawal
- Antiretroviral medications and drug-drug interactions
- Psychiatric

# HIV-Associated Psychiatric Comorbidities



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# HIV and Psychiatric Illness: HIV Cost and Services Utilization Study

- Nationally representative probability sample of HIV-infected adults receiving medical care in US
- Screened for symptoms of MDD, dysthymia, GAD, panic attacks, and illicit drug use and dependence within the past year
- N = 2864
- 77.4% male, 49.2% white, 40.4% heterosexual

Bing et al, Arch Gen Psychiatry 2001; 58:721-728



# HIV Cost and Services Utilization Study: Results

Condition	% Screening Positive (95% CI)		NCS-R <sup>2</sup> (N= 9282)
	HCSUS <sup>1</sup> (N = 2864)	NHSDA (N = 22 181)	
Major depression	36.0 (33.6-38.3)	7.6	6.7
Dysthymia	26.5 (23.5-29.5)	...	1.5
Generalized anxiety disorder	15.8 (14.0-17.7)	2.1	3.1
Panic attack	10.5 (8.0-13.0)	2.5	2.7

\* CI indicates confidence interval; HCSUS, HIV [human immunodeficiency virus] Cost and Services Utilization Study; NHSDA, National Household Survey on Drug Abuse; and ellipses, these conditions were not assessed.

1. Bing et al, Arch Gen Psychiatry 2001; 58:721-728
2. Kessler et al, Arch Gen Psychiatry 2005; 62:617-627





# HIV Cost and Services Utilization Study: Results

Risk factors associated with screening positive for a psychiatric disorder:

- Age < 35 years
- Caucasian
- Living alone or with non-partner
- Unemployed or disabled
- Greater # of HIV-related symptoms
- Illicit drug use or dependence (excluding marijuana)
- Heavy alcohol use

Bing et al, Arch Gen Psychiatry 2001; 58:721-728

# AIDS Healthcare Foundation Retrospective Cohort Study

- N = 7834 HIV-positive patients receiving treatment in ambulatory care clinics in California
- Any psychiatric condition: 53%
- Any mood-related disorder: 23%
- Any anxiety-related disorder: 16%
- Any substance-related disorder: 19%

# Depression and HIV

- Most common psychiatric manifestation associated with HIV Infection
- Prevalence: 18-81%
- HCSUS: 36% MDD, 26.5% dysthymia<sup>1</sup>
- HCSUS re-estimation of data: 22% MDD, 5% dysthymia<sup>2</sup>
- Meta-analysis: 2x increased risk MDD in HIV pts<sup>3</sup>
- HIV+ women > men
- ↑ risk if advanced disease, hx MDD, psychosocial stressors
- Atypical features
- Associated with poor ARV adherence and worse outcomes

1. Bing et al, Arch Gen Psychiatry 2001; 58: 721-7281
2. Orlando et al, Int J Methods Psychiatr Res 2002; 11: 75-82
3. Ciesla and Roberts, Am J Psychiatry 2001; 158: 725-730

