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

Insulin resistance

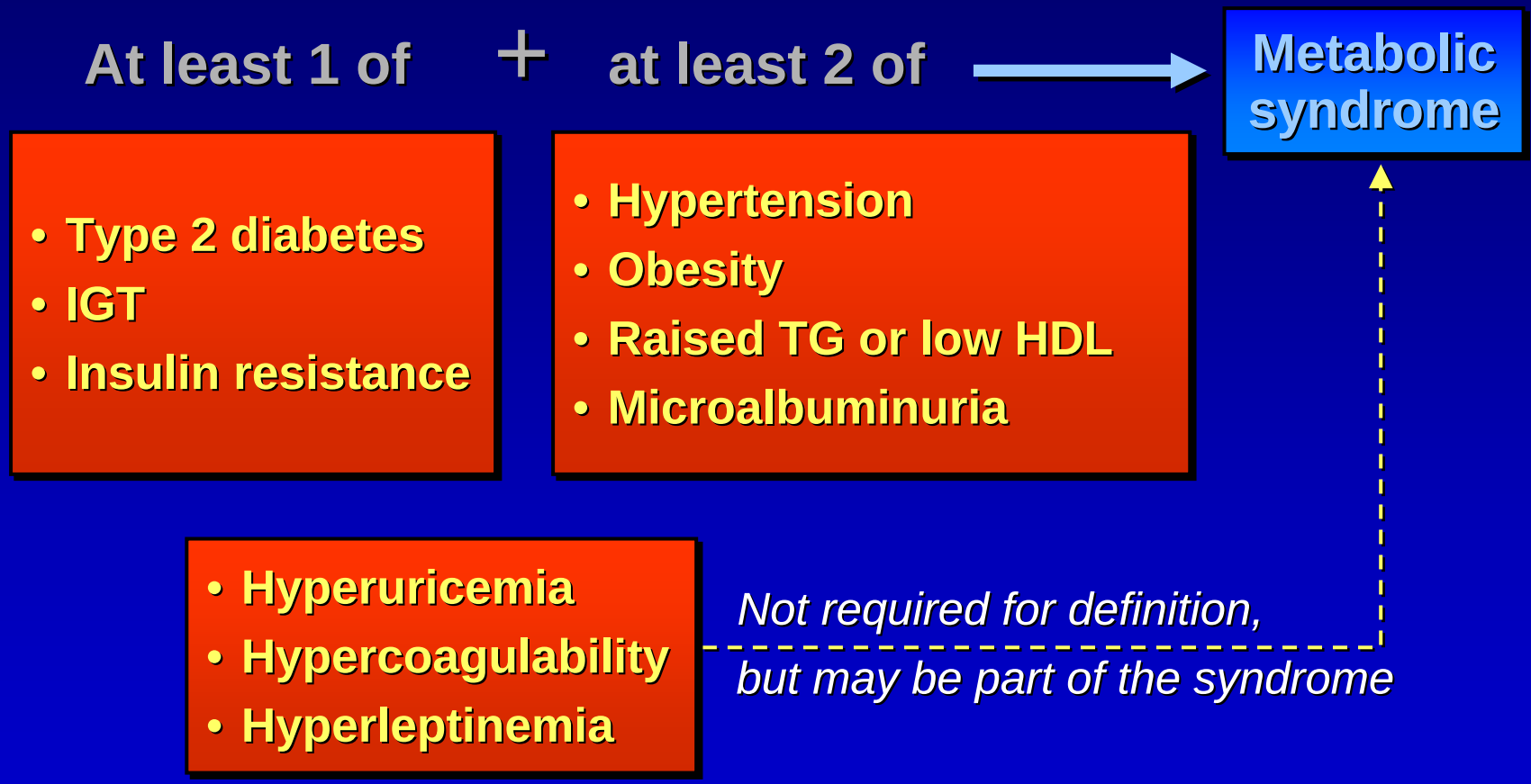
Endothelial dysfunction

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 (≥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 ≥ 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

IDF CONSENSUS

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
	(cm)	
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 ≥ 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