MIND trial: Comparing dedicated and designated models of integrating mental health into chronic disease care

Statistical Analysis Plan
Version 1.2
22/4/2021

1 Study design

Project Mind is a three-arm cluster RCT conducted in 24 primary care clinics (clusters) offering co-located but vertically organized HIV and diabetes services within the Western Cape province of South Africa. These clinics serve geographically distinct catchment areas. As the intervention influenced health providers delivering HIV and diabetes services within these clinics, we selected a cluster design to reduce risk of contamination.

1.1 Randomization and masking

The Western Cape Department of Health purposively selected 24 clinics (15 in urban and nine in rural communities) to participate in the trial. These facilities were selected from a total of 189 clinics (of which 101 were in urban and 88 in rural areas) situated in four of the province's six health districts. Clinics from the other two health districts were excluded from the study as these districts were demonstration sites for other health system interventions. These 24 sites were selected to broadly reflect the geographic distribution and variability in size, structure, and organization of clinics in the province.

An independent statistician used a computer-generated randomization sequence to randomly assign the 24 clinics, stratified by urban-rural status, in a 1:1:1 ratio to either the treatment as usual (TAU), dedicated, or designated study arms. This randomization was communicated to the trial manager and investigators remained masked to the allocation. Clinics consented to participate in the study prior to the randomization. Blinding of sampled patients was not possible as they were informed of their clinic's assignment during the informed consent process. Facility-based counsellors (FBCs) delivering the intervention and study assessors administering patient questionnaires functioned independently of each other: FBCs did not conduct any assessments, ensuring that these assessments were independent from the counselling sessions. Study assessors were not blind to treatment allocation.

1.2 Recruitment and study procedures

Recruitment date: 1 May 2017 to 31 March 2019
Study population: All patients presenting for routine HIV or diabetes treatment at participating clinics
Eligibility: Individuals reporting low mood or alcohol use were referred to a study assessor for eligibility screening. Inclusions criteria were: i) age $\geq$ 18 years old; ii) taking ART for HIV or medication for diabetes; iii) an Alcohol Use Disorders Identification Test (AUDIT) score ≥8 or a Center for Epidemiologic Studies Depression Scale score ≥16. Exclusion: Receiving other mental health treatment or participating in another study.

Baseline data: Self-report information on socio-demographic characteristics, HIV and/or diabetes treatment, common mental disorders, alcohol, tobacco and other drug use, health service utilization, and health-related quality of life. HIV viral load testing or HbA1c testing (as appropriate).

Endpoints: 6- and 12-months post-enrolment.
Window period: 30-days from the scheduled appointment for 6 months endpoint; 60 days for the 12-month assessment.

Outcome assessments: Baseline questionnaire; HIV viral load and/or HbA1c testing.

Interventions

i) Treatment as usual (TAU)

Standard care for CMDs i.e. asking patients about their mood and alcohol use during routine visits, providing lifestyle advice, and referral to an on-or off-site mental health nurse or social worker for further assessment.

ii) Designated care

Clinics designated one of their facility-based counsellors (FBCs) from the chronic disease care team to provide the MIND intervention *in addition* to their other chronic disease-related counselling responsibilities. FBCs delivered the intervention and referral for further mental health services if needed. The intervention was manualized and comprised three sessions of individual counselling based on motivational interviewing (MI) and problem-solving therapy (PST) with the option of a fourth session if desired. All sessions included a motivational component, an education component (in which problem-solving skills are taught) and opportunities to apply new skills through exercises and take-home activities Participants were given a six-week window within which to complete the intervention, and an additional two weeks for the optional fourth session.

ii) Dedicated care

As above, but an additional FBC was employed and added to the existing pool of FBCs working within the chronic disease care team. The primary task of this dedicated FBC was to deliver the MIND intervention.

Outcomes

Primary outcomes

1. Hazardous/harmful alcohol use based on the mean AUDIT score at 12 months follow-up.
2. Depressive symptoms based on the mean CES-D score at 12 months follow-up.

Secondary outcomes

i. Remission from hazardous/harmful alcohol use (AUDIT score <8) among individuals with AUDIT >=8 at baseline
ii. Remission from depressive symptoms (CES-D scores <16 and CES-D scores<20) respectively among individuals reporting clinically relevant symptoms at baseline.
iii. Biomarkers of chronic disease treatment outcomes: HbA1c levels (for diabetes) as continuous and binary (normal/abnormal using standard cut-off $\geq$7) and HIV-1 RNA viral load as continuous (log10 VL) and binary ($\geq$1000 copies/ul).
iv. Adherence to treatment for HIV and diabetes treatment respectively assessed using the Visual Analog Scale (VAS) as a percentage of medication adherence over a 30-day timeframe, dichotomized into optimal and suboptimal adherence categories using standard cut off scores for adherence (**≥**90%).
v. Health-related quality of life assessed using the EuroQol (EQ) 5D-3L composite score and associated VAS.