# Depression and HIV

## Depression

Risk Behaviors  
Substance Abuse  
Cognitive Impairment  
Poor Adherence

↑ Mortality

↑ Cortisol

Faster disease progression

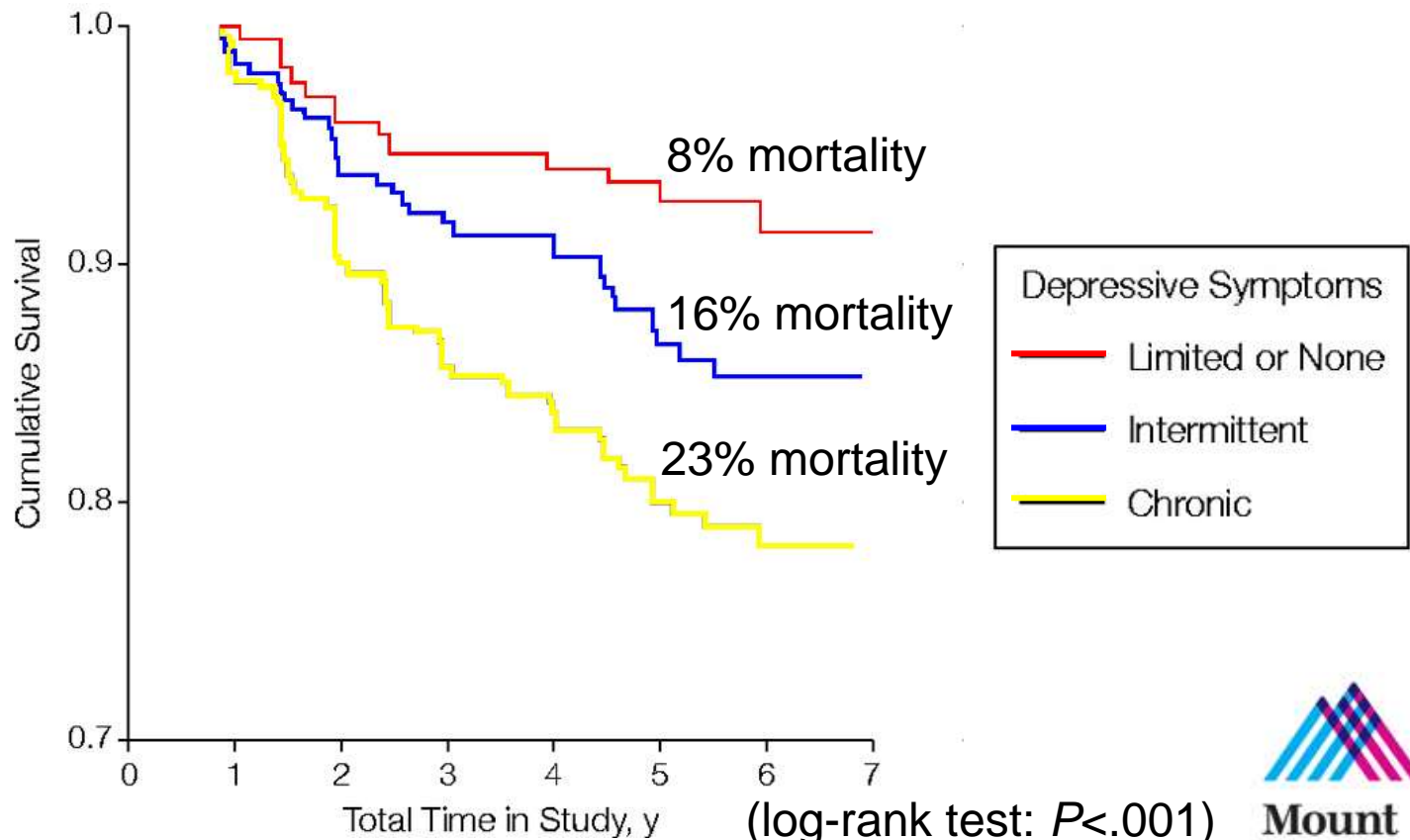
↓ # and activity of NK & CD4 cells

Demoralization, Stigma, Isolation  
Debility, disability  
Substance Abuse  
Cognitive Impairment  
Direct cortical & subcortical injury  
Pro-inflammatory cytokines

