#### **BHIVA 2017**

# Mental health among people with HIV: insights from the ASTRA study

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## **Outline**

#### Among people living with HIV in the UK:

- 1. To what extent does living with HIV impact on mental health in the current era of successful treatment?
- 2. Does the prevalence of psychological symptoms vary according to socio-demographic factors?
- 3. Do psychological symptoms influence outcomes of HIV treatment?
- 4. Are those with evidence of depression receiving treatment?
- 5. Does depression impact on sexual behaviour and STI/HIV transmission risk?

## **ASTRA and AURAH studies**

	ASTRA Antiretrovirals, Sexual Transmission Risk and Attitudes	AURAH Attitudes to, and Understanding of, Risk of Acquisition of HIV			
N	3258	2630			
Study population	Adults with diagnosed HIV	Adults without diagnosed HIV (believed HIV-ve at recruitment)			
Setting	8 HIV outpatient clinics, UK	20 GUM clinics, UK			
Date	2011-12	2013-14			
Questionnaire	Self-completed, confidential questionnaire: demographic, socio-economic, lifestyle, health, HIV and ART-related factors				
Additional data	Clinic VL and CD4 at time of study. 92% gave additional consent for linkage with routine clinic data				
Response rate	64%	60%			
MSM Heterosexual men Women	2248 373 637	1484 470 676			
Mean age (years)	45 (SD: 10) [range 18-88]	32 (SD: 10) [range 18-80]			
On ART %	87%				

## Measures of depression

PHQ-9 Over the last 2 weeks, how often have you been	Not at all	Several days	More than half the days	Nearly every day		
bothered by any of the following problems?	0	1	2	3		
1) Little interest or pleasure in doing things						
2) Feeling down, depressed or hopeless						
3) Trouble falling or staying asleep, or sleeping too much						
4) Feeling tired or having little energy						
5) Poor appetite or overeating	PHQ-9 I	PHQ-9 Depressive Symptoms:				
6) Feeling bad about yourself – or that you are a failure or have let yourself or your family down	-Depressive Disorder [PHQ-9 DD] (includes 'major' and 'other' DD)					
7) Trouble concentrating on things, such as reading the newspaper or watching television	-Major Depressive Disorder [PHQ-9 MDD] -Depression Severity Score [DSS]					
8) Moving or speaking so slowly that other people could have noticed. Or the opposite - being so fidgety or restless that it is hard to sit still	(range 0-27, ≥10 indicates major depression)  -Suicidal thoughts (Q9: any occurrence)					
9) Thoughts that you would be better off dead, or of hurting yourself in some way						

• Treatment for depression: "Are you currently receiving treatment (medicine or other therapy) for depression?"

# Measure of anxiety

GAD-7 Over the last 2 weeks, how often have you been		Several days	More than half the days	Nearly every day	
bothered by any of the following problems?	0	1	2	3	
1) Feeling nervous, anxious or on edge					
2) Not being able to stop or control worrying					
3) Worrying too much about different things					
4) Becoming easily annoyed or irritable	GAD-7 anxiety symptoms:				
5) Trouble relaxing		-Anxiety Score (range 0-21, ≥10 indicates anxiety)			
6) Being so restless that it is hard to sit still					
7) Feeling afraid as if something awful might happen					

# Measure of health-related quality of life (QoL)

EQ-5D-3L Please indicate which statements best describe you own state of health TODAY						
a) Mobility	I have no problems in walking about I have some problems in walking about I am confined to bed					
b) Self-care	I have no problems with self-care I have some problems washing or dressing myself I am unable to wash or dress myself					
c) Usual activities (e.g. work, study, housework, family or leisure activities)	I have no problems with performing my usual activities I have some problems with performing my usual activities I am unable to perform my usual activities					
d) Pain / discomfort	I have no pain or discomfort I have some pain or discomfort I have extreme pain or discomfort					
e) Anxiety / depression	I am not anxious or depressed I am moderately anxious or depressed I am extremely anxious or depressed					

#### **Quality of life score:**

Range 0-1.