Primary objectives:

To compare the effectiveness of

i) the designated approach relative to TAU for reducing i) hazardous/harmful alcohol use and ii) depressive symptoms at 12 months follow-up.
ii) the dedicated approach relative to TAU for reducing i) hazardous/harmful alcohol use and ii) depressive symptoms defined at 12 months follow-up.

iii) the designated approach relative to the dedicated approach for reducing i) hazardous/harmful alcohol use and ii) depressive symptoms defined at 12 months follow-up.

Secondary objectives

To compare the effectiveness of the designated and dedicated approaches vs TAU and each other on

1. AUDIT score at 6 months follow-up
2. Depressive symptoms at 6 months follow-up
3. Remission from harmful/hazardous alcohol use at 6 and 12 month follow-up respectively
4. Remission from depressive symptoms at 6 and 12 month follow-up respectively
5. Biomarkers of chronic disease treatment outcomes: HbA1c levels (for diabetes) as continuous and binary (normal/abnormal using standard cut-off ≥7) and HIV-1 RNA viral load as continuous (log10 VL) and binary (≥1000 copies/ul).
6. Adherence to treatment for HIV and diabetes treatment respectively assessed using the Visual Analog Scale (VAS) as a percentage of medication adherence over a 30-day timeframe, dichotomized into optimal and suboptimal adherence categories using standard cut off scores for adherence (**≥**90%).
7. Health-related quality of life assessed using the EuroQol (EQ) 5D-3L composite score and associated VAS.

1.3 Sample size

The study was powered to detect changes in mean AUDIT and CES-D scores at 12-month follow up. The sample size calculation was based on separate analyses of diabetes and HIV clinic populations, showing a difference between the active arms using two-sided tests at α=0.05 and 90% power. Assuming an intra-class correlation of 0.03 and adjusting for 20% attrition, we calculated a minimum target sample size of eight clinics per arm (24 total), with a cluster size of 25 unique participants from HIV and 25 unique participants from diabetes services. For each cluster, we examined the number of participants who were eligible based on depression scores and the number eligible based on alcohol use after reaching the minimum recruitment target. As anticipated [1], most clusters had reached their recruitment target of 25 participants for depression (across HIV or diabetes services), but not alcohol use. As planned[1], we augmented the sample by recruiting additional participants with hazardous/harmful alcohol use until the required number of 25 was obtained for each cluster. Most of these additional participants were recruited from HIV services.

Realised sample:

The analysis done on the MIND dataset was done in **a blinded** fashion by the trial statistician. The trial arms were indicated only by numbers 1,2,3. This was done to finalise the statistical analysis plan.

Diabetes and HIV cohorts for the study as specified in the protocol:

```
. tab BaseT_AnyHIV BaseT_AnyDM

BaseT_AnyH |      BaseT_AnyDM
        IV |        No        Yes  |     Total
-----------+----------------------+----------
         0 |         0        539  |       539
         1 |       718         83  |       801
-----------+----------------------+----------
     Total |       718        622  |     1,340
```

- HIV cohort (HIV) enrolled and randomized n=801 of which 83 also diabetic
- Diabetes (DM) cohort enrolled and randomized n=622 of which 83 also HIV positive

Each disease cohort will independently be analysed for the two primary outcomes conditional on the alcohol intake risk score (Audit) at baseline which need to be >=8 and conditional on the depression status based at baseline indicated by the CESD score of >=16. The numbers enrolled satisfying the inclusion criteria as per protocol, is given below. The sample size planned for each disease cohort and study outcome was n=600.

DM and AUDIT

```
. generate auditb_yes=( BaseT_AUDIT_Composite>=8)

. tab BaseT_StudyArm  auditb_yes if BaseT_AnyDM==1 , row
```

Computed variable indicating assignment of the site to one of the three study arm	auditb_yes 0	auditb_yes 1	Total
1	144	59	203
	70.94	29.06	100.00
2	157	54	211
	74.41	25.59	100.00
3	151	57	208
	72.60	27.40	100.00
Total	452	170	622
	72.67	27.33	100.00

- The DM cohort enrolled for the AUDIT primary outcome analysis is n=170.
- The study will therefore be underpowered for this outcome since only 28% of the planned DM cohort for this outcome was enrolled.