## HIV/AIDS

# HIV-Related Mortality in Depressed Women

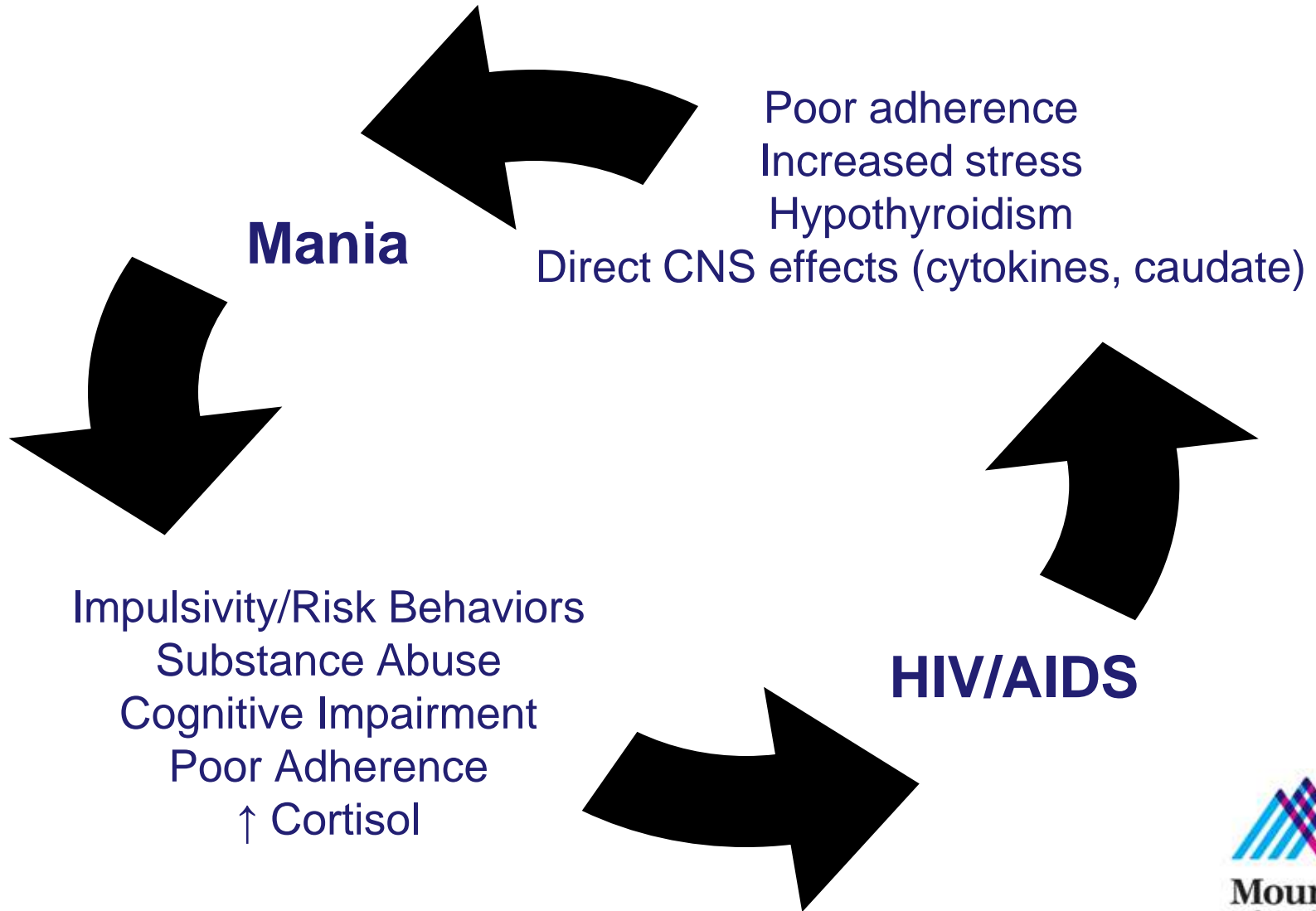
HIV Epidemiology Research Study (n= 765)



# Mania and HIV

- *Prevalence:* 1-2% in HIV, 4-8% in AIDS
- Associated with CD4+ < 100, HAD, MCMD
- Unique Features of HIV-associated mania:
  - Irritability > Euphoria
  - Chronic > Episodic
  - Later age of onset
  - Increased talkativeness
  - No history mood disorder
  - Higher rates of HAD
  - No family history

