

Le Syndrome Métabolique

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Genève, le 20 mars 2007

Facteurs de risques cardio-vasculaires

Age

Diabète

Anamnèse familiale

Tabagisme

Surcharge pondérale

Hypertension artérielle

Dyslipidémie

Sédentarité

Problèmes psycho-sociaux

Antécédents cardio-vasculaires

Genre masculin

Facteurs de risques cardio-vasculaires

Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

Salim Yusuf, Steven Hawken, Stephanie Ôunpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais, John Varigos, Liu Lisheng, on behalf of the INTERHEART Study Investigators*



Lancet 2004; 364: 937-52

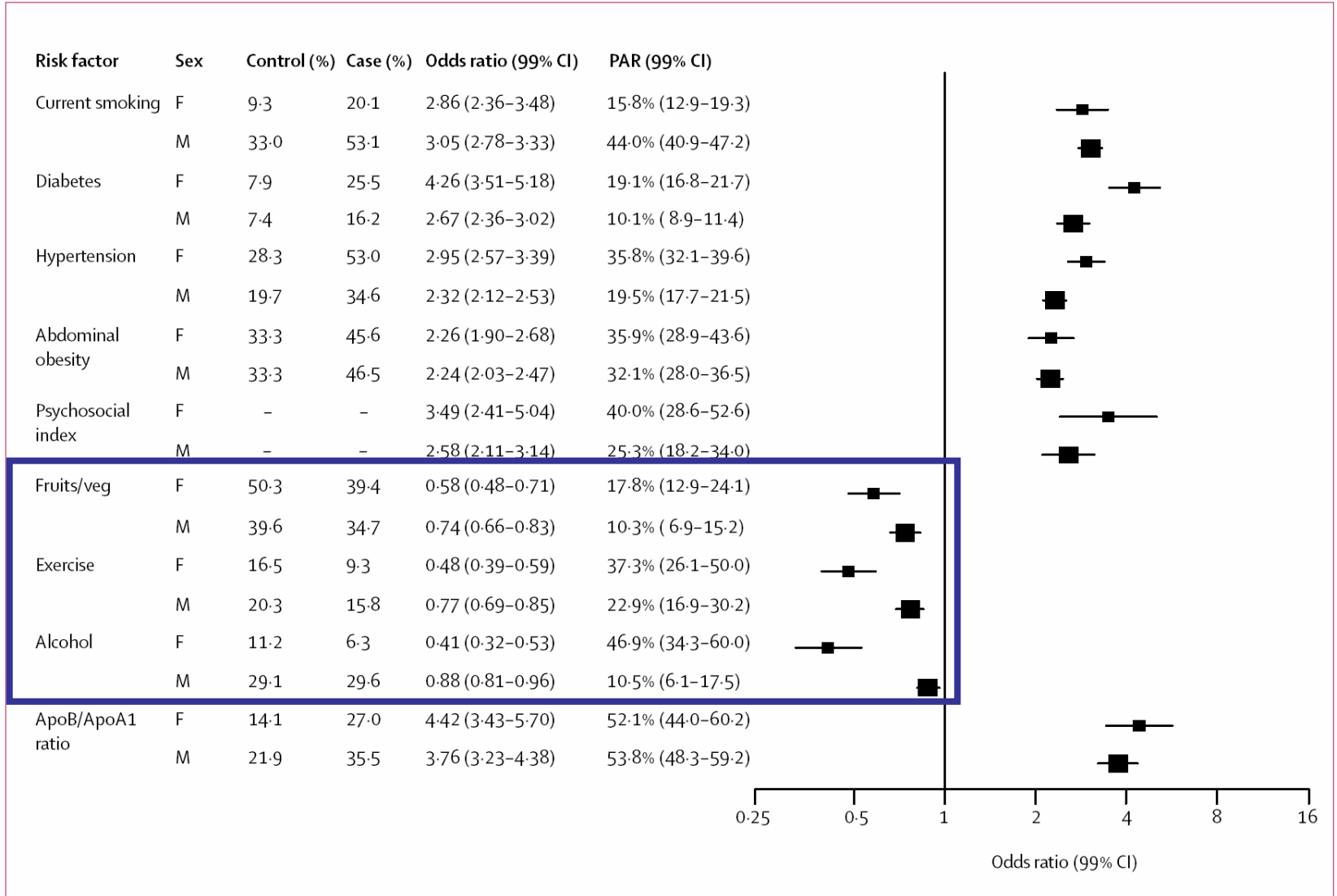
Published online
September 3, 2004

Summary

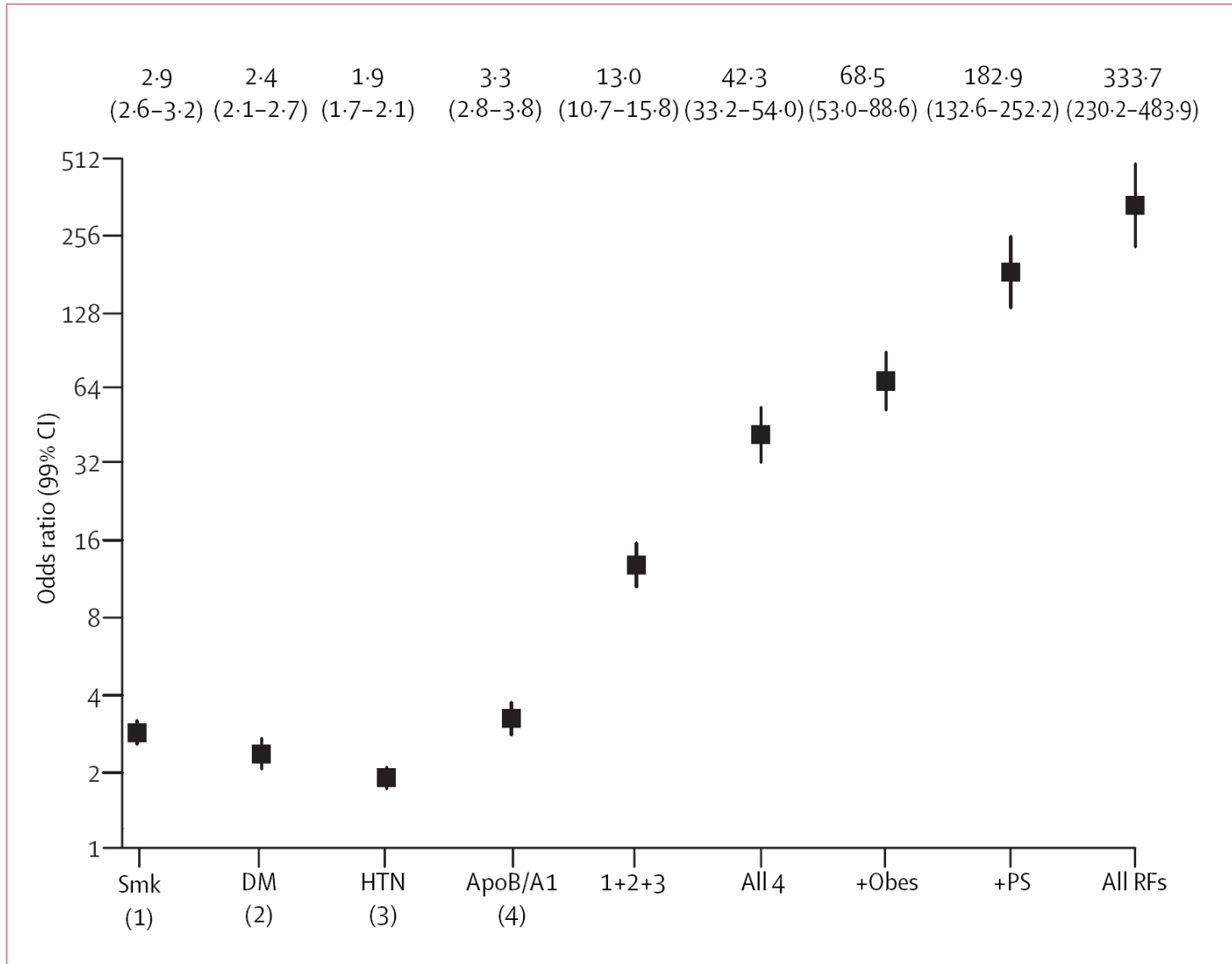
Background Although more than 80% of the global burden of cardiovascular disease occurs in low-income and middle-income countries, knowledge of the importance of risk factors is largely derived from developed countries. Therefore, the effect of such factors on risk of coronary heart disease in most regions of the world is unknown.

Methods We established a standardised case-control study of acute myocardial infarction in 52 countries, representing every inhabited continent. 15 152 cases and 14 820 controls were enrolled. The relation of smoking, history of hypertension or diabetes, waist/hip ratio, dietary patterns, physical activity, consumption of alcohol, blood apolipoproteins (Apo), and psychosocial factors to myocardial infarction are reported here. Odds ratios and their 99% CIs for the association of risk factors to myocardial infarction and their population attributable risks (PAR) were calculated.