HIV and AUDIT

```
. tab BaseT_StudyArm auditb_yes if BaseT_AnyHIV==1 , row
```

Computed variable indicating assignment of the site to one of the three study arm	auditb_yes 0	1	Total
1	94	176	270
	34.81	65.19	100.00
2	83	160	243
	34.16	65.84	100.00
3	105	183	288
	36.46	63.54	100.00
Total	282	519	801
	35.21	64.79	100.00

- The HIV cohort enrolled for the AUDIT primary outcome analysis is n=519
- 87% of the planned HIV cohort for this outcome was enrolled.

DM and CESD

```
. tab BaseT_StudyArm BaseT_CESD_cut_off if BaseT_AnyDM==1 , row
```

Computed variable indicating assignment of the site to one of the three study arm	Baseline CESD cut offs below cut	above cut	Total
1	24	179	203
	11.82	88.18	100.00
2	15	196	211
	7.11	92.89	100.00
3	31	177	208
	14.90	85.10	100.00
Total	70	552	622
	11.25	88.75	100.00

- The DM cohort enrolled for the CESD primary outcome analysis is n=552
- 92% of the planned HIV cohort for this outcome was enrolled.

HIV and CESD

```
. tab BaseT_StudyArm BaseT_CESD_cut_off if BaseT_AnyHIV==1 , row

  Computed |
  variable |
indicating |
```

assignment of the site to one of the three study arm	Baseline CESD cut offs: below cut	above cut	Total
1	48	222	270
	17.78	82.22	100.00
2	32	211	243
	13.17	86.83	100.00
3	81	207	288
	28.13	71.88	100.00
Total	161	**640**	801
	20.10	79.90	100.00

- The HIV cohort enrolled for the CESD primary outcome analysis is n=640
- The enrolled cohort exceeds the planned HIV cohort for this outcome by 7%

2 Statistical methods

2a. Management of missing data

The trial statistician, blinded to the arm allocation, assessed the extent of missing data at 12 months as well as which baseline variables were associated with missing data at 12 months (using a binomial regression model with the sandwich estimator for the variance) for each disease/outcome cohort.

Missing status at 12 months indicated by missing_12=1

DM and AUDIT

```
. tab BaseT_StudyArm  missing_12 if auditb_yes==1 & BaseT_AnyDM==1 , row
```

Computed variable indicating assignment of the site to one of the three study arm	missing_12: 0	1	Total
1	53	6	59
	89.83	10.17	100.00
2	48	6	54
	88.89	11.11	100.00
3	53	4	57
	92.98	7.02	100.00
Total	154	16	170
	90.59	9.41	100.00

HIV and AUDIT

```
. tab BaseT_StudyArm  missing_12 if auditb_yes==1 & BaseT_AnyHIV==1 , row

  Computed |
```

```
  variable |
indicating |
assignment |
    of the |
   site to |
one of the |
     three |      missing_12
  study arm|         0          1 |     Total
-----------+----------------------+----------
         1 |       150         26 |       176
           |     85.23      14.77 |    100.00
-----------+----------------------+----------
         2 |       139         21 |       160
           |     86.88      13.13 |    100.00
-----------+----------------------+----------
         3 |       166         17 |       183
           |     90.71       9.29 |    100.00
-----------+----------------------+----------
     Total |       455         64 |       519
           |     87.67      12.33 |    100.00
```

DM and CESD

```
. tab BaseT_StudyArm  missing_12 if BaseT_CESD_cut_off==1 & BaseT_AnyDM==1 , row
```

```
  Computed |
  variable |
indicating |
assignment |
    of the |
   site to |
one of the |
     three |      missing_12
  study arm|         0          1 |     Total
-----------+----------------------+----------
         1 |       159         20 |       179
           |     88.83      11.17 |    100.00
-----------+----------------------+----------
         2 |       173         23 |       196
           |     88.27      11.73 |    100.00
-----------+----------------------+----------
         3 |       158         19 |       177
           |     89.27      10.73 |    100.00
-----------+----------------------+----------
     Total |       490         62 |       552
           |     88.77      11.23 |    100.00
```

HIV and CESD

```
. tab BaseT_StudyArm  missing_12 if BaseT_CESD_cut_off==1 & BaseT_AnyHIV==1 , row
```

```
  Computed |
  variable |
indicating |
assignment |
    of the |
   site to |
one of the |
     three |      missing_12
  study arm|         0          1 |     Total
-----------+----------------------+----------
         1 |       187         35 |       222
           |     84.23      15.77 |    100.00
-----------+----------------------+----------
         2 |       181         30 |       211
           |     85.78      14.22 |    100.00
-----------+----------------------+----------
         3 |       189         18 |       207
           |     91.30       8.70 |    100.00
```

```
-----------+----------------------+----------
     Total |       557           83 |       640
           |     87.03        12.97 |    100.00
```