# Mania and HIV

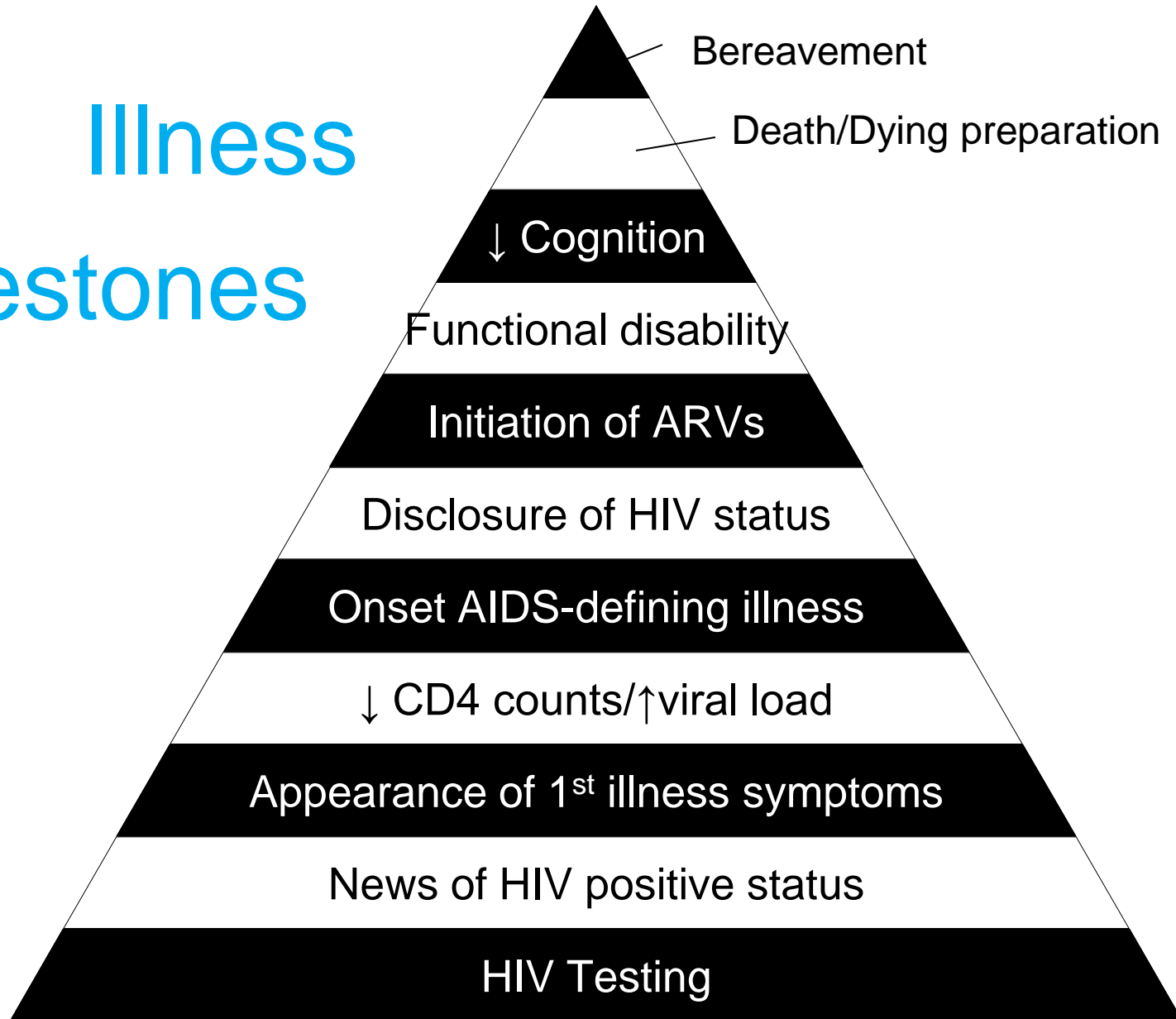




# Anxiety Disorders & HIV

- Prevalence: 10-72%
  - HCSUS: 15.8% GAD, 10.5% panic disorder
- Increase with illness progression
- Pre-existing anxiety disorders exacerbated
- Associated with: ↓ Adherence, ↑ Risk behaviors and ↑ Substance abuse
- May affect immune function
  - PTSD a/w ↓CD4+, CD4+/CD8+, & NK cells
  - ↑ Cortisol → ↓immune function
  - PTSD a/w disturbed regulation of HPA axis & sympathoadrenomedullary system

# Illness Milestones



# Psychotic Disorders and HIV

- Can be primary or secondary
- HIV prevalence among people with serious mental illness is greater than that of the general population
  - 2001 data: 3.1% prevalence (8x greater than general population)<sup>1</sup>
- Schizophrenia is a risk factor for HIV
- Poor adherence
- Many barriers to medical care
- Longer medical hospitalizations
- ↑ suicidality
- May decompensate upon diagnosis
- More sensitive to extrapyramidal side effects of antipsychotics

1. Rosenberg et al. Am J Public Health 2001; 91:31-37

# Substance Abuse and HIV

- Substance abuse ↑ risk for HIV transmission
- HIV Cost & Service Utilization Study: 50% of HIV+ individuals reported drug use in past 12 mo

**Table 2. Percentage of People Screening Positive for Conditions\***

Condition	% Screening Positive (95% CI)	
	HCSUS (N = 2864)	NHSDA (N = 22 181)
No drug use	49.9 (46.0-53.71)	89.7
Marijuana use only/ no dependence	12.1 (10.2-14.8)	...
Other drug use/ no dependence	25.6 (22.1-29.1)	...
Drug dependence	12.5 (10.2-14.8)	...