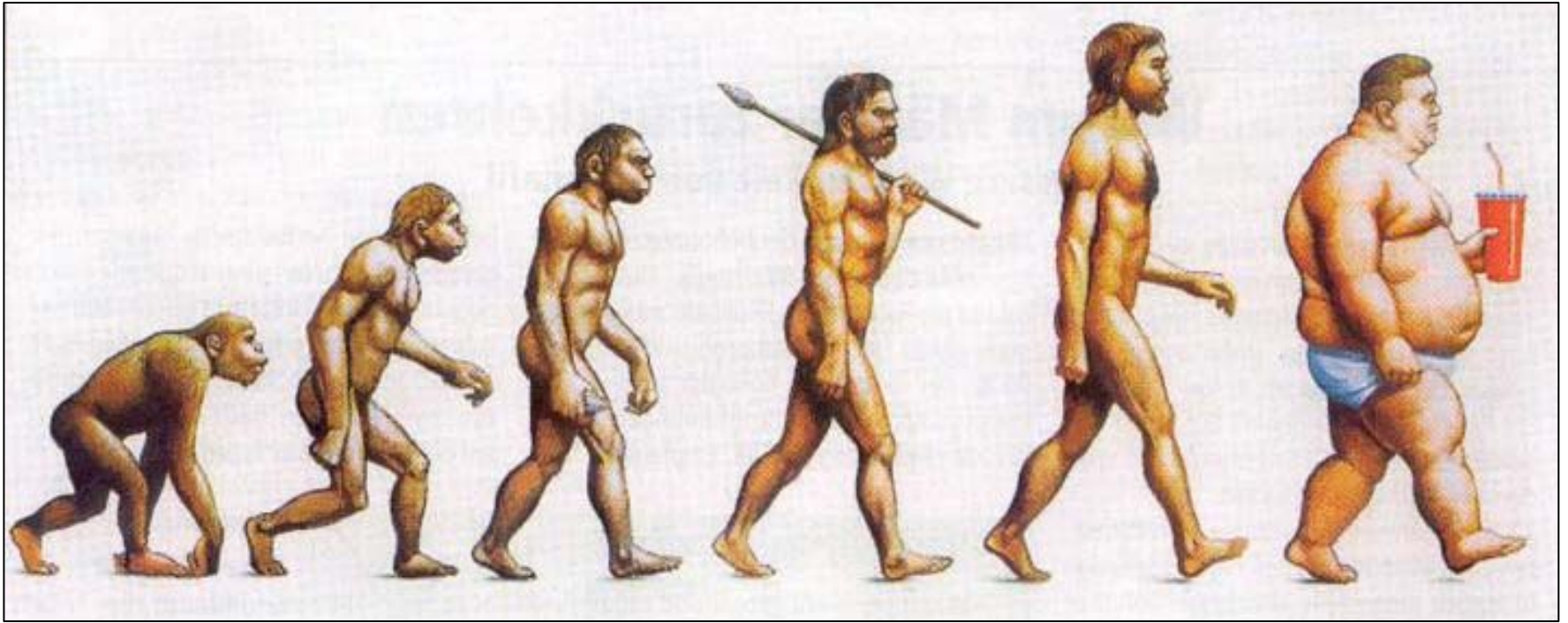
Facteurs de risques cardio-vasculaires



Facteurs de risques cardio-vasculaires



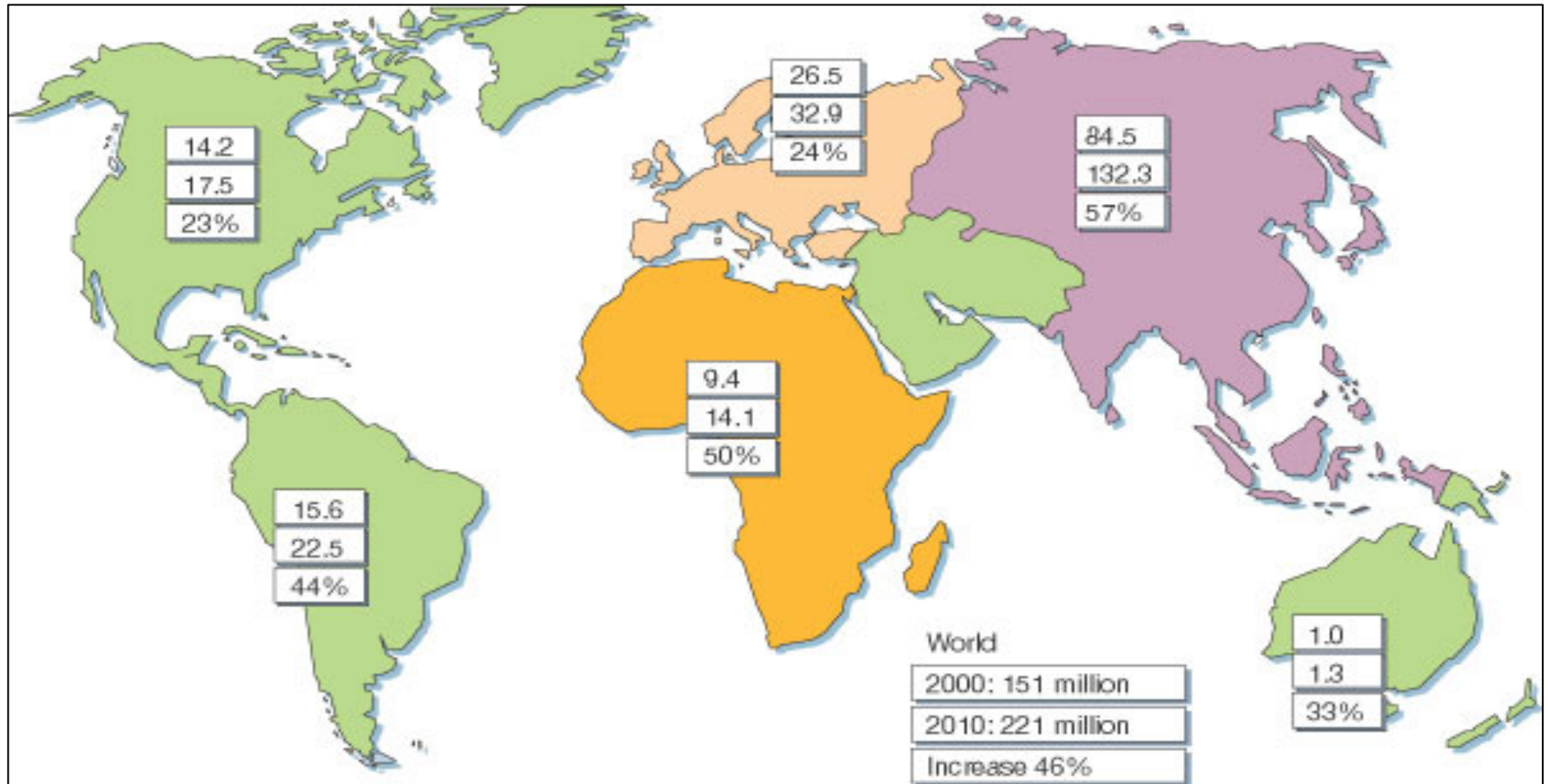