- The HIV cohort has a larger differential in dropout by arm compared to the DM cohort

Baseline factors associated with missing status at 12 months for each cohort not taking intervention arm into account

In each of the study cohorts, location (urban, rural), sex (male, female), experienced hunger (never/seldom, sometimes/often) were factors associated with missing data at 12 month follow up. In addition, the following factors were specific to each disease cohort: DM HbA1C level indicating poor control and HIV with viral load >1000 indicated poor control- these will also be adjusted for.

Binomial regression model estimating risk ratios were used adjusting for clustering at facility level.

HIV and AUDIT

```
.binreg missing_12 i.BaseT_Site_Location i.BaseT_Gender i.base_hunger2 i.Ba-
seT_HIV_VL_1000 if BaseT_AnyHIV==1 & auditb_yes==1 , rr vce(cluster BaseT_Site)


Generalized linear models                         Number of obs   =        519
Optimization     : MQL Fisher scoring             Residual df     =        514
                   (IRLS EIM)                     Scale parameter =          1
Deviance         =  370.2532451                   (1/df) Deviance =   .7203371
Pearson          =  514.0251611                   (1/df) Pearson  =   1.000049

Variance function: V(u) = u*(1-u)                 [Bernoulli]
Link function    : g(u) = ln(u)                   [Log]

                                                  BIC             =  -2843.225

                                (Std. Err. adjusted for 24 clusters in BaseT_Site)
------------------------------------------------------------------------------
                     |             Semirobust
         missing_12 | Risk Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
BaseT_Site_Location |
  Rural study site  |   .4034424   .1244888    -2.94   0.003     .2203582    .7386418
                    |
       BaseT_Gender |
             Female |   .6935254    .209176    -1.21   0.225     .3839982    1.252551
    1.base_hunger2 |   1.374159   .3113316     1.40   0.161     .8814289     2.14233
                    |
  BaseT_HIV_VL_1000 |
                yes |   1.420094   .3447516     1.44   0.149     .8824164    2.285391
              _cons |   .1638446   .0428483    -6.92   0.000     .0981358      .27355
------------------------------------------------------------------------------
Note: _cons estimates baseline risk.
```

DM and AUDIT

```
. binreg missing_12 i.BaseT_Site_Location i.BaseT_Gender i.base_hunger2 i.Ba-
seT_HbA1C_cut_off if BaseT_AnyDM==1 & auditb_yes==1 , rr vce(cluster BaseT_Site)

Generalized linear models                         Number of obs   =        170
Optimization     : MQL Fisher scoring             Residual df     =        165
                   (IRLS EIM)                     Scale parameter =          1
Deviance         =  93.81562569                   (1/df) Deviance =   .5685795
Pearson          =  173.1497697                   (1/df) Pearson  =   1.049393
```

```
Variance function: V(u) = u*(1-u)                [Bernoulli]
Link function    : g(u) = ln(u)                  [Log]

                                                 BIC             =  -753.5911

                                (Std. Err. adjusted for 24 clusters in BaseT_Site)
------------------------------------------------------------------------------
                     |             Semirobust
         missing_12 | Risk Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
BaseT_Site_Location |
  Rural study site  |   .6123355   .2341595    -1.28   0.200     .2893921    1.295663
                    |
       BaseT_Gender |
            Female  |   .1781394   .1038991    -2.96   0.003     .0567937     .558753
     1.base_hunger2 |    1.64943   .8370327     0.99   0.324     .6100654    4.459553
                    |
BaseT_HbA1C_cut_off |
      poor control  |    1.26478   .6891388     0.43   0.666     .4347326    3.679662
              _cons |   .1557152   .0895096    -3.24   0.001     .0504703    .4804257
------------------------------------------------------------------------------
Note: _cons estimates baseline risk.
```