\* CI indicates confidence interval; HCSUS, HIV [human immunodeficiency virus] Cost and Services Utilization Study; NHSDA, National Household Survey on Drug Abuse; and ellipses, these conditions were not assessed.

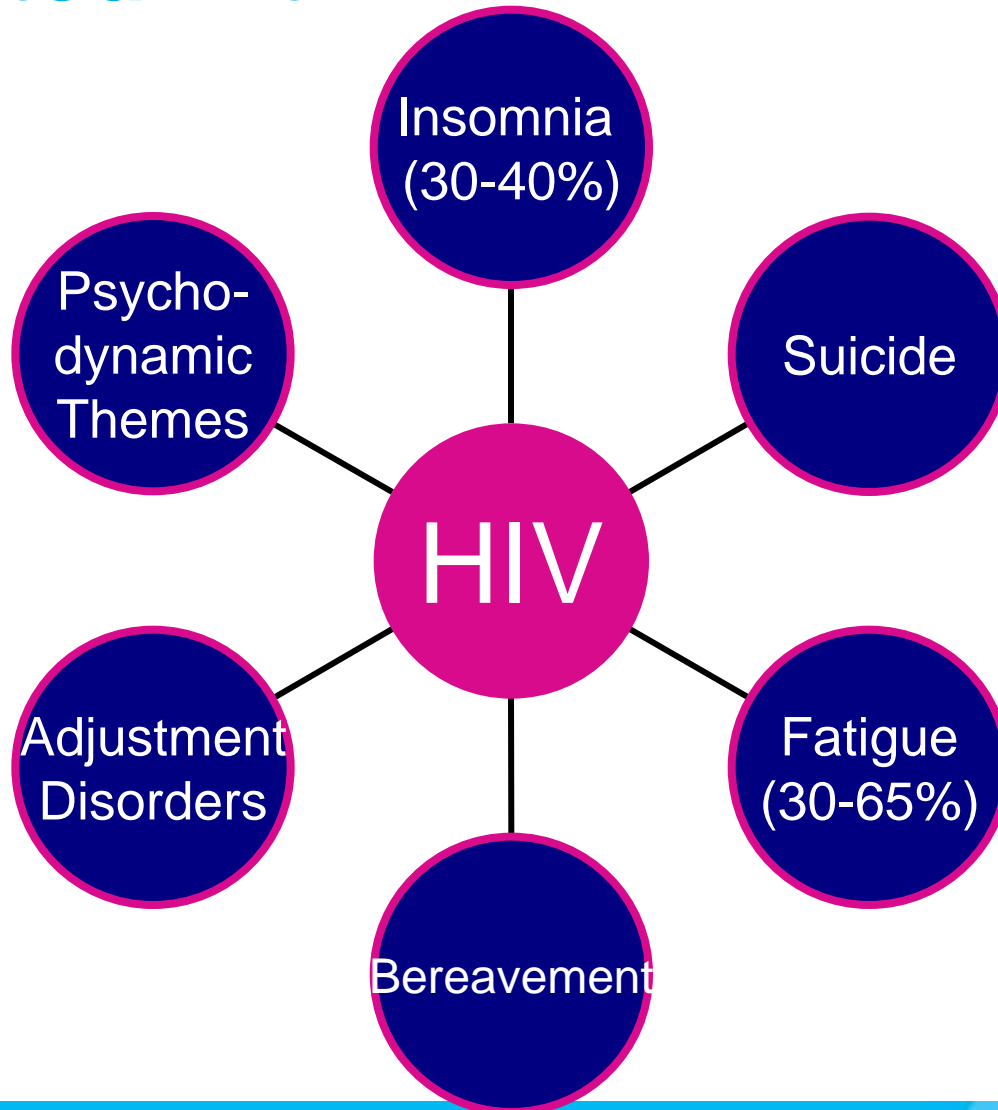
# Substance Abuse and HIV

- Poor adherence
- Less likely to access HAART
- Diagnosed at more advanced stage
- More opportunistic Infections
- High risk sexual and injection behaviors
- Interactions with HAART
- ↑ risk cognitive impairment/dementia

