

DEFINITIONS OF THE METABOLIC SYNDROME

KGMM Alberti

THE "ORIGINAL" SYNDROME X

- Resistance to insulin-stimulated glucose uptake
- Glucose intolerance
- Hyperinsulinaemia
- Increased VLDL-triglyceride
- Decreased HDL-cholesterol
- Hypertension

Reaven, 1988

SYNONYMS

- Syndrome X METABOLIC SYNDROME
- Metabolic Syndrome X
- Plurimetabolic Syndrome
- Dysmetabolic Syndrome, etc.
- Insulin Resistance Syndrome

METABOLIC SYNDROME 1997

Key components

- Glucose intolerance
- Hypertension
- Hypertriglyceridaemia
- ↓ Fibrinolysis
- ↑ Apolipoprotein B
- ↓ Small dense LDL
- ↓ HDL-cholesterol

Insulin resistance

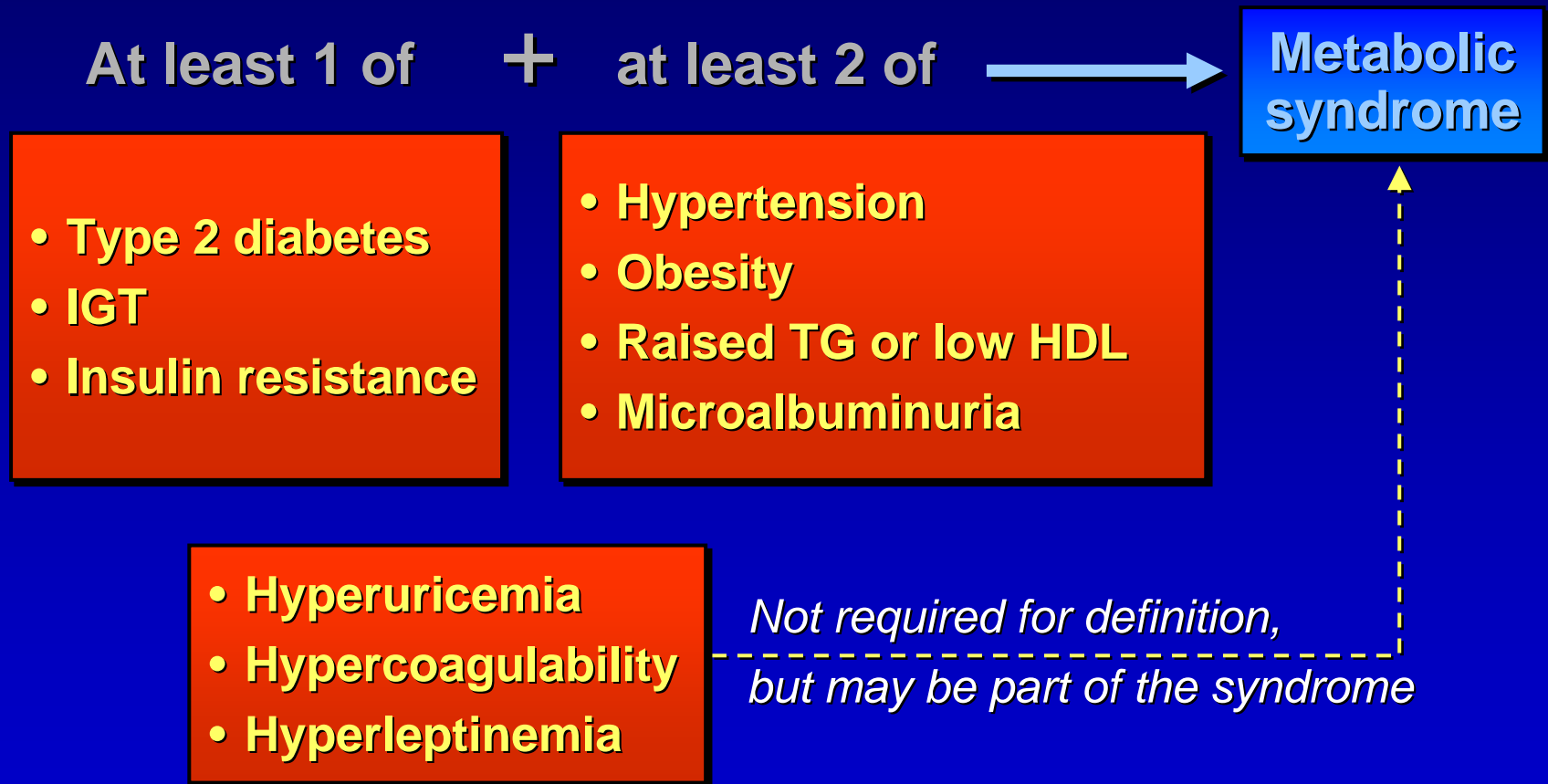
Endothelial dysfunction

Obesity

WHO - 1999

Attempt to describe and
define the Syndrome - not
as the final word but to
create interest and debate

Metabolic Syndrome - WHO 1999



EGIR 1999

- Insulin resistance + 2 or more of:
- Central obesity (94 cmM; 80 cmF)
- TG >2.9 mM OR HDL <1.0
- Hypertension ($\geq 140/90$)
- FPG ≥ 6.1 mM

ATP III - DEFINITION 2001

3 or more of:

- Central obesity [waist circumference >102 cm (M); 88 cm (F)]
- Hyper TG (≥ 1.7 mM)
- HDL-cholesterol (<1.0 (M); <1.3 (F))
- Hypertension (BP $\geq 135/85$)
- FPG ≥ 6.1 mM

RESULT

- confusion!

IDF CONSENSUS MEETING 2004

Aims

1. To bring together individuals with different viewpoints
2. To establish a unified working diagnostic tool
3. To highlight areas where more knowledge is needed

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Agreed Components

Adiposity

↑ TG; ↓ HDL-cholesterol