(value 1 - perfect health; value 0 - death)

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## Mental health among people with HIV

*N=3258 people with diagnosed HIV (ASTRA)* 

		n	Prevalence (95% CI)	Comparison (Gen Pop)
PHQ-9 DD (%) (Depressive disorde	r)	871	26.7 % (25.2, 28.3)	<sup>1</sup> Germany: 9.2% N=2060
PHQ-9 MDD (%) (Major depressive d	isorder)	600	18.4 % (17.1, 19.8)	<sup>1</sup> Germany: 3.8% N=2060
PHQ-9 score:	0-4 5-9 10-15 15-19 20-27	1716 658 426 250 208	52.7 % 20.2 % 13.1 % 7.7 % 6.4 %	For PHQ-9 score ≥10 <sup>2</sup> England: 7% N=2265 <sup>3</sup> US (NHANES): 6.8%, N=10283
	≥10	884	27.1 %	
Any depression (treatment* or PHQ	-9 DD)	1148	35.2 % (33.6, 36.9)	
Suicidal thoughts		743	22.8 % (21.4, 24.3)	
GAD-7 anxiety		715	21.9 % (20.6, 23.4)	<sup>2</sup> England: 5% N=2265 <sup>4</sup> Germany: 5.1% N=5030
PHQ-2~ DD score ≥3		813	25.0 % (23.5, 26.5)	<sup>5</sup> UK (NATSAL): 9.4%, N=13507

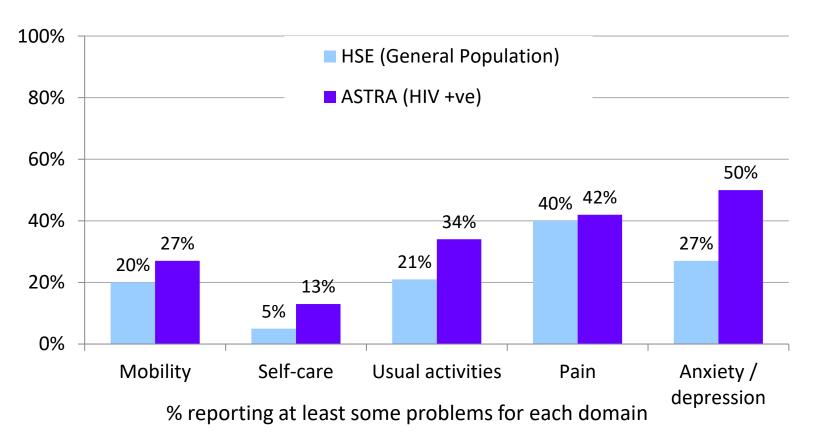
<sup>\*</sup>Medical or other. ~Uses first 2 PHQ-9 questions only .

<sup>&</sup>lt;sup>1</sup>Martin et al. General Hospital Psychiatry 2006; <sup>2</sup>Paranjothy et al. BMC Public Health 2011; <sup>3</sup>Shim et al, J Am Board Fam Med 2011; <sup>4</sup>Lowe et al, Med Care 2008; <sup>5</sup>Field et al, BMJ Open 2016

## Quality of life: people with HIV vs general population

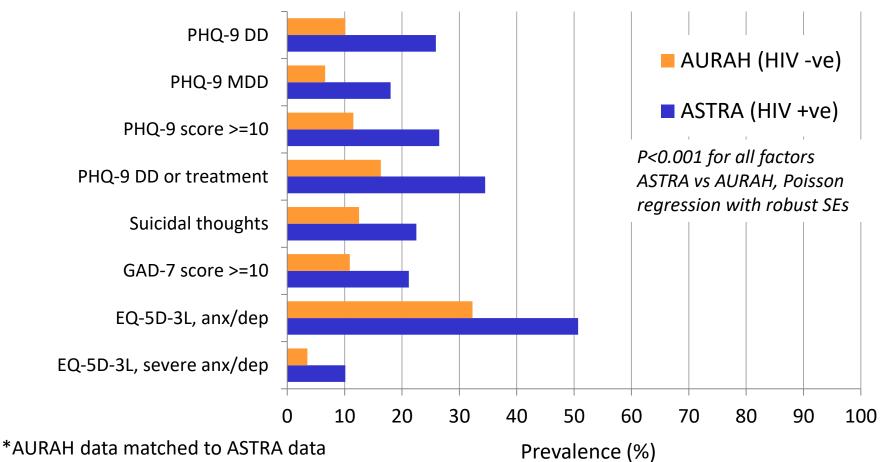
N=3151 people with diagnosed HIV (ASTRA) N=7424 from Health Survey for England (HSE), 2011