# Substance Abuse & HIV: Effects on Immune Function

- **Cocaine:** augments HIV replication, ↑ permeability of BBB to HIV
- **Alcohol:** immunosuppressive; enhances HIV infection of lymphocytes
- **Opioids:** ↑ ability of HIV to infect target cells; Morphine inhibits CD8+ T-cell-mediated anti-HIV activity in latently infected immune cells
- **Methamphetamine:** may ↑ viral replication and mutation rates

# Additional Psychiatric Issues Associated with HIV



# Psychodynamic Themes

- Suffering as sign of weakness in face of adversity
- Guilt over getting HIV
- Guilt over infecting others
- Anger at source of disease, oneself, God
- Precipitous revelation of hidden sexual or drug abuse behavior → shame and self loathing
- Stigma leading to rejection or abandonment by others, feel like lepers
- Some become hopeless and nihilistic and refuse tx



# How Would You Differentiate Between Primary and Secondary Psychiatric Disorders?

## Primary

- Personal history of similar episodes
- Family psychiatric history
- Episodic
- Neuro-cognitive symptoms rare
- Typical features
- Uniquely psychiatric symptoms (ex- hopelessness, helplessness, worthlessness, apathy)

## Secondary

- No personal or family psych hx
- More chronic
- Neuro-cognitive deficits
- Fluctuating consciousness
- Evidence of organ dysfunction
- Prominent neurovegetative symptoms
- Personality change
- Temporal association
- Atypical Features
- Age of onset >40
- Abnormal vital signs
- Lower CD4 counts & higher VLs

# Differential Diagnosis of Psychiatric Symptoms in HIV Patients

- Direct CNS manifestation of HIV
- CNS infections & malignancies
- Endocrine/Metabolic disturbances
- HAND
- Vitamin Deficiencies
- Drug intoxication or withdrawal
- Cardiovascular or pulmonary disease
- Medications

# Neuropsychiatric Side Effects of ARVs

- **Efavirenz:** 50% develop neuropsychiatric sx  
Dizziness, headache, ↓concentration, confusion, insomnia, nightmares, anxiety, amnesia, depersonalization, euphoria, depression, hallucinations, SI
- **NRTIs:**
  - Didanosine:** anxiety, insomnia, seizures, confusion
  - Lamivudine:** insomnia, mania
  - Stavudine:** h/a, malaise, depression, mania, insomnia, seizures
  - Zidovudine:** h/a, malaise, insomnia, vivid dreams, AH agitation, mania, confusion, depression

