South Africa - Glycated haemoglobin threshold for dysglycaemia screening and application to metabolic syndrome diagnosis in HIV-infected Africans

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Report generated on: January 25, 2019

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Overview

Identification

ID NUMBER
HbA1cfordysglycaemiascreeninginHIV

Overview

ABSTRACT
Background: Glycated haemoglobin (HbA1c) test has been increasingly promoted as an alternative to fasting plasma glucose (FPG) or oral glucose tolerance test (OGTT) to diagnose dysglycaemia but its performance in HIV-infected Africans has yet to be established. This study aimed to assess the diagnostic accuracy of HbA1c for dysglycaemia including FPG-defined and OGTT-defined dysglycaemia, and OGTT-defined diabetes in HIV-infected Africans, and the effect of HbA1c-predicted dysglycaemia on Joint Interim Statement (JIS)-based prevalent metabolic syndrome (MS).

Methods: A cross-sectional study included HIV-positive patients recruited across public healthcare facilities in the Western Cape. The recommended HbA1c cut-points were tested alongside the optimal cut-points obtained from receiver operating characteristic curve analyses, while the agreement between the MS criteria were assessed using kappa statistic.

Results: 748 participants (157 men), median age 38 years, 93% on anti-retroviral drugs were included. The optimal HbA1c cut-points of 5.75% (39.3 mmol/mol) showed 54% sensitivity, 84% specificity for FPG-defined dysglycaemia, and 52% sensitivity, 85% specificity for OGTT-defined dysglycaemia. The HbA1c value of 5.85% (40.4 mmol/mol) (63% sensitivity, 99% specificity) was optimal for diabetes. The internationally advocated cut-point of 6.5% (48 mmol/mol) had 37% sensitivity and 99% specificity for diabetes, while HbA1c =5.7% (=39 mmol/mol) yielded similar performance with the study-specific cut-point for any dysglycaemia. MS prevalence by the JIS criteria (28.2%) increased to 29.7% when using HbA1c =5.75% (=39.3 mmol/mol) and to 32.9% with HbA1c =5.7% (=39 mmol/mol); agreement between the original and modified criteria was generally good.

Conclusions: This study agrees with the internationally recommended HbA1c cut-point for detecting dysglycaemia, but not for diabetes in HIV-infected Africans. In line with previous studies in general African populations, our findings suggest that similar factors interfere with HbA1c values regardless of HIV infection status. Replacing FPG-based with HbA1c-predicted dysglycaemia in the JIS criteria to diagnose MS is feasible in HIV-infected Africans.

Producers and Sponsors

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Sampling

No content available

Questionnaires

No content available

Data Collection

Data Collection Dates

Start	End	Cycle
2014-03-01	2015-02-28	N/A

Data Processing

No content available

Data Appraisal

No content available

File Description

Variable List

Data

Content	
Cases	748
Variable(s)	34
Structure	Type: Keys: ()
Version	
Producer	
Missing Data	

Variables

ID	Name	Label	Type	Format	Question
V1	PTId	PTId	discrete	character	
V2	Gender	Gender	discrete	numeric	
V3	Age	Age	contin	numeric	
V4	Weight1	Weight1	contin	numeric	
V5	Weight2	Weight2	contin	numeric	
V6	Height1	Height1	contin	numeric	
V7	Height2	Height2	contin	numeric	
V8	Waist1	Waist1	contin	numeric	
V9	Waist2	Waist2	contin	numeric	
V10	nd_SBP	nd_SBP	contin	numeric	
V11	nd_DBP	nd_DBP	contin	numeric	
V12	rd_SBP	rd_SBP	contin	numeric	
V13	rd_DBP	rd_DBP	contin	numeric	
V14	HIVDxy	HIVDxy	discrete	character	
V15	HIVDxm	HIVDxm	discrete	character	
V16	HIVDxw	HIVDxw	discrete	character	
V17	HIVDxd	HIVDxd	discrete	character	
V18	Value_CD4	Value_CD4	discrete	character	
V19	ART_use	ART_use	discrete	character	
V20	HTN_Rx	HTN_Rx	discrete	numeric	
V21	DM_Rx	DM_Rx	discrete	numeric	
V22	Chol_Rx	Chol_Rx	discrete	numeric	
V23	ALT	ALT	contin	numeric	
V24	AST	AST	discrete	character	
V25	HDLC	HDLC	contin	numeric	
V26	CHOLESTEROLS	CHOLESTEROLS	discrete	character	
V27	CREATININES	CREATININES	discrete	character	

ID	Name	Label	Type	Format	Question
V28	hsCRP	hsCRP	discrete	character	
V29	GAMMAGT	GAMMAGT	discrete	character	
V30	GLUCOSE2h	GLUCOSE2h	discrete	character	
V31	GLUCOSEf	GLUCOSEf	contin	numeric	
V32	HbA1c	HbA1c	contin	numeric	
V33	LDLC	LDLC	contin	numeric	
V34	TGS	TGS	contin	numeric	

PTId (PTId)
File: Data

Overview

Type: Discrete
Format: character
Width: 3

Valid cases: 748
Invalid: 0

Gender (Gender)
File: Data

Overview

Type: Discrete
Format: numeric
Decimals: 0
Range: 1-2

Valid cases: 748
Invalid: 0

Age (Age)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 18-72

Valid cases: 748
Invalid: 0
Minimum: 18
Maximum: 72
Mean: 38.5
Standard deviation: 9

Weight1 (Weight1)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 37.75-140.75

Valid cases: 748
Invalid: 0
Minimum: 37.8
Maximum: 140.8
Mean: 71.3
Standard deviation: 17.6