Difference in EQ-5D-3L QoL score ASTRA vs HSE: **-0.11 (95% CI: -0.13, -0.10),** p<0.001 Adjusted\* for gender/sexual orientation, age, ethnicity, education, children, smoking



## Mental heath: people with HIV vs 'at risk' group

N=2699 people with diagnosed HIV (ASTRA)
N=2699 without diagnosed HIV (AURAH), matched datasets\*



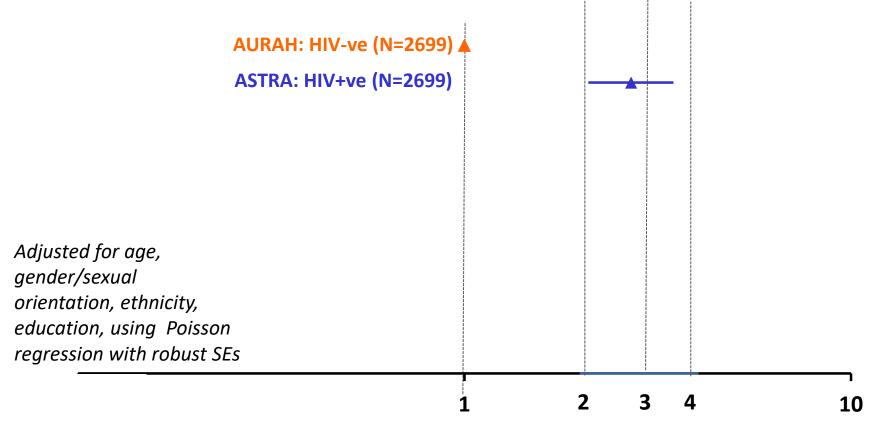
(with replacement) for: gender/sexual orientation; age; ethnicity; education level; children.

Ages 30-70 years included

**Acknowledgments: Alec Miners** 

## Depression: time with diagnosed HIV vs 'at risk' group

N=2699 people with diagnosed HIV (ASTRA)
N=2699 without diagnosed HIV (AURAH), matched datasets\*



\*AURAH data matched to ASTRA data Adjusted prevalence ratio (95% CI) of PHQ-9 DD (with replacement) for: gender/sexual orientation; age; ethnicity; education level; children.

