#### Mental Health as Facilitator and Barrier to Optimizing HIV Outcomes

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# Why focus on mental health in the context of HIV prevention and care?

- Significant gaps along HIV care continuum
- Mental health problems and disorders influence every step
- People at risk for and those living with HIV have significantly higher rates of mental health symptoms and disorders
- If we do not address behavioral health, unlikely to achieve "90-90-90" goals or end the HIV epidemic
- The human right to health means that everyone has the right to the highest attainable standard of physical AND mental health



ENDING THE AIDS EPIDEMIC BY 2030

#### "No health without mental health"

## Global burden of disease

#### 2016 Global Ranking: Number of years lived with disability (YLD) per 100,000

Communicable, maternal, neonatal, and nutritional diseases

Non-communicable diseases Injuries

#### 1 Mental & substance use 2 Other non-communicable 3 Musculoskeletal disorders 4 Neurological disorders 5 Diabetes/urog/blood/endo 6 Nutritional deficiencies 7 Unintentional inj 8 Cardiovascular diseases 9 Chronic respiratory 10 Diarrhea/LRI/other 11 Neonatal disorders 12 NTDs & malaria 13 Transport injuries 14 Digestive diseases 15 HIV/AIDS & tuberculosis 16 Neoplasms 17 Other group I 18 Self-harm & violence 19 Cirrhosis 20 War & disaster 21 Maternal disorders

Mental & substance use disorders

HIV/AIDS & Tuberculosis

Source: Institute for Health Metrics and Evaluation (IHME)

#### Global burden of mental, neurological, and substance use disorders, by age



#### Seek, Test, Link, Treat, Adhere, Retain: The Implementation Cascade



# Mental illness is a risk factor for HIV acquisition

- Mental illness contributes 4 to 10X increased risk for acquiring HIV
  - HIV prevalence in US people with SMI: 2% 6%
  - HIV prevalence in US general population: ~0.5%
- Mood disorders + alcohol/substance use + other conditions contribute even higher risk

### Multiple co-occurring conditions magnify HIV risk



- 4295 MSM from 6 US cities
- Co-occurring conditions
  - Depressive symptoms
  - Heavy alcohol use
  - Stimulant use
  - Poly drug use
  - Childhood sexual abuse

Probability of staying HIV negative goes down as number of conditions increases

## Depression influence on risk behaviors and PrEP adherence

Men who have sex with men (MSM) and transgender women (TGW) at risk for HIV infection in iPrEx and iPrEx OLE

#### **Conclusions:**

r F P

- Higher depression scores were associated with:
  - lower drug-detection
  - condomless receptive anal intercourse
- Thus, depression screening/treatment may key to maximizing PrEP efficacy





#### Rates of selected psychiatric disorders: United States general population vs PLWHA



#### Prevalence of Mental Health-Related Problems Seen in HIV Care Settings

Depression	7-67%
Alcohol and other substance use disorders (Current)	2-19%
Anxiety disorders	up to 40%
PTSD (lifetime)	40-64%
<ul> <li>HIV-related symptomatic Cognitive Disorders</li> </ul>	28-50%
Pain	28-97%
Insomnia	up to 60%

Cournos, McKinnon, Wainberg: Epidemiology of Psychiatric Disorders Associated with HIV and AIDS, In Comprehensive Textbook of AIDS Psychiatry, 2017

### Depression and mortality among PLWHA



- Among 1487 women followed for 24 months in Tanzania, mortality was 6.6% among women with depressive symptoms vs 3.7% without
- Among 765 HIV+ women at 4 US sites followed for up to 7 years, women with chronic depressive symptoms were **twice as likely to die** as women with limited or no depressive symptoms, even after adjusting for predictors of mortality (CD4 count, ART duration, age)
- In the US WIHS\* prospective cohort (study N=858), chronic depressive symptoms was associated >3 times the hazard of mortality (women on ART) and >7 times the hazard of mortality (women not on ART) compared to women on ART with no depression

\*The Women's Interagency HIV Study (WIHS) is the largest ongoing prospective cohort study of HIV among women in the U.S.