Weight2 (Weight2)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 37.7-140.75

Valid cases: 748
Invalid: 0
Minimum: 37.7
Maximum: 140.8
Mean: 71.3
Standard deviation: 17.6

Height1 (Height1)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 137.2-185.6

Valid cases: 748
Invalid: 0
Minimum: 137.2
Maximum: 185.6
Mean: 161.1
Standard deviation: 7.6

Height2 (Height2)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 136.8-185.4

Valid cases: 748
Invalid: 0
Minimum: 136.8
Maximum: 185.4
Mean: 161.1
Standard deviation: 7.6

Waist1 (Waist1)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 62-149.1

Valid cases: 748
Invalid: 0
Minimum: 62
Maximum: 149.1
Mean: 88.9
Standard deviation: 14.4

Waist2 (Waist2)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 61.8-149.5

Valid cases: 748
Invalid: 0
Minimum: 61.8
Maximum: 149.5
Mean: 89.1
Standard deviation: 14.4

nd_SBP (nd_SBP)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 77-218

Valid cases: 748
Invalid: 0
Minimum: 77
Maximum: 218
Mean: 121.3
Standard deviation: 20.1

nd_DBP (nd_DBP)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 48-134

Valid cases: 748
Invalid: 0
Minimum: 48
Maximum: 134
Mean: 83.7
Standard deviation: 12.8

rd_SBP (rd_SBP)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 76-223

Valid cases: 748
Invalid: 0
Minimum: 76
Maximum: 223
Mean: 120
Standard deviation: 19.7

rd_DBP (rd_DBP)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 49-135

Valid cases: 748
Invalid: 0
Minimum: 49
Maximum: 135
Mean: 83
Standard deviation: 12.8

HIVDxy (HIVDxy)
File: Data

Overview

Type: Discrete
Format: character
Width: 2

Valid cases: 748
Invalid: 0

HIVDxm (HIVDxm)
File: Data

Overview

Type: Discrete
Format: character
Width: 2

Valid cases: 748
Invalid: 0

HIVDxw (HIVDxw)
File: Data

HIVDxw (HIVDxw)
File: Data

Overview

Type: Discrete
Format: character
Width: 2

Valid cases: 748
Invalid: 0

HIVDxd (HIVDxd)
File: Data

Overview

Type: Discrete
Format: character
Width: 3

Valid cases: 748
Invalid: 0

Value_CD4 (Value_CD4)
File: Data

Overview

Type: Discrete
Format: character
Width: 4

Valid cases: 748
Invalid: 0

ART_use (ART_use)
File: Data

Overview

Type: Discrete
Format: character
Width: 2

Valid cases: 748
Invalid: 0

HTN_Rx (HTN_Rx)
File: Data

Overview

Type: Discrete
Format: numeric
Decimals: 0
Range: 0-2

Valid cases: 748
Invalid: 0

DM_Rx (DM_Rx)
File: Data

Overview

Type: Discrete
Format: numeric
Decimals: 0
Range: 0-2

Valid cases: 748
Invalid: 0

Chol_Rx (Chol_Rx)
File: Data

Overview

Type: Discrete
Format: numeric
Decimals: 0
Range: 0-1

Valid cases: 748
Invalid: 0

ALT (ALT)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 0
Range: 6-380

Valid cases: 748
Invalid: 0
Minimum: 6
Maximum: 380
Mean: 29.3
Standard deviation: 26.2

AST (AST)
File: Data

Overview

Type: Discrete
Format: character
Width: 3

Valid cases: 748
Invalid: 0

HDLC (HDLC)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 0.5-3.27

Valid cases: 748
Invalid: 0
Minimum: 0.5
Maximum: 3.3
Mean: 1.3
Standard deviation: 0.4

CHOLESTEROLS (CHOLESTEROLS)
File: Data

Overview

Type: Discrete
Format: character
Width: 17

Valid cases: 748
Invalid: 0

CREATININES (CREATININES)
File: Data

Overview

CREATININES (CREATININES)
File: Data

Type: Discrete
Format: character
Width: 3

Valid cases: 748
Invalid: 0

hsCRP (hsCRP)
File: Data

Overview

Type: Discrete
Format: character
Width: 17

Valid cases: 748
Invalid: 0

GAMMAGT (GAMMAGT)
File: Data

Overview

Type: Discrete
Format: character
Width: 3

Valid cases: 748
Invalid: 0

GLUCOSE2h (GLUCOSE2h)
File: Data

Overview

Type: Discrete
Format: character
Width: 17

Valid cases: 748
Invalid: 0

GLUCOSEf (GLUCOSEf)
File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 3.2-21.2

Valid cases: 748
Invalid: 0
Minimum: 3.2
Maximum: 21.2
Mean: 5.4
Standard deviation: 1.7

HbA1c (HbA1c)
File: Data

Overview

HbA1c (HbA1c)

File: Data

Type: Continuous
Format: numeric
Decimals: 2
Range: 4.2-13.6

Valid cases: 748
Invalid: 0
Minimum: 4.2
Maximum: 13.6
Mean: 5.6
Standard deviation: 0.8

LDLC (LDLC)

File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 0.4-5.6

Valid cases: 748
Invalid: 0
Minimum: 0.4
Maximum: 5.6
Mean: 2.6
Standard deviation: 0.9

TGS (TGS)

File: Data

Overview

Type: Continuous
Format: numeric
Decimals: 2
Range: 0.35-6.99

Valid cases: 748
Invalid: 0
Minimum: 0.4
Maximum: 7
Mean: 1.1
Standard deviation: 0.6