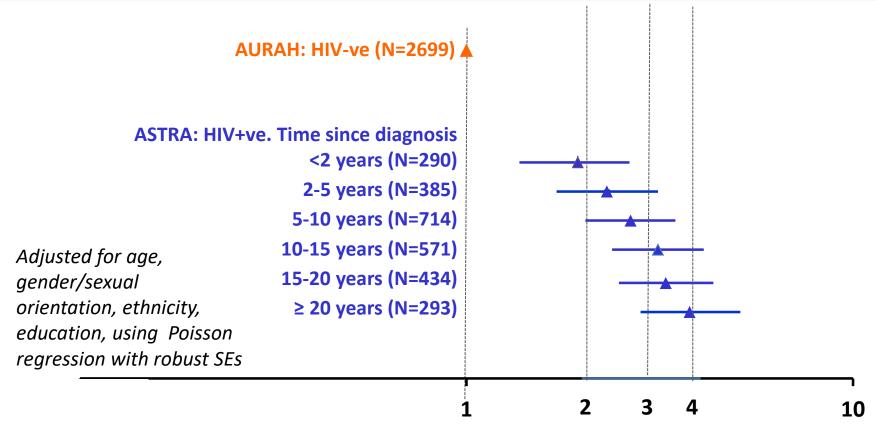
Ages 30-70 years included

See: Ciesla et al. Am J Psychiatry 2001

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Ages 30-70 years included

See: Ciesla et al. Am J Psychiatry 2001

**Acknowledgments: Alec Miners** 

Adjusted prevalence ratio (95% CI) of PHQ-9 DD

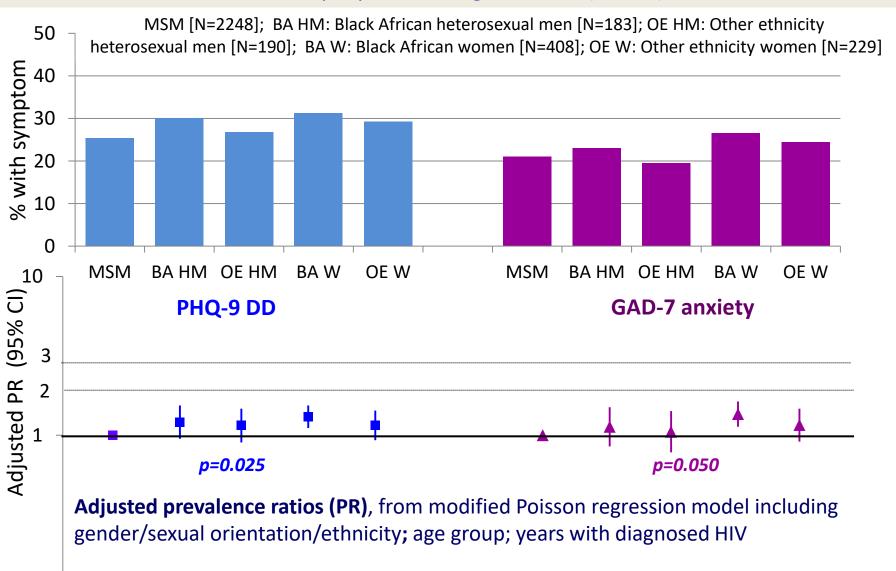
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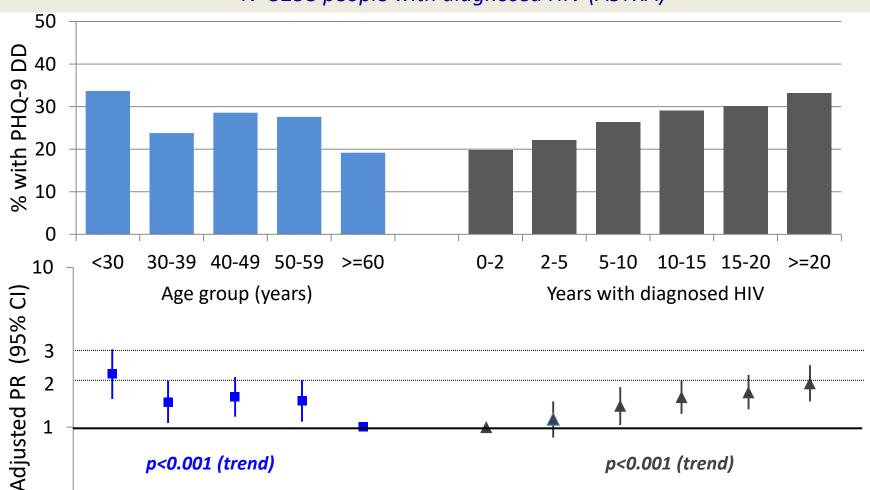
## Gender/ethnicity, depression and anxiety symptoms

N=3258 people with diagnosed HIV (ASTRA)