Facteurs de risques cardio-vasculaires



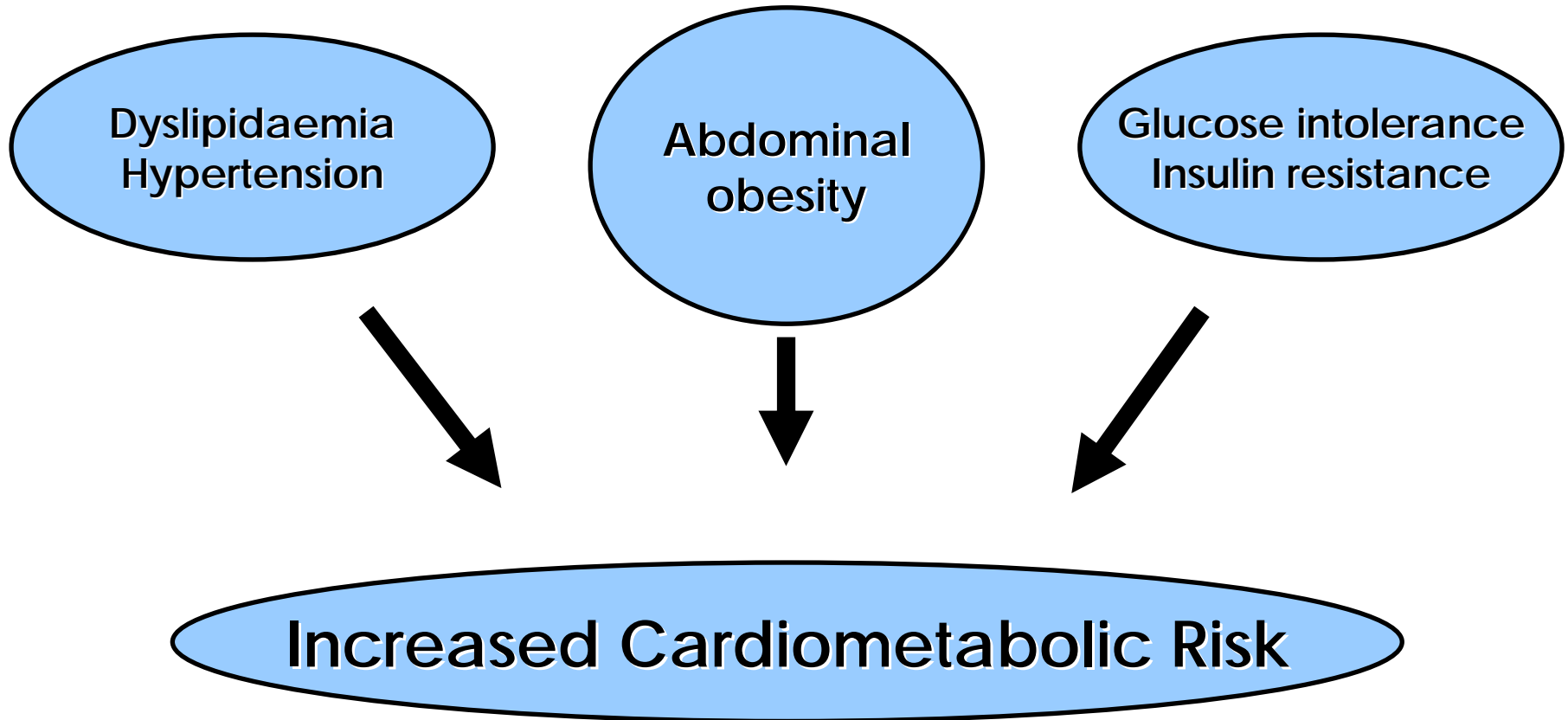
Something somewhere went terribly wrong...