↑ BP

Dysglycaemia

[? Insulin resistance]

NB Need for practical guide usable world-wide

WAIST GIRTH

ATP III 102 cm (M); 88 cm (F)

OR

EGIR 94 cm (M); 80 cm (F)

IDF CONSENSUS

Central Obesity

	M	F
	<u>(cm)</u>	
Europids	94	80
South Asians	90	80
Chinese	90	80
Japanese	85	90

Sub-Saharan Africans, Middle East – use Europid figures

South/Central Americans – use South Asian figures

AHA/NHLBI DEFINITION 2005

3 or more of:

- Central obesity [waist circumference >102 cm (M); 88 cm (F)] *
- Hyper TG (≥ 1.7 mM)
- HDL-cholesterol (<1.0 (M); <1.3 (F))
- Hypertension (BP $\geq 135/85$)
- FPG ≥ 5.6 mM (100 mg/dl)

* May need to be ethnicity specific

PROBLEM

- Will need further refinement
- Requires long term outcome studies

N.B.

Does not give **ABSOLUTE** risk
but picks out those at high
RELATIVE risk

N.B.

Should be used together with other risk markers

e.g. LDL-cholesterol

Smoking

Family history

= OVERALL "CARDIOMETABOLIC RISK"

**THE METABOLIC SYNDROME
TIME FOR
A CRITICAL APPRAISAL**

**R Kahn, E Ferrannini, J Buse, M Stern
on behalf of ADA & EASD**

Diabetologia 2005; 28: 2289-2304

IDF POSITION

- A useful way of focusing on subjects at high risk of CVD and diabetes
- A simple diagnostic “set” capable of use in primary care world wide
- Strong need for long term detailed studies of other putative components
- Does not replace attention to individual risk factors but is complementary

METABOLIC SYNDROME

A cluster of risk factors for
diabetes and cardiovascular
disease

- greater than by chance alone