## Age, time since HIV diagnosis and depressive symptoms





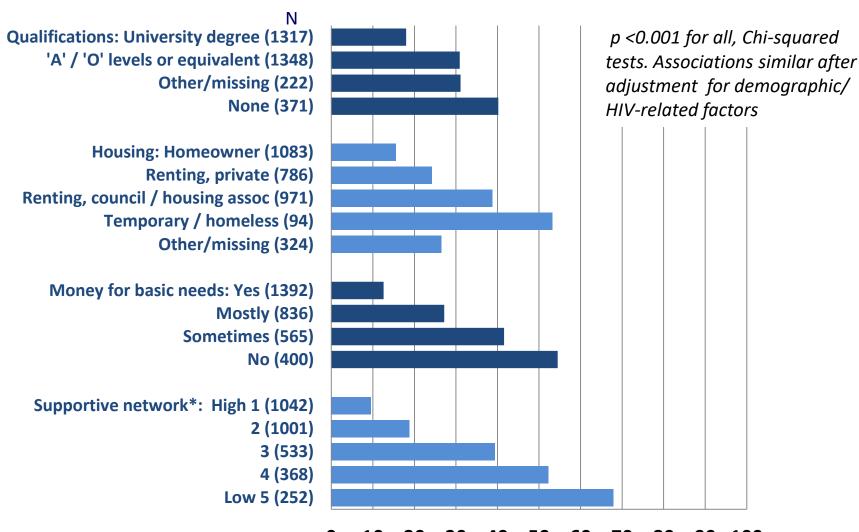
**Adjusted prevalence ratios (PR) of PHQ-9 DD**, from modified Poisson regression model including age group; years with diagnosed HIV; gender/sexual orientation; ethnicity

Adapted from Jennifer McGowan et al. HIV Medicine, 2017

See: Lifson et al. HIV Med 2015

## Socio-economic factors and depressive symptoms

N=3258 people with diagnosed HIV (ASTRA)



<sup>\*</sup>Modified Duke UNC Functional Social Support Questionnaire.

10 20 30 40 50 60 70 80 90 100 Prevalence (%) depressive symptoms (PHQ-9 DD)

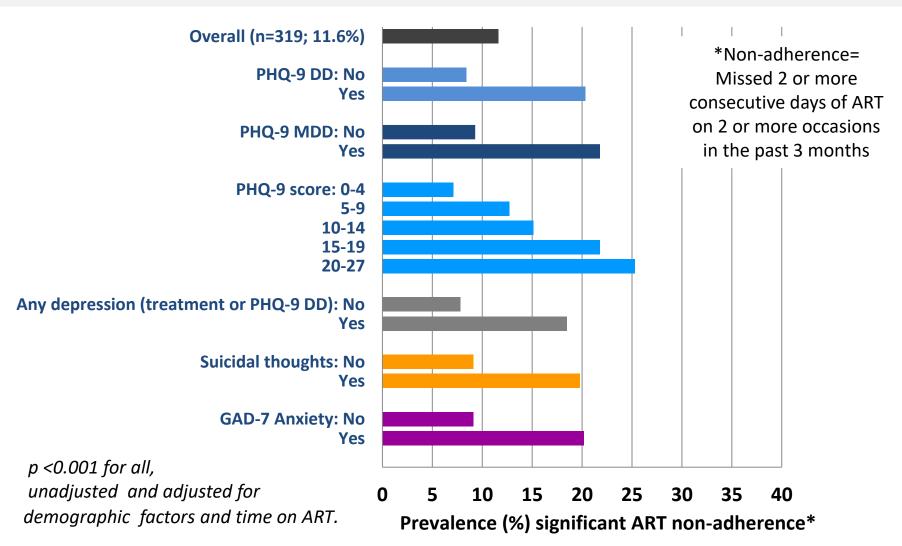
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#### Mental health and ART non-adherence