Facteurs de risques cardio-vasculaires

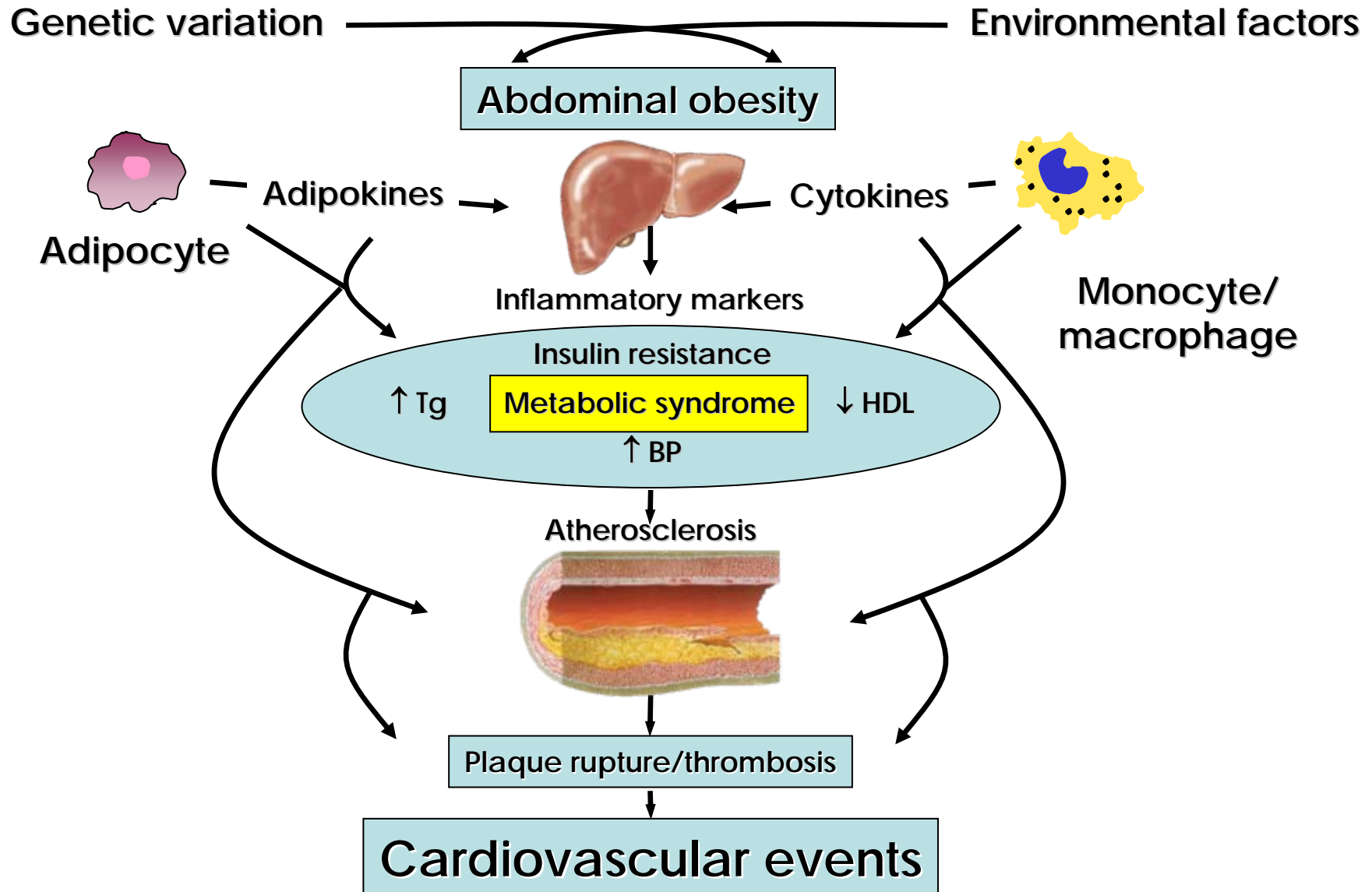
Worldwide epidemia of « diabetes »



Multiple cardiovascular risk factors drive adverse clinical outcomes



Pathophysiology of the metabolic syndrome leading to atherosclerotic CV disease



Syndrome Métabolique: Définitions / Critères

NHLBI/AHA Conference Proceedings

Definition of Metabolic Syndrome

Report of the National Heart, Lung, and Blood Institute/American Heart Association Conference on Scientific Issues Related to Definition

Components of Metabolic Syndrome

ATP III¹ identified 6 components of the metabolic syndrome that relate to CVD:

- Abdominal obesity
- Atherogenic dyslipidemia
- Raised blood pressure
- Insulin resistance \pm glucose intolerance
- Proinflammatory state
- Prothrombotic state