Sources: Sudfield et al., 2017, AIDS; Ickovics JR et al, 2001, JAMA; Todd et al., 2016, American Journal of Epidemiology;

# Longer depression yields worse HIV care outcomes

- Dose-response relationship between depression length and HIV outcomes
- 5927 US individuals living with HIV
- Each 25%  $\uparrow$  in days with depression
  - 19% 个 risk of mortality







What are the potential pathways between mental illness and HIV health outcomes?

## •Biological Pathway

Behavioral Pathway

## **Potential biological mechanisms**

- Direct effects of depression  $\rightarrow$  immune system
  - Chronic immune activation, HPA dysregulation
- HIV crosses the blood brain barrier → immune activation in the brain and the CNS
  - Inflammatory proteins  $\rightarrow$  oxidative stress and neuronal injury
- Chronic inflammatory response to HIV infection
  - Elevation in the level of cytokines e.g. Interleukin(IL)-6 and Tumor Necrosis Factor(TNF)-Alpha trigger chain reaction involving Tryptophan depletion through the activation of Indoleamine 2,3dioxygenase (IDO) enzyme
  - Tryptophan depletion reduces serotonin levels and increases Kynurenine (Kyn) and its metabolites (some are neurotoxic and associated with depression, suicide, and anxiety)

Source: Fu et al, Journal of Neuroinflammation, 2011; Lawson et al, Brain, Behavior, and Immunity, 2011; Capuron et al, Biological Psychiatry, 2011; Castillo-Mancilla et al, Clinical Infections Diseases, 2016; Hunt, Clinical Infections Diseases, 2017; Wada et al, AIDS, 2015; Dantzer, Current Topics in Behavioral Neurosciences, 2016; Martinez et al, JAIDS, 2014

## The behavioral pathway is clear

Mental health impairment contributes to:



- All lead to non-optimal HIV treatment and thus, poorer health outcomes (for self and for others)
- Whatever the pathway, it is clear that we need to address mental health problems if we want to improve health outcomes along the HIV prevention and HIV care continua

Bemelmans M et al, J Int AIDS Soc, 2016; Gonzalez JS et al, JAIDS 2011; Uthman et al, Curr HIV/AIDS Rep, 2014; Mayston et al, AIDS, 2012; Krumme et al, J Epidemiol Community Health, 2014; Musisi et al, Int J STD AIDS, 2014; Antelman et al, JAIDS, 2007; Remien et al, AIDS and Behavior, 2007

### Mental Health Screening Tools

**General Health Questionnaire (GHQ-5/12)** 

**Generalized anxiety** disorder scale (GADS)

Patient health questionnaire (PHQ-9)

> **Edinburgh postnatal** depression scale (EPDS)

**Center for Epidemiological Studies** depression scale (CES-D)

> Hospital anxiety and depression scale (HADS)

> > **Children's depression** inventory (CDI)

Hamilton rating scale for depression (HAM-D)

Harvard trauma questionnaire (HTQ)

Substance Abuse and **Mental Illness Symptoms** Screener (SAMISS)

Self-report

**Kessler psychological** distress scale (K10) questionnaire (SQR-20)



**Beck depression inventory (BDI)** 

Source: Ali, PLoS One, 2016, "Validated screening tools for common mental health disorders in low and middle income countries: a systematic review

PHQ-9 modified for Adolescents (PHQ-A) every day Yes No
'''If you have had thoughts that you would be better off dead

### Mental health treatments

Psychopharmacological (Psychotropic medications)

#### Psychotherapies

- Psychodynamic
- Cognitive-behavioral therapy (CBT)
- Motivational enhancing therapy (MI)
- Interpersonal therapy (IPT)
- Stress-reduction / Mindfulness interventions
- Harm-reduction and Abstinence treatments