# Management of Psychiatric Disorders in HIV patients



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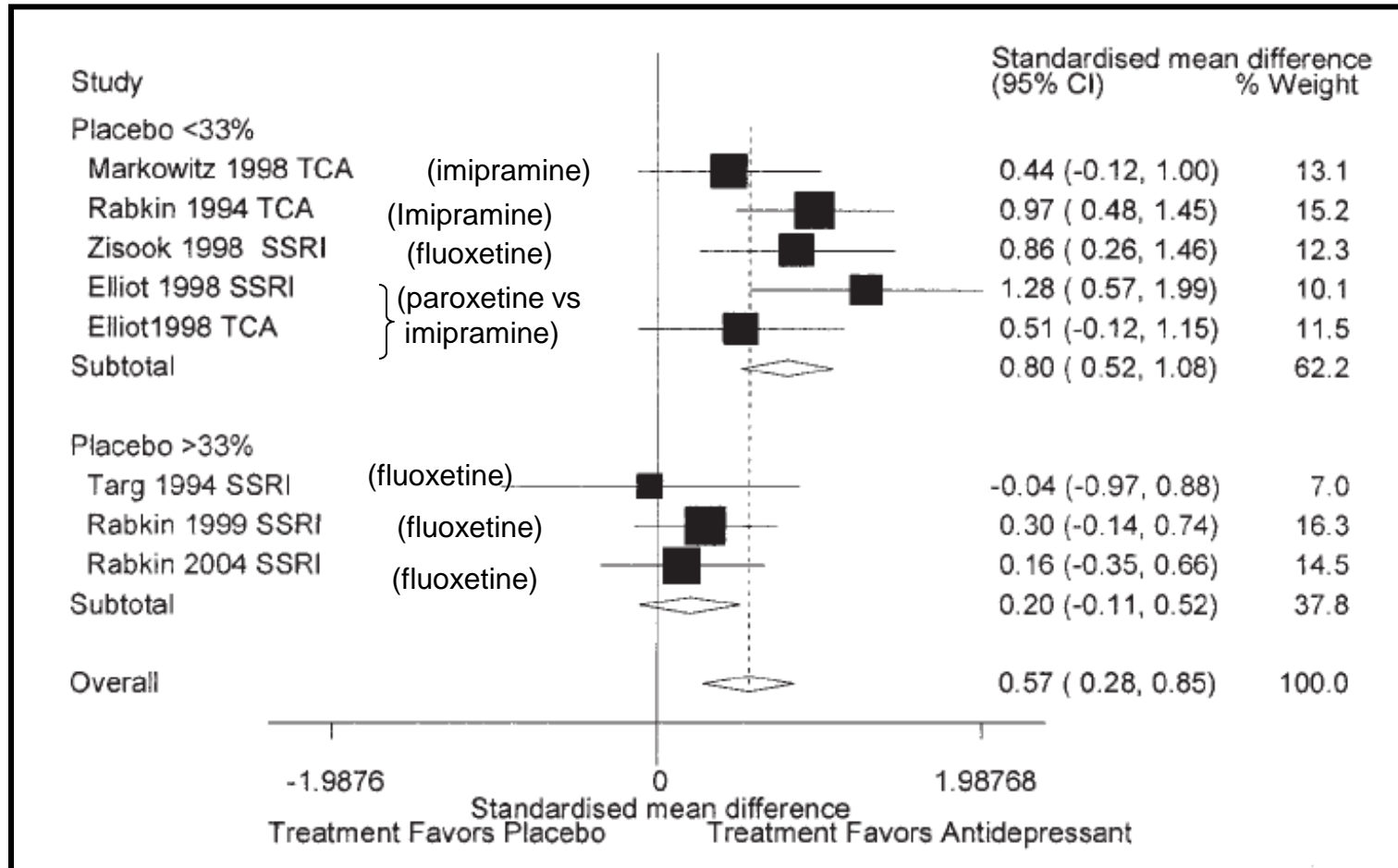
# Effects of Mental Health Interventions for HIV Patients

- Improved ARV adherence
- Increased CD4 cell count
- Decreased risky sexual behaviors
- Decreased suicidality
- Improved quality of life
- Decreased medical complications
- Improved prognosis (?)

# Pharmacological Considerations for HIV Patients

- Psychotropic-ARV interactions
  - PIs
    - Substrates, inducers, inhibitors of multiple CYP450 isoenzymes
    - Ritonavir is CYP3A4 & CYP2D6 inhibitor
  - NNRTIs
    - CYP3A4 substrates & inducers
    - CYP2C9 & 2C19 inhibitors
  - Most psychotropics: CYP 2D6 & 3A4 substrates and/or inhibitors
- Increased or atypical adverse effects
- Neuropsychiatric side effects of ARVs
- Adherence (pill burden, cognitive deficits)

# Treatment of MDD Associated with HIV: Antidepressant Efficacy



# Psychotropic-HAART

## Interactions: Antidepressants

	SSRIs	TCAs	Other Agents
NNRTIs	<p>Fluoxetine and fluvoxamine may ↑ NNRTIs (3A4, 2D6)</p> <p>Nevirapine may ↓ fluoxetine (3A4)</p>		<p>Efavirenz may ↑ bupropion</p> <p>St. John's Wort may ↓ NNRTIs (3A4)</p>
PIs	<p>Most SSRIs may ↑ PIs (2D6, 3A4)</p> <p>PIs may ↑ most SSRIs (2D6)</p> <p><i>Potential for serotonin syndrome</i></p>	<p>PIs ↑ most TCAs (2D6)</p>	<p>PIs may ↑ trazodone, duloxetine, venlafaxine, mirtazapine, modafinil, &amp; stimulants (3A4, 2D6)</p> <p>Ritonavir may ↑ bupropion</p> <p>St. John's Wort ↓ PIs (3A4)</p>