Syndrome Métabolique: Définitions / Critères

TABLE 1. Metabolic Syndrome Definitions of NCEP, WHO, EGIR, and ACE

| | NCEP | WHO | EGIR | ACE |
|-----------------------------|--|---|--|--|
| Required | ... | Required: Insulin in top 25%; glucose ≥ 6.1 mmol/L [110 mg/dL]; 2-hour glucose ≥ 7.8 mmol/L [140 mg/dL] | Required: Insulin in top 25% | High risk*; BMI >25 kg/m ² or waist ≥ 102 cm (men) or ≥ 88 cm (women) |
| No. of abnormalities | ≥ 3 of: | And ≥ 2 of: | And ≥ 2 of: | And ≥ 2 of: |
| Glucose | ≥ 6.1 mmol/L [110 mg/dL] | | ≥ 6.1 mmol/L [110 mg/dL] | ≥ 6.1 mmol/L [110 mg/dL]; 2-hour glucose ≥ 7.8 mmol/L [140 mg/dL] |
| HDL cholesterol | <1.0 mmol/L [40 mg/dL] (men); <1.3 mmol/L [50 mg/dL] (women) | <0.9 mmol/L [35 mg/dL] (men); <1.0 mmol/L [40 mg/dL] (women) or | <1.0 mmol/L [40 mg/dL] | <1.0 mmol/L [40 mg/dL] (men); <1.3 mmol/L [50 mg/dL] (women) |
| Triglycerides | ≥ 1.7 mmol/L [150 mg/dL] | ≥ 1.7 mmol/L [150 mg/dL] | ≥ 2.0 mmol/L [180 mg/dL] | ≥ 1.7 mmol/L [150 mg/dL] |
| Obesity | Waist ≥ 102 cm (men) or ≥ 88 cm (women) | Waist/hip ratio >0.9 (men) or >0.85 (women); BMI ≥ 30 kg/m ² | Waist ≥ 94 cm (men) or ≥ 80 cm (women) | |
| Hypertension | $\geq 130/85$ mm Hg | $\geq 140/90$ mm Hg | $\geq 140/90$ mm Hg | $\geq 130/85$ mm Hg |

Syndrome Métabolique: Définitions / Critères

| | ICD-9 2000 | OMS 1998 | AHA 2001 | IDF 2000 | ADA 2001 | ATP III 2001 |
|----------------------|---------------|-------------|-------------|-------------|-------------|-----------------|
| Rés. Insuline | ● | ● | ● | ● | ● | ■ |
| HDL bas | ● | ● | ● | ● | ● | ● |
| Pres. Art. élevée | ● | ● | ● | ● | ● | ● |
| Tg élevés | ● | ● | ● | ■ | ● | ● |
| Obésité centrale | ● | ● | ● | ■ | ● | ● |
| Intol. gluc | ■ | ● | ● | ■ | ● | ● |
| DM | ■ | ● | ● | ● | ■ | ■ |
| LDL élevés | ■ | ■ | ■ | ● | ■ | ■ |



Inclus dans la définition



Exclus de la définition

Syndrome Métabolique: Définitions / Critères

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www.agla.ch

Evaluation du risque cardiovasculaire

Identification des situations particulières à risque

- Maladie coronarienne / athérosclérose connue ou établie
- Diabète¹
- Hyperlipidémies familiales
- Syndrome métabolique

Critères de diagnostic de syndrome métabolique²

Au moins trois des critères suivants doivent être remplis:

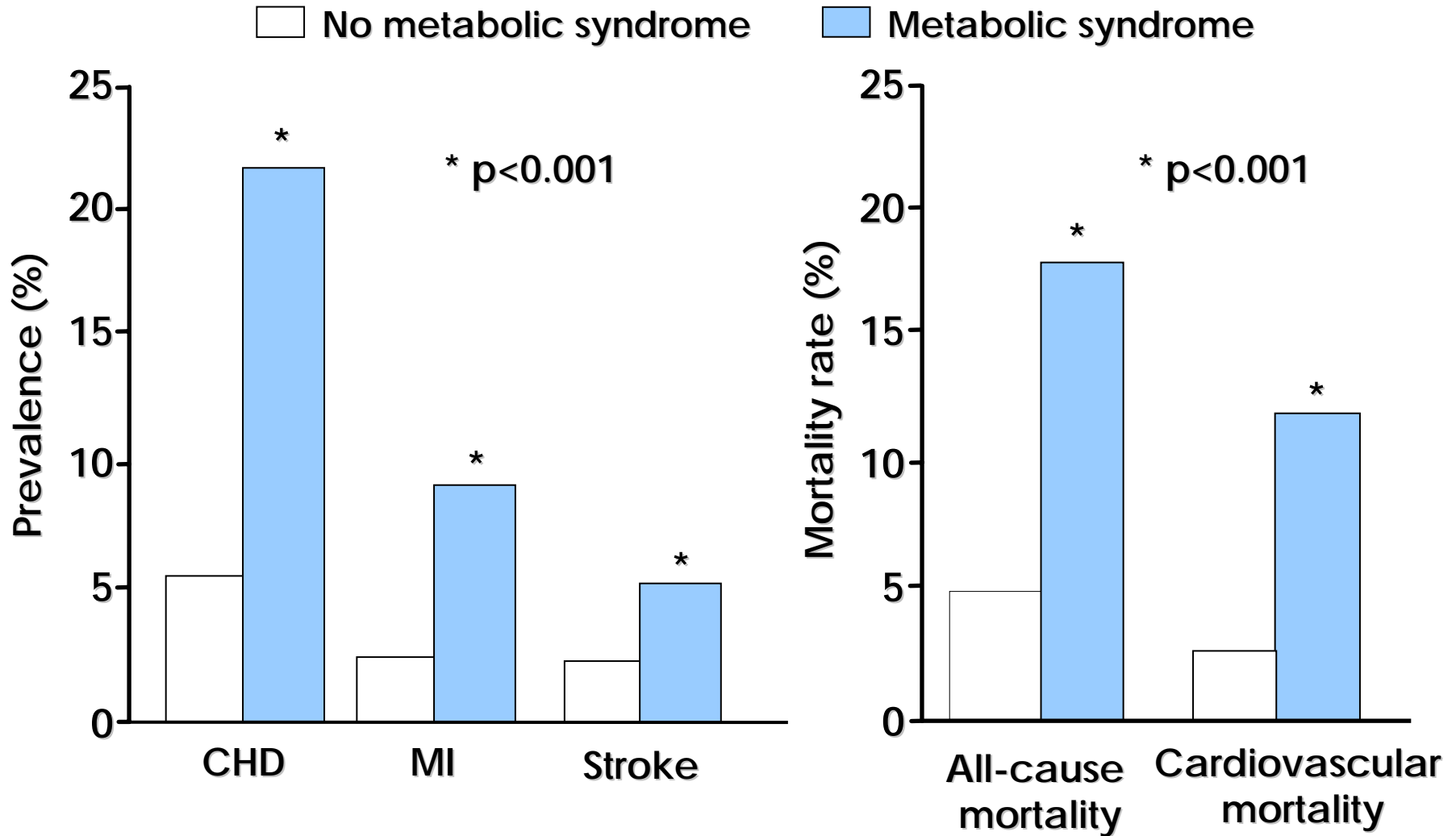
- Périmètre abdominal > 102 cm chez les hommes, > 88 cm chez les femmes
- Taux de triglycérides à jeun $\geq 1,7$ mmol / l
- HDL-cholestérol <1,0 mmol / l chez les hommes, <1,3 mmol / l chez les femmes
- Pression artérielle systolique ≥ 130 mm Hg et / ou pression artérielle diastolique ≥ 85 mm Hg
- Taux plasmatique de glucose $\geq 6,1$ mmol / l ($\geq 5,6$ mmol / l selon l'ADA³)