HIV and CESD

```
. binreg missing_12 i.BaseT_Site_Location i.BaseT_Gender i.base_hunger2 i.Ba-
seT_HIV_VL_1000 if BaseT_AnyHIV==1 & BaseT_CESD_cut_off==1 , rr vce(cluster BaseT_Site)

Generalized linear models                        Number of obs   =        640
Optimization     : MQL Fisher scoring            Residual df     =        635
                   (IRLS EIM)                    Scale parameter =          1
Deviance         =  481.4840993                  (1/df) Deviance =   .7582427
Pearson          =  646.6580578                  (1/df) Pearson  =   1.018359

Variance function: V(u) = u*(1-u)                [Bernoulli]
Link function    : g(u) = ln(u)                  [Log]

                                                 BIC             =  -3621.548

                                (Std. Err. adjusted for 24 clusters in BaseT_Site)
------------------------------------------------------------------------------
                     |             Semirobust
         missing_12 | Risk Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
BaseT_Site_Location |
  Rural study site  |   .6891783   .1564524    -1.64   0.101     .4416699    1.075388
                    |
       BaseT_Gender |
            Female  |    .640915   .1498548    -1.90   0.057     .4053011    1.013498
     1.base_hunger2 |   1.336474   .2409957     1.61   0.108     .9385778    1.903053
                    |
  BaseT_HIV_VL_1000 |
               yes  |   1.635006   .3286913     2.45   0.014     1.102552    2.424597
              _cons |   .1582807   .0381004    -7.66   0.000     .0987488    .2537021
------------------------------------------------------------------------------
Note: _cons estimates baseline risk.
```

DM and CESD

```
. binreg missing_12 i.BaseT_Site_Location i.BaseT_Gender i.base_hunger2 i.Ba-
seT_HbA1C_cut_off if BaseT_AnyDM==1 & BaseT_CESD_cut_off==1 , rr vce(cluster BaseT_Site)

Generalized linear models                        Number of obs   =        552
Optimization     : MQL Fisher scoring            Residual df     =        547
                   (IRLS EIM)                    Scale parameter =          1
Deviance         =   377.783677                  (1/df) Deviance =   .6906466
Pearson          =  554.1102648                  (1/df) Pearson  =   1.012999
```

```
Variance function: V(u) = u*(1-u)                [Bernoulli]
Link function    : g(u) = ln(u)                  [Log]

                                                 BIC             =  -3075.727

                                  (Std. Err. adjusted for 24 clusters in BaseT_Site)
------------------------------------------------------------------------------
                    |             Semirobust
         missing_12 | Risk Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
BaseT_Site_Location |
  Rural study site  |   .7761769   .2628689    -0.75   0.454      .399653    1.507434
                    |
       BaseT_Gender |
            Female  |     .77917   .2921596    -0.67   0.506     .3736487    1.624804
     1.base_hunger2 |   1.932945   .4865465     2.62   0.009     1.180215    3.165757
                    |
BaseT_HbA1C_cut_off |
      poor control  |   1.320559    .400456     0.92   0.359     .7288413    2.392668
              _cons |   .0932299   .0394228    -5.61   0.000     .0407023    .2135458
------------------------------------------------------------------------------
Note: _cons estimates baseline risk.
```

For each the four disease/outcome combinations a different baseline factor is significantly associated with missing status at 12 months. The longitudinal models for the study outcome will be adjusted for the three common risk factors (sex, location, hunger status) as well as the disease specific control indicator (viral load, HbA1c) under the assumption that the missing status in each arm is missing at random (MAR).

2b. Baseline tables

An overall baseline table by of the participants' disease characteristics by arm will be tabulated. The table will include the physical health morbidities (Diabetes, HIV positive) and multi-morbidities (diabetes & HIV) as well as the percentage meeting the AUDIT and CESD criteria overall. The disease specific baseline tables (For HIV and DM patients respectively), will be summarized using mean and standard deviation (SD) or median and interquartile range (IQR) for continuous variables and frequency and percentage for categorical variables and presented in supplementary tables (Table 1a and 1b).

2c. Intention to treat outcome analyses and sensitivity analyses

Analyses will follow intention-to-treat principles, with all participants enrolled within the clusters randomized, included in the analysis, independent of their compliance with their treatment assignment and will follow CONSORT guidelines for cluster-randomised trials.

We will conduct separate analyses for HIV and diabetes cohorts and within each, we will create separate models for alcohol (for people with scores $\geq$8 at baseline) and depression (people with scores $\geq$16 at baseline). All outcome analyses will be adjusted for strata (urban/rural site) and baseline measures of the outcome measure. Any of the following variables deemed to be substantially imbalanced between arm at baseline will be adjusted for in further analyses – age, gender, mental health comorbidity (depression/alcohol use), physical comorbidity (diabetes/HIV), and baseline HIV or HbA1c levels.

The intention to treat analysis will be based on a linear mixed effect model using the baseline as well as the 2 follow-up time points (6 and 12 months) with facility (cluster) and participant within clusters as random effects. The random effects model for participant will have a time factor whereas the cluster random effect model will only have a random intercept. Since only 24 clusters were randomized the degrees of freedom used for the modeling will be the *Satterthwaite* approach to ensure the proper control of the type I error as recommended by Leyrat (2018).