# Novel Antidepressants

- **Psychostimulants:** may help depression + fatigue
- **Testosterone:** potential benefits for depressive symptoms and fatigue in hypogonadal patients with AIDS wasting
- **DHEA:** may help milder forms of depression
- **Modafanil/Armodafinil:** Open-label & RCT data for fatigue in HIV patients

# Additional Effects of Antidepressants in HIV patients

- Improved pain control (SNRIs)
- Improved sleep (mirtazapine)
- Improved appetite/weight (mirtazapine, stimulants)
- Improved energy (stimulants, modafinil, bupropion)
- Decreased nausea (mirtazapine)

# Psychotherapy for Depression in HIV patients

- Interpersonal psychotherapy
- Cognitive behavioral therapy
- Cognitive behavioral stress management group
- Brief supportive psychotherapy

# Use of Antipsychotics in HIV Patients

- Appear to be efficacious but not well studied
- More sensitive to extrapyramidal side effects
- PIs may ↑ typical antipsychotics, aripiprazole, quetiapine, risperidone, ziprasidone (3A4, 2D6)
  - Pimozide contraindicated with PIs (cardiac)
- PIs may ↓ olanzapine (1A2)
- In late stage infection, start low, go slow
- Overlapping metabolic effects
- Bone marrow toxicity with Clozapine and Zidovudine

# Use of Mood Stabilizers in HIV Patients

- Additive renal toxicity from lithium + tenofovir
- Lithium may improve neuropsychological function
- Data suggesting valproate increases HIV replication in vitro (but not found in vivo)
- Hepatotoxicity from valproate
- Lamotrigine effective in HIV-associated neuropathic pain
- Avoid Carbamazepine

# Psychotropic-HAART

## Interactions: Mood Stabilizers

	Valproate	Carbamazepine Oxcarbazepine	Other AEDs
NNRTIs		CBZ may ↓ NNRTIs	
NRTIs	Valproate may ↑ zidovudine (gluc)		
PIs	PIs may ↓ valproate (gluc)	CBZ ↓ PIs (3A4) PIs ↑ CBZ (3A4)	PIs may ↓ lamotrigine (gluc)
Other		CBZ ↓ maraviroc	

# Use of Sedative/hypnotics in HIV Patients

- HIV patients more sensitive to side effects
- Limited data examining benzodiazepine efficacy for anxiety treatment in HIV
- Most sedative/hypnotics have extensive CYP3A4 metabolism
- Decreased benzodiazepine and non-benzodiazepine hypnotic clearance when administered with PI
- Midazolam & triazolam contraindicated with PI or efavirenz
- Lorazepam, clonazepam preferable

# Helpful Resources for Drug-Drug Interactions

Micromedex

Epocrates Rx

<http://www.drug-interactions.com>

<http://www.hiv-druginteractions.org>

<http://hivinsite.ucsf.edu>



# Other Aspects of Psychiatric Care for HIV Patients

- Therapeutic relationship
- Care coordination
- Treatment adherence
- Health education
- Prevention of high risk behaviors
- Coping with disability and chronic illness
- Work with families, friends and partners
- Integration of religion and/or spirituality
- Expanding support network

# Conclusions

- Among new HIV/AIDS cases, an increasing percentage comes from unprotected heterosexual activity and higher-risk demographic groups
- Common neuropsychiatric syndromes associated with HIV include cognitive dysfunction, depression, psychosis, substance abuse and suicidality
- All HIV patients should be screened for cognitive dysfunction, regardless of virologic control
- Sexual and drug use histories should be incorporated into routine psychiatric evaluations and HIV testing should be considered as appropriate

# Conclusions (continued)

- Traditional psychotropic medications are effective but require closer monitoring due to higher risk for adverse effects and drug-drug interactions
- Antiretrovirals carry risk of neuropsychiatric side effects and risk/benefit analyses are important
- Medical, psychiatric and substance use treatment services should be integrated with efforts directed at improving access to care
- Skill-based risk reduction strategies designed for the seriously mentally ill and cognitive impaired should be considered