¹ Par principe, tous les patients diabétiques se situent dans une situation de risque particulière, même si, en cas de diabète de type 1 bien équilibré et sans complications secondaires, le risque cardio-vasculaire n'est que légèrement augmenté par rapport à la population non diabétique.

² Selon les recommandations de l'IDF (2005): périmètre abdominal ≥ 94 chez les hommes, ≥ 80 chez les femmes et 2 des 4 autres risques.

³ American Diabetes Association

Metabolic syndrome has a negative impact on CV health and mortality



Syndrome Métabolique vs addition des risques CV

Comparaison entre risque CV donné par le syndrome métabolique et l'addition de ces risques

5 études:

Aucune ne montre une supériorité du syndrome métabolique par rapport à l'addition des facteurs de risque

Syndrome Métabolique vs addition des risques CV

Metabolic syndrome, diabetes and adverse outcomes post-MI

Increases in risk

| | Metabolic syndrome | Diabetes |
|----------------------------|-----------------------|--------------------|
| Death | +29% (p=0.002) | +68% (p<0.0001) |
| Cardiovascular events | +23% (p=0.005) | +47% (p<0.0001) |
| Hospitalisation for CHF | +24% (p=0.241) | +89% (p<0.0003) |

Syndrome Métabolique vs addition des risques CV

Metabolic Syndrome and 10-Year Cardiovascular Disease Risk in the Hoorn Study

Jacqueline M. Dekker, PhD; Cynthia Girman, PhD; Thomas Rhodes, MSPH; Giel Nijpels, MD, PhD; Coen D.A. Stehouwer, MD, PhD; Lex M. Bouter, PhD; Robert J. Heine, MD, PhD

Background—Different definitions of the metabolic syndrome have been proposed. Their value in a clinical setting to assess cardiovascular disease (CVD) risk is still unclear. We compared the definitions proposed by the National Cholesterol Education Program Adult Treatment Panel III (NCEP), World Health Organization (WHO), European Group for the Study of Insulin Resistance (EGIR), and American College of Endocrinology (ACE) with respect to the prevalence of the metabolic syndrome and the association with 10-year risk of fatal and nonfatal CVD.

Methods and Results—The Hoorn Study is a population-based cohort study. The present study population comprised 615 men and 749 women aged 50 to 75 years and without diabetes or a history of CVD at baseline in 1989 to 1990. The prevalence of the metabolic syndrome at baseline ranged from 17% to 32%. The NCEP definition was associated with about a 2-fold increase in age-adjusted risk of fatal CVD in men and nonfatal CVD in women. For the WHO, EGIR, and ACE definitions, these hazard ratios were slightly lower. Risk increased with the number of risk factors. Elevated insulin levels were more prevalent in subjects with multiple risk factors, but metabolic syndrome definitions including elevated insulin level were not more strongly associated with risk.

Syndrome Métabolique vs addition des risques CV

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Conclusions—The metabolic syndrome, however defined, is associated with an approximate 2-fold increased risk of incident cardiovascular morbidity and mortality in a European population. In clinical practice, a more informative assessment can be obtained by taking into account the number of individual risk factors.

Syndrome Métabolique

Réalité ou usurpation clinique ?