The regression models will be fitted using maximum likelihood to serve as the imputation model. All three arms will be included in the analysis and the specific contrasts as specified in the protocol will be tested and the intervention effects estimated with 95% confidence intervals (Dedicated arm vs TAU arm, Designated arm vs TAU, and Dedicated versus Designated respectively). The fixed effects of the models will have time as a categorical variable to cater for the expected non-linear trend, a intervention effect with two indicator variables for intervention arms and the interaction between the intervention and time variables. The interaction effect will be used to assess the significance of the intervention effect overall and time specific contrasts will be estimated with 95% confidence intervals. The four baseline factors associated with dropout will also be included as fixed effects in the models to enhance the adjustment for missing data.

The linear regression mixed effects modeling will be used since this simplifies the adjustment for covariates and facilitates the individual response profiles of participants over time. The main concern of using such a model with a small number of cluster (n=24) is accommodated by using the Satterthwaite approach for the degrees of freedom.

A sensitivity analysis using a cluster level analysis of the intervention effect at 12 months will be done and compared to the effects based on the linear mixed effects model. Further sensitivity analysis will adjust for health district.

The same linear mixed models will be used to do a pooled analysis over the disease groups for the alcohol and depression outcomes. The disease group status (DM, HIV, DM&HIV) will be added as a fixed effect. This ad hoc analysis is considered in view of the small AUDIT cohort enrolled in the Diabetes disease group. The pooled sample size for the alcohol analysis will be n=663 participants and n=1119 for the depression analysis.

All analyses will include the stratification variable (urban/rural) as a fixed effect. No adjustment for multiplicity will be made since the trial outcome will be determined by the overall significance of the group (intervention) effect.

A similar approach will be adopted to estimate the intervention effects and 95% confidence intervals for the secondary outcomes.

Planned subgroup analyses:

A-priori defined effect-moderation factors are

(a) gender
(b) education (completed vs. not completed high school)
(c) baseline AUDIT score (8-15 versus >=16)
(d) tobacco use (yes/no)

(e) QoL subgroups based on the EQ-5D scale.

An exploratory (descriptive) subgroup analysis will look at variability of effect by health district.