Manualized and tailored across languages and cultures – thus, capable of being scaled up Technology as part of scale-up





# Opportunities for intervention: Mental health screening and intervening



# Benefits of integrating mental health screening and treatment into HIV care



Medicine, 2017; Safren et al, Lancet HIV, 2009

### Potential Effect of U=U Campaign

The science is there to support  $U=U^*$ 

- Increased motivation for ART initiation and adherence
- Reduction in stigma
- Improvement in mental health and well-being



\*Bavinton BR, Pinto AN, Phanuphak N, et al. *The Lancet HIV* 2018; 5(8):e438-e447. Cohen MS, Chen YQ, McCauley M, et al. *The New England journal of medicine* 2016; 375(9):830-839. Rodger AJ, Cambiano V, Bruun T, et al. *Jama* 2016; 316(2):171-181.

#### UNDETECTABLE = UNTRANSMITTABLE

The science is clear. A person with a sustained, undetectable viral load CANNOT transmit HIV to their partners.

**f** ♥ **②** @riseuptohiv



To learn more about #UEqualsU visit www.preventionaccess.org

### Positive Effect of U=U Campaign

*"U=U has done wonders for my self-esteem. I feel sexy not that I know that I cannot transmit HIV"* 

"It was only when I learned about U=U that I realized that I have been living for all these years carrying this heavy weight. Because I took my meds, I kept on living. **But inside I** felt like I was dying. And that made me afraid to get close to anyone else. The night I heard about U=U, I couldn't stop crying. It was like that burden I didn't even realize I was carrying just fell away."

"When I learned I was HIV+, I became **isolated and depressed**. I went on medication, but knowing I had the virus made me feel dirty and ashamed. I stayed that way for seven years, stigmatizing myself. **U=U has given me my life back**. Knowing that I can't infect anyone else has allowed me to forgive myself."



# Potential mental and other health effects related to PrEP

- We have evidence for the efficacy of PrEP
- Now, also evidence that PrEP use significantly reduces symptoms of anxiety and depression
- There is also emerging evidence that engagement in PrEP care can simultaneously promote:

- greater engagement in screening and treatment for mental and behavioral health challenges

- screening and treatment for other health conditions, such as diabetes, hypertension, and tobacco use

Fonner VA, Dalglish SL, Kennedy CE, et al. *AIDS (London, England)* 2016; 30(12):1973-1983.
Golub S. *IAPAC*. Miami, Fl; 2015. / Grant RM, Koester KA. *Current opinion in HIV and AIDS* 2016; 11(1):3-9.
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### Take Home Messages: Mental Health Matters!

- Mental health problems (ranging from distress to SMI) are elevated among people at-risk for HIV and those living with HIV
- Mental health problems contribute to HIV acquisition and poor outcomes along the HIV treatment continuum
- We have the necessary assessment (screening) tools and efficacious treatments. However, we need to prioritize mental health treatment with appropriate resources to address the current gap
- Integrating mental health assessment and treatment into HIV care should be routine and is essential to achieving our "90-90-90" and "EtE" goals.

Remien, R.H., Stirratt, M.J., Nguyen, N., Robbins, R.N., Norcini Pala, A., and Mellins, C.A. Mental Health and HIV/AIDS: The Need for an Integrated Response. *AIDS*, 2019.

# Take Home Messages: Mental Health Matters! (cont.)

- PrEP scale-up and the U=U campaign provide opportunities for significantly improving well-being and quality of life for people at risk for acquiring HIV and those living with HIV
- We need stronger advocacy for the human right to the highest attainable standard of MENTAL health

All health care providers and advocates are fundamental to the improvement of the mental health of people living with, and affected by, HIV - contributing to better physical health for individuals as well as improving the public health and thus, facilitating an End to the HIV Epidemic!!!

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# Thank You!

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