The metabolic syndrome: Time for a critical appraisal

Joint statement from the American Diabetes Association and the European Association for the Study of Diabetes
Diabetes Care 2005 28:2289-2304

- How clear is the existing definition of MS?
- How useful is MS in predicting CVD?
- Does MS predict more than the sum of its parts?
- Are the components of MS the result of a common pathological process (eg, insulin resistance)?
- Does treatment of MS differ from treatment of its components?
- What needs to be done to improve our understanding?

Growing prevalence of abdominal obesity

US National Health and Nutrition Examination Survey (NHANES)

| | NHANES III (1988–1994) | NHANES (1999–2000) | Relative change |
|-------|---------------------------|-----------------------|--------------------|
| Men | 29.5% | 36.9% | + 28% |
| Women | 46.7% | 55.1% | + 18% |

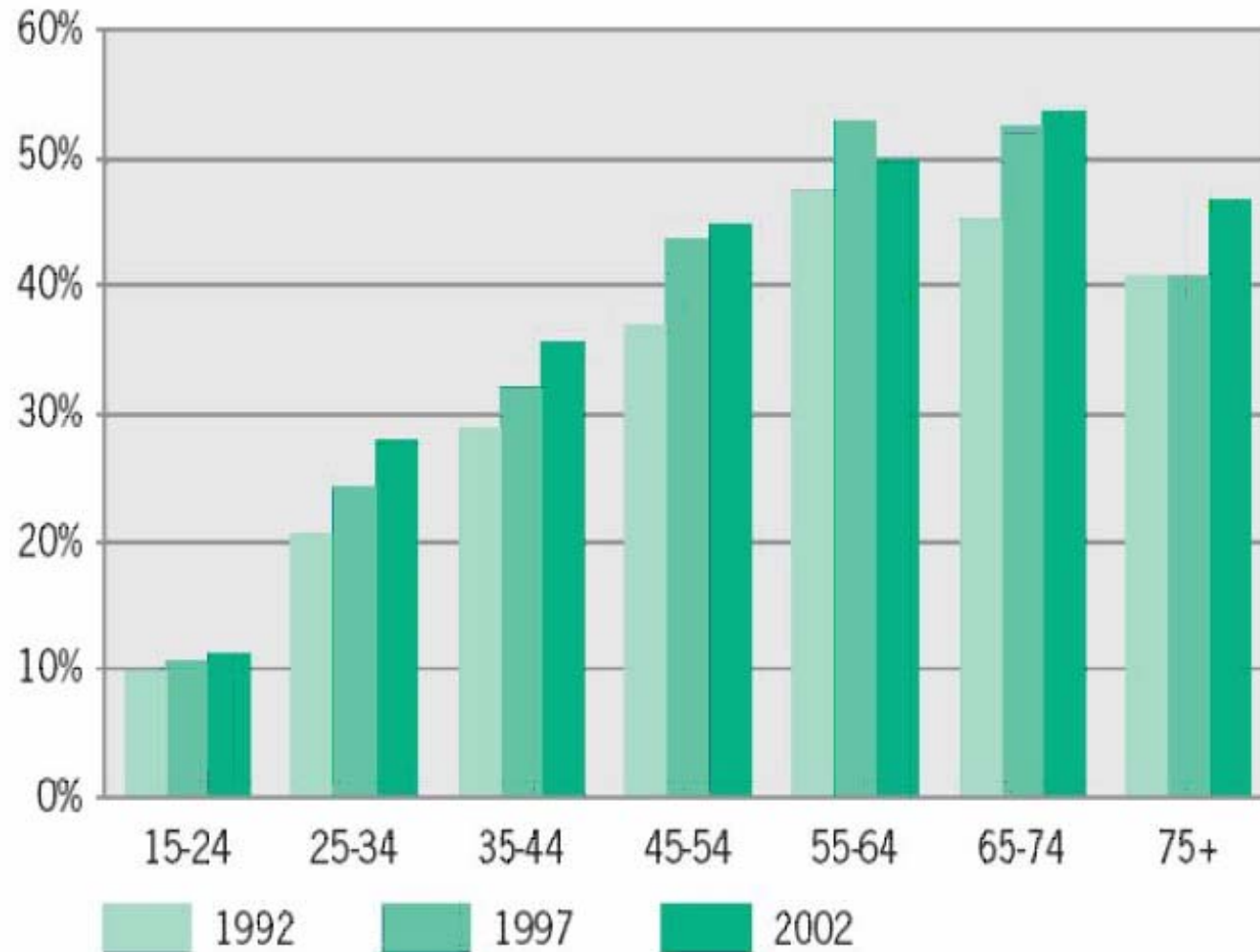
Abdominal obesity defined as waist circumference: >102 cm (>40 in) in men or >88 cm (>35 in) in women

Abdominal obesity has reached epidemic proportions worldwide

| | Men (%) | Women (%) | Total (%) |
|-------------|---------|-----------|-----------|
| US | 36.9 | 55.1 | 46.0 |
| Spain | 30.5 | 37.8 | 34.7 |
| Italy | 24.0 | 37.0 | 31.5 |
| UK | 29.0 | 26.0 | 27.5 |
| France | – | – | 26.3 |
| Netherlands | 14.8 | 21.1 | 18.2 |
| Germany | 20.0 | 20.5 | 20.3 |