Figure 1: MIND trial flow chart

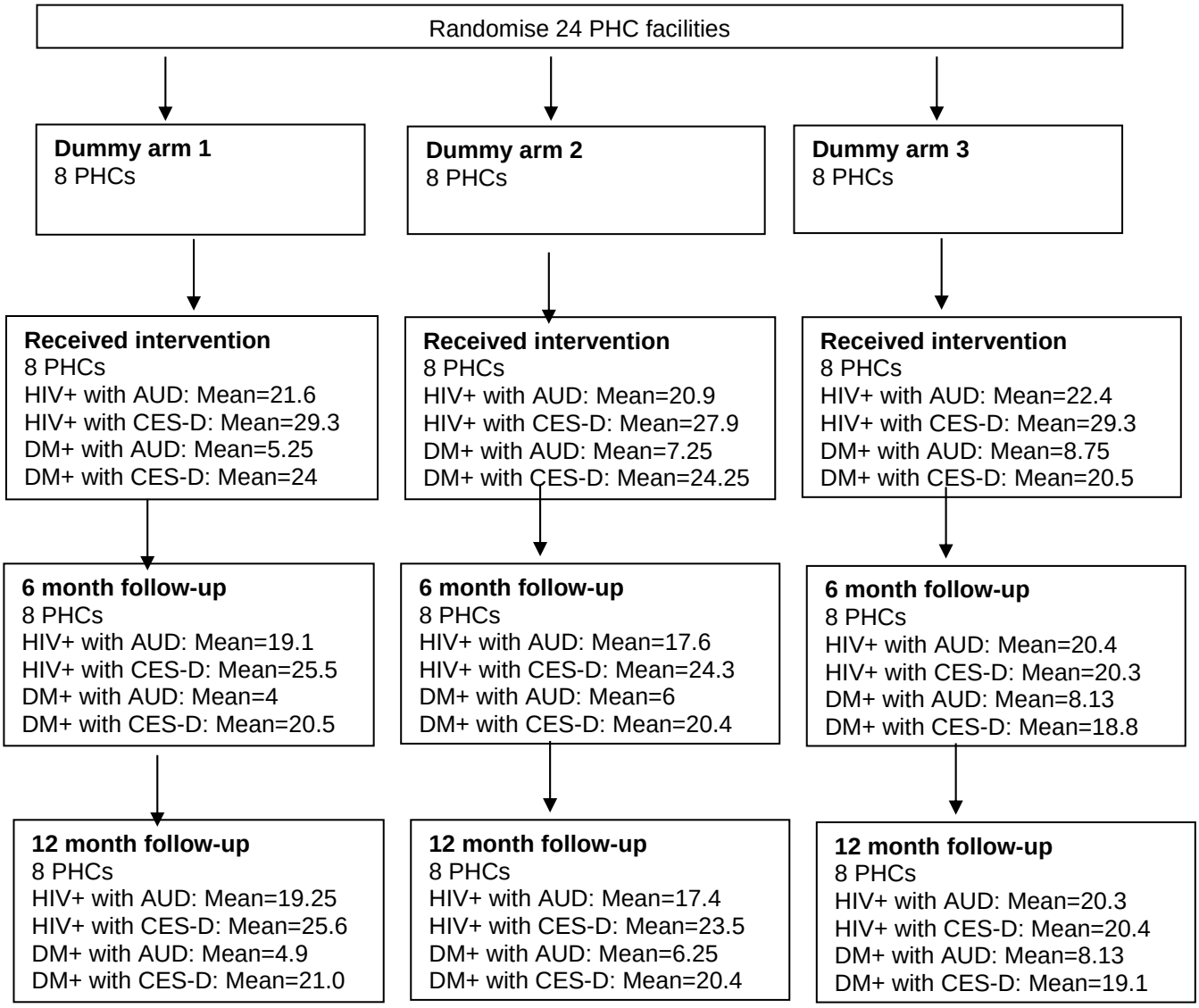

Table 1a: Baseline socio-demographic characteristics of participants with HIV, by trial arm

Baseline characteristic		**Designated arm**	**Dedicated arm**	**TAU**
Individual level				
Number of participants	Total			271
Gender (%)	Females Males			210 (77.5%) 61 (22.5%)
Age (in years)	Mean (SD)			
Marital status (%)	Married/living with partner Single/widowed/separated			
Race (%)	Black Coloured/Other			
Completed high school (%)	No Yes			
Housing instability	No Yes			
Employment	Unemployed Not unemployed			
Food insecurity	Never/seldom Sometimes/often			
Baseline current drinker	No Yes			

AUDIT category	Low risk Hazardous Harmful			
Current smoker	No Yes			
CES-D score	<16 >=16			
Virological failure (>1000)	No Yes			
Suppressed VL (<40)	No Yes			
Log10 viral load among those with VL≥40 copies/mL (mean)				

Table 1b: Baseline Socio-demographic characteristics of participants with DM, by trial arm

Participants with DM		**Designated arm**	**Dedicated arm**	**TAU**
Number of participants	Total			204
Gender (%)	Females Males			
Age (in years)	Mean (SD)			
Marital status (%)	Married/living with partner Single/widowed/separated			
Race (%)	Black Coloured Other			
Completed high school (%)	No Yes			
Housing instability	No Yes			
Employment	Unemployed Not unemployed			
Food insecurity	Never Seldom Sometimes Often			

Baseline current drinker	No Yes			
AUDIT category	Low risk Hazardous Harmful			
Current smoker	No Yes			
CES-D score	<16 >=16			
HbA1c level	<7 >=7			
HbA1c level (mean)				

Table 2a: Intervention effects on primary and secondary trial outcomes at 12 months among participants with HIV

	Designated vs TAU	Dedicated vs TAU	Designated vs Dedicated
Primary outcome: Adjusted[1] mean differences (95%CI)			
Alcohol use (AUD score)[2]			
Depressive symptoms (CES-D score)[3]			
Secondary outcomes- continuous: adjusted[1] mean differences (95%CI)			
Health related QoL (EQ-5D score)[4]			
Secondary outcomes- binary: adjusted[1] risk ratio (95%CI)			
Remission from AUD (AUD<8) [2]			
Remission from depressive symptoms (CES-D<16) [3]			
Virological suppression (log10 VL < 1000 copies/mL) [4]			
Adherence to HIV treatment (VAS $\geq$ 90%) [4]			

[1] Adjusted for strata (urban/rural site) and baseline measure of the outcome
[2] Among those with AUD $\geq$ 8 at baseline
[3] Among those with CES-D $\geq$ 16 at baseline
[4] Among all participants

Table 2b: Intervention effects on primary and secondary trial outcomes at 12 months among participants with DM