*N=2771 people on ART (ASTRA)* 

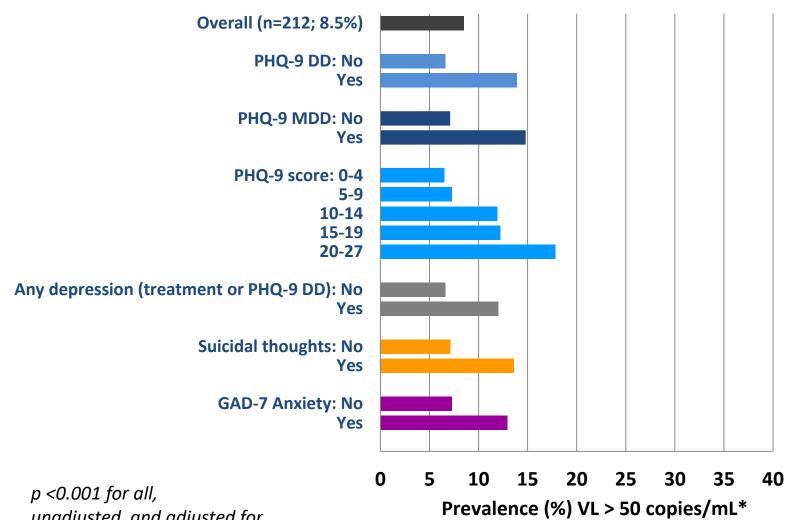


See: Gonzalez et al. JAIDS 2011; Langebeek et al. BMC Medicine 2014

**Acknowledgments: Alice Goodman** 

## Mental health and VL non-suppression on ART

N=2481 people on ART, started ≥6 months prior to VL measure (ASTRA)



unadjusted and adjusted for demographic factors and time on ART.

\*Using clinic-recorded VL at the time of the questionnaire

## Mental health and risk of virological rebound

N=1773 people on ART with VL<=50, started ART ≥6 months prior to baseline VL (ASTRA)

N=145 rebounds (first VL>200c/mL) Mean [range] 2.3 [0.01, 3.3] years follow-up		р-у	VL rebound rate /100 p-y (events)	Adjusted HR* (95% CI)
PHQ-9 DD	<b>Q-9 DD</b> No		2.7 (80)	1
	Yes	891	7.3 (65)	2.8 (2.0, 3.8)
PHQ-9 MDD	No	3263	2.8 (93)	1
	Yes	624	8.3 (52)	3.0 (2.1, 4.3)
PHQ-9 score	0-4	2129	2.3 (50)	1
	5-9	802	3.2 (26)	1.5 (0.9, 2.4)
	10-15	475	6.1 (29)	2.7 (1.7, 4.2)
	15-19	269	5.6 (15)	2.4 (1.4, 4.3)
	20-27	213	11.7 (25)	4.6 (2.8, 7.5)
Any depression	No	2612	2.5 (66)	1
(treatment or PHQ-9 DD)	Yes	1275	6.2 (79)	2.4 (1.7, 3.3)
Suicidal thoughts	No	3089	2.9 (91)	1
	Yes	798	6.8 (54)	2.3 (1.6, 3.3)
GAD-7 anxiety	No	3118	2.9 (91)	1
	Yes	769	7.0 (54)	2.5 (1.8, 3.5)

<sup>\*</sup>Adjusted for gender/sexual orientation, ethnicity, age, time with VL suppression, using Cox proportional hazards regression. p-y=person years at risk

## Mental health and knowledge of personal VL level

*N=2771 people on ART (ASTRA)* 

#### **Self-reported VL level:**

- ≤50c/mL / 'undetectable'
- >50c/mL / 'detectable'
- Don't know

**Inaccurate self-report of VL =** self-reported VL category does not agree with clinic-recorded VL\* or participants responds 'don't know'

<sup>\*</sup>Latest VL available to participant at time of questionnaire

		N	n	% with inaccurate self-report of VL	Adjusted PR <sup>\$</sup> (95% CI)
TOTAL		2678	434	16.2	
PHQ-9 score ≥ 10	No	1955	265	13.6	1
	Yes	723	169	23.4	1.9 (1.6, 2.2)
GAD-7 score ≥ 10	No	2082	301	14.5	1
	Yes	596	133	22.3	1.6 (1.3, 1.9)

<sup>\$</sup>Adjusted prevalence ratios (PR) of inaccurate self-report of VL, from modified Poisson regression model adjusted for: gender/sexual orientation; age group; ethnicity; time since started ART

Janey Sewell et al. HIV Medicine, 2017

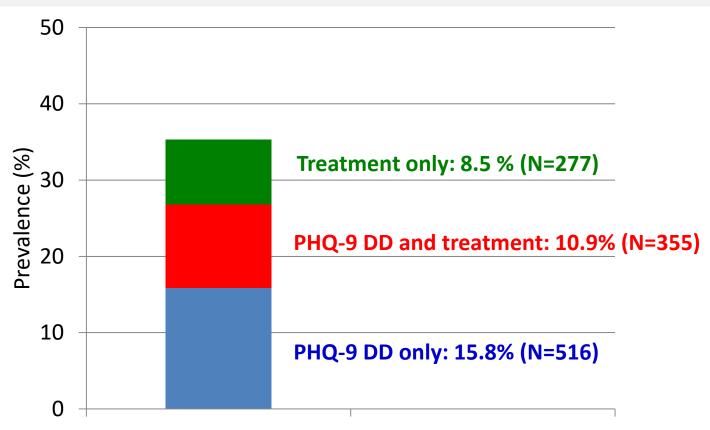
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## **Depression: symptoms and treatment**

