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

“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 disorders
2 Other non-communicable diseases
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

Source: Institute for Health Metrics and Evaluation (IHME)
Notice the similarity in age burden relative to the age burden for HIV

Among adolescents and young adults living with HIV:
>60% have some type of mental health disorder

Excess deaths among persons with MNS disorders
Life span often 15 to 20 years shorter

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

**PrEP Initiation (HIV-)**

**ART Initiation (HIV+)**

**↑ Testing**

**Diagnosis**

**Linkage**

**Primary Care**

**↑ Treatment**

- Prevention of HIV Acquisition
- Virologic Suppression

**Mental Health and Substance Use Problems**
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

Source: Mimiaga et al. JAIDS, 2015
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:

• Higher depression scores were associated with:
  - lower drug-detection
  - condomless receptive anal intercourse

• Thus, depression screening/treatment may key to maximizing PrEP efficacy

Mehrotra et al, AIDS and Behavior, 2016; Defechereux et al. AIDS and Behavior 2016
Rates of selected psychiatric disorders: United States general population vs PLWHA

<table>
<thead>
<tr>
<th>Disorder</th>
<th>General population – lower estimate</th>
<th>General population – upper estimate</th>
<th>PLWH – lower estimate</th>
<th>PLWH – upper estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Alcohol Use Disorder*</td>
<td>5-10%</td>
<td>14-24%</td>
<td>2-4%</td>
<td>2-19%</td>
</tr>
<tr>
<td>Lifetime Alcohol Use Disorder</td>
<td>3-12%</td>
<td>14-24%</td>
<td>6-12%</td>
<td>6-24%</td>
</tr>
<tr>
<td>Current Drug Use Disorder*</td>
<td>2-4%</td>
<td>2-4%</td>
<td>6-10%</td>
<td>6-10%</td>
</tr>
<tr>
<td>Lifetime Drug Use Disorder</td>
<td>23-56%</td>
<td>23-56%</td>
<td>7-67%</td>
<td>7-67%</td>
</tr>
<tr>
<td>Current Depression**</td>
<td>7-67%</td>
<td>7-67%</td>
<td>30-64%</td>
<td>30-64%</td>
</tr>
<tr>
<td>Lifetime PTSD</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
</tr>
</tbody>
</table>

In South Africa, 26 to 38% of PLWHA have a mental disorder vs. 13% in the general population. Jonsson et al., *S Afr J HIV Med* 2013; 14(4):155-165

Even higher rates for adolescents and young adults.

Source: Extensive literature review by colleagues in the Northeast/Caribbean AETC.
### Prevalence of Mental Health-Related Problems Seen in HIV Care Settings

<table>
<thead>
<tr>
<th>Condition</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>7-67%</td>
</tr>
<tr>
<td>Alcohol and other substance use disorders (Current)</td>
<td>2-19%</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>up to 40%</td>
</tr>
<tr>
<td>PTSD (lifetime)</td>
<td>40-64%</td>
</tr>
<tr>
<td>HIV-related symptomatic Cognitive Disorders</td>
<td>28-50%</td>
</tr>
<tr>
<td>Pain</td>
<td>28-97%</td>
</tr>
<tr>
<td>Insomnia</td>
<td>up to 60%</td>
</tr>
</tbody>
</table>

Depression and mortality among PLWHAs

- 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% ↑ in days with depression
  - 19% ↑ risk of mortality

Source: Pence et al, JAMA Psychiatry, Feb 21 2018
What are the potential pathways between mental illness and HIV health outcomes?

• Biological Pathway
• Behavioral Pathway
Potential biological mechanisms

• Direct effects of depression → immune system
  - Chronic immune activation, HPA dysregulation

• HIV crosses the blood brain barrier → immune activation in the brain and the CNS
  - Inflammatory proteins → 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 2,3-dioxygenase (IDO) enzyme
  - Tryptophan depletion reduces serotonin levels and increases Kynurenine (Kyn) and its metabolites (some are neurotoxic and associated with depression, suicide, and anxiety)

The behavioral pathway is clear

Mental health impairment contributes to:

- Increased risk behaviors
- Delayed (or lack of) HIV testing and care initiation
- Poor retention in care
- Delayed (or lack of) ART initiation
- Poor ART adherence
- Undetectable Viral Load

• 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

Mental Health Screening Tools

- General Health Questionnaire (GHQ-5/12)
- Patient health questionnaire (PHQ-9)
- Generalized anxiety disorder scale (GADS)
- Edinburgh postnatal depression scale (EPDS)
- Center for Epidemiological Studies depression scale (CES-D)
- Hospital anxiety and depression scale (HADS)
- Hospital anxiety and depression scale (HADS)
- Children’s depression inventory (CDI)
- Hamilton rating scale for depression (HAM-D)
- Harvard trauma questionnaire (HTQ)
- Beck depression inventory (BDI)
- Substance Abuse and Mental Illness Symptoms Screener (SAMISS)
- Kessler psychological distress scale (K10)
- Self-report questionnaire (SQR-20)

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

- When accessing STI testing and PrEP
- When testing for HIV and upon diagnosis
- When first accessing care
- Throughout care
- When initiating ART and ongoing

<table>
<thead>
<tr>
<th>HIV Infected</th>
<th>HIV Diagnosed</th>
<th>Linked to Care</th>
<th>HIV Retained in Care</th>
<th>HIV Prescribed ART</th>
<th>Undetectable Viral Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
</tr>
</tbody>
</table>
Benefits of integrating mental health screening and treatment into HIV care

First critical step!

Mental Health Screening → Mental Health Treatment → MH care integration

Improvements in Mediators: Mental Health Symptoms, Substance Use, Stress and Coping

Reduced HIV Risk Behavior

Improved Adherence to HIV Care and Treatment

Improved Linkage and Retention

Reduction in HIV Transmission

Treating depression, PTSD & SUD improves adherence

Reduced Viral Load

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

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

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.

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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