	Designated vs TAU	Dedicated vs TAU	Designated vs Dedicated
Primary outcome: Adjusted[1] mean differences (95%CI)			
Alcohol use (AUD score)[2]			
Depressive symptoms (CES-D score)[3]			
Secondary outcomes- continuous: adjusted[1] mean differences (95%CI)			
HbA1c level[4]			
Health related QoL (ED-5D score)[4]			
Secondary outcomes- binary: adjusted[1] risk ratio (95%CI)			
Remission from AUD (AUD<8) [2]			
Remission from depressive symptoms (CES-D<16) [3]			
Remission from depressive symptoms (CES-D<20) [3]			
Good glycaemic control (HbA1c < 7) [4]			

[1] Adjusted for strata (urban/rural site) and baseline measure of the outcome
[2] Among those with AUD $\geq$ 8 at baseline
[3] Among those with CES-D $\geq$ 16 at baseline
[4] Among all participants

Adherence to DM treatment (VAS $\geq$ 90%)

[1]Adjusted for stratification variables (urban/rural status) and baseline score of respective outcome measure.

Table 3a: Intervention effects on primary and secondary trial outcomes at 6 months among participants with HIV

	Designated vs TAU	Dedicated vs TAU	Designated vs Dedicated
Primary outcome: Adjusted[1] mean differences (95%CI)			
Alcohol use (AUD score)			
Depressive symptoms (CES-D score)			
Secondary outcomes- continuous: adjusted[1] mean differences (95%CI)			
HIV viral load (log10 viral load)			
Health related QoL (ED-5D score			
Secondary outcomes- binary: adjusted[1] risk ratio (95%CI)			
Remission from AUD (AUD<8)			
Remission from depressive symptoms (CES-D<16)			
Remission from depressive symptoms (CES-D<20)			
Virological suppression (log10 VL < 1000 copies/mL)			
Adherence to HIV treatment (VAS $\geq$ 90%)			

[1]Adjusted for stratification variables (urban/rural status) and baseline score of respective outcome measure.

Table 3b: Intervention effects on primary and secondary trial outcomes at 6 months among participants with DM

	Designated vs TAU	Dedicated vs TAU	Designated vs Dedicated
Primary outcome: Adjusted[1] mean differences (95%CI)			
Alcohol use (AUD score)			
Depressive symptoms (CES-D score)			
Secondary outcomes- continuous: adjusted[1] mean differences (95%CI)			
HbA1c level			
Health related QoL (ED-5D score)			
Secondary outcomes- binary: adjusted[1] risk ratio (95%CI)			
Remission from AUD (AUD<8)			
Remission from depressive symptoms (CES-D<16)			
Remission from depressive symptoms (CES-D<20)			
Good glycaemic control (HbA1c < 7)			
Adherence to DM treatment (VAS $\geq$ 90%)			

[1]Adjusted for stratification variables (urban/rural status) and baseline score of respective outcome measure.

Table 4a: Intervention effects on primary and secondary trial outcomes at 12 months among participants with HIV

	Designated vs TAU	Dedicated vs TAU	Designated vs Dedicated
Primary outcome: Adjusted[1] mean differences (95%CI)			
Alcohol use (AUD score)			
Depressive symptoms (CES-D score)			
Secondary outcomes- continuous: adjusted[1] mean differences (95%CI)			
HIV viral load (log10 viral load)			
Health related QoL (ED-5D score			
Secondary outcomes- binary: adjusted[1] risk ratio (95%CI)			
Remission from AUD (AUD<8)			
Remission from depressive symptoms (CES-D<16)			
Remission from depressive symptoms (CES-D<20)			
Virological suppression (log10 VL < 1000 copies/mL)			
Adherence to HIV treatment (VAS $\geq$ 90%)			

[1]Adjusted for stratification variables (urban/rural status) and baseline score of respective outcome measure.

Table 4a: Sensitivity analysis on primary and secondary trial outcomes at 12 months among participants with DM

	Designated vs TAU	Dedicated vs TAU	Designated vs Dedicated
Primary outcome: Adjusted[1] mean differences (95%CI)			
Alcohol use (AUD score)			
Depressive symptoms (CES-D score)			
Secondary outcomes- continuous: adjusted[1] mean differences (95%CI)			
HbA1c level			
Health related QoL (ED-5D score)			
Secondary outcomes- binary: adjusted[1] risk ratio (95%CI)			
Remission from AUD (AUD<8)			
Remission from depressive symptoms (CES-D<16)			
Remission from depressive symptoms (CES-D<20)			
Good glycaemic control (HbA1c < 7)			
Adherence to DM treatment (VAS $\geq$ 90%)			

[1]Adjusted for stratification variables (urban/rural status) and baseline score of respective outcome measure.

References

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