N=3258 people with diagnosed HIV (ASTRA)



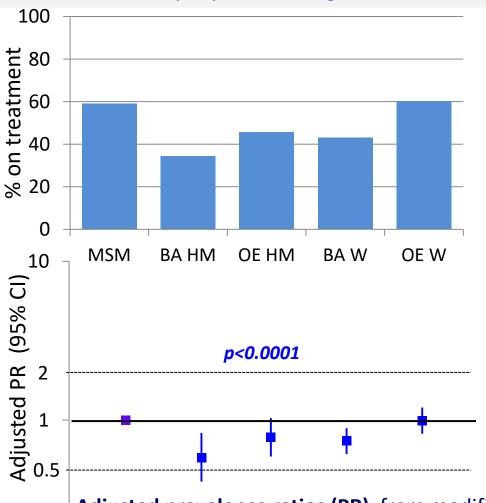
TOTAL with evidence of depression: 35.2% (N=1148) of whom 516 (45.0%) were not receiving treatment

Treatment=medicine or other therapy for depression

See: Bengtson et al. PLoS ONE 2016

## Gender/ethnicity and treatment for depression

N=1148 people with diagnosed HIV and evidence of depression\* (ASTRA)



% receiving treatment for depression (medicine or other therapy) of all those with evidence of depression (\*treatment or PHQ-9 DD)

MSM [N=784]

BA HM: Black African heterosexual men [N=64]

OE HM: Other ethnicity heterosexual men [N=59]

BA W: Black African women [N=153] OE W: Other ethnicity women [N=88]

Adjusted prevalence ratios (PR), from modified Poisson regression model including gender/sexual orientation/ethnicity; age group; ART status

## Depression: symptoms, treatment and VL outcome

1. N=2481 people on ART, started  $\geq 6$  months prior to VL measure 2. N=1773 people on ART with VL<=50, started ART  $\geq 6$  months prior to baseline VL (ASTRA)

Measure of depression		(1) VL non-suppression: >50c/mL at questionnaire			(2) VL rebound: time to VL >200 c/mL	
Symptoms (PHQ-9 DD)	Treatment (medicine/other)	N	<b>N</b> Adjusted PR* p value (95% CI)		Adjusted HR# (95% CI)	p value
No	No	2110	1		1	
No	Yes	277	1.0 (0.6, 1.7)	0.91	1.4 (0.8, 2.5)	0.24
Yes	No	516	1.9 (1.4, 2.6)	< 0.001	2.0 (1.3, 3.2)	0.003
Yes	Yes	355	2.2 (1.6, 3.1)	< 0.001	3.9 (2.6, 5.8)	< 0.001

N given for non-suppression analysis

<sup>\*</sup>Prevalence ratio, adjusted for gender/sexual orientation, ethnicity, age, time on ART, using modified Poisson regression.

<sup>#</sup>Hazard ratio, adjusted for gender/sexual orientation, ethnicity, age, time with VL suppression, using Cox proportional hazards regression.

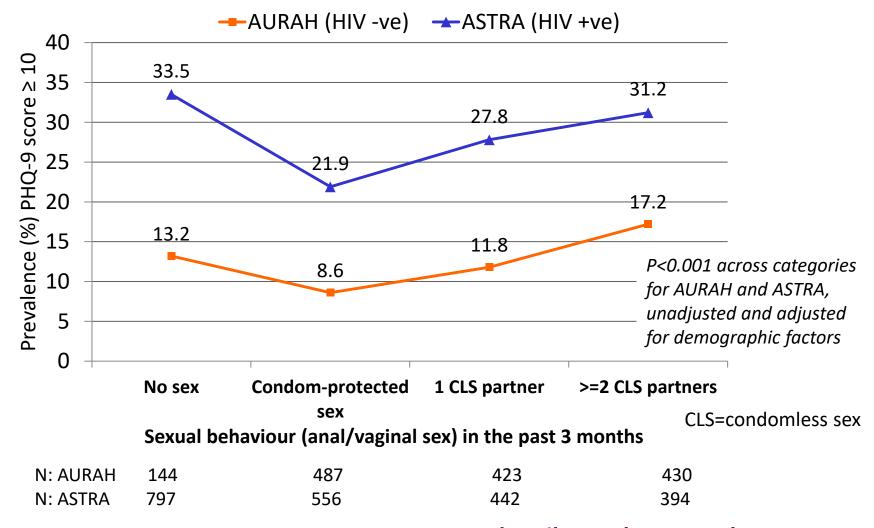
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## Depression and condomless sex among MSM

N=2189 MSM with diagnosed HIV (ASTRA); N=1484 MSM without diagnosed HIV (AURAH)



See Ada Miltz et al, Br J Psych Open 2017

See: Shiu et al. J Sexual Med 2014; Fendrich et al. Add Beh 2013

# **Summary**

- People living with HIV have substantially higher prevalence of mental health problems compared to HIV-negative people the difference is greatest for those diagnosed with HIV for longest
- Socioeconomic disadvantage is a key factor closely linked to mental health problems
- Psychological symptoms are associated with ART nonadherence, VL non-suppression, VL rebound, lower knowledge of personal VL level, and are linked to condomless sex
- Depression may be under-recognised or under-treated, particularly among Black African men and women

# **Implications**

- Results emphasise importance of screening, identification and management of depression among people living with HIV, with links to appropriate support services
- Highlights need for collection of patient-reported data on psychological symptoms as well as socio-economic factors, for research studies and clinical care

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#### **ASTRA clinic teams**

Royal Free: Alison Rodger; Margaret Johnson; Jeff McDonnell; AdebiyiAderonke

Mortimer Market: Richard Gilson; Simon Edwards; Lewis Haddow; Simon Gilson; Christina Broussard;

Robert Pralat; SonaliWayal

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Homerton: Jane Anderson; SifisoMguni; DamilolaAwosika; Rosalind Scourse

Eastbourne: KazeemAderogba; Caron Osborne; Sue Cross; Jacqueline Whinney; Martin Jones

Newham: Rebecca O'Connell; Cheryl Tawana

Whipps Cross: Monica Lascar; Zandile Maseko; Gemma Townsend; Vera Theodore; Jas Sagoo

#### **AURAH clinic teams**

Barking: Rageshri Dhairyawan, Sharmin Obeyesekera;

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Birmingham: Stephen Taylor, Gerry Gilleran, Cathy Stretton

Brighton: Martin Fisher, Amanda Clarke, Nicky Perry, Elaney Youssef, Celia Richardson, Louise Kerr,

Mark Roche, David Stacey, Sarah Kirk

Bristol: Mark Gompels, Louise Jennings, Caroline Holder, Katie-Anne Baker

Calderdale & Huddersfield: Maneh Farazmand, Matthew Robinson, Emma Street

**Coventry**: Sris Allan, Abayomi Shomoye **Dean Street**: Nneka Nwokolo, Ali Ogilvy

Homerton: Jane Anderson, Sfiso Mguni, Rebecca Clark, Cynthia Sajani, Veronica Espa

John Hunter: David Asboe, Sara Day, Ali Ogilvy, Sarah Ladd

Kings: Susan Mann, Michael Brady, Jonathan Syred, Lisa Hamza, Lucy Campbell, Emily Wandolo,

Janagan Alagarajah

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Mortimer Market: Richard Gilson, Rita Trombin, Ana Milinkovic, Clare Oakland

Newham: Rebecca O'Connell, Nyasha Makoka

Reading: Alan Tang, Ruth Wilson, Elizabeth Green, Sheila O'Connor, Sarah Kempster, Katie Keating-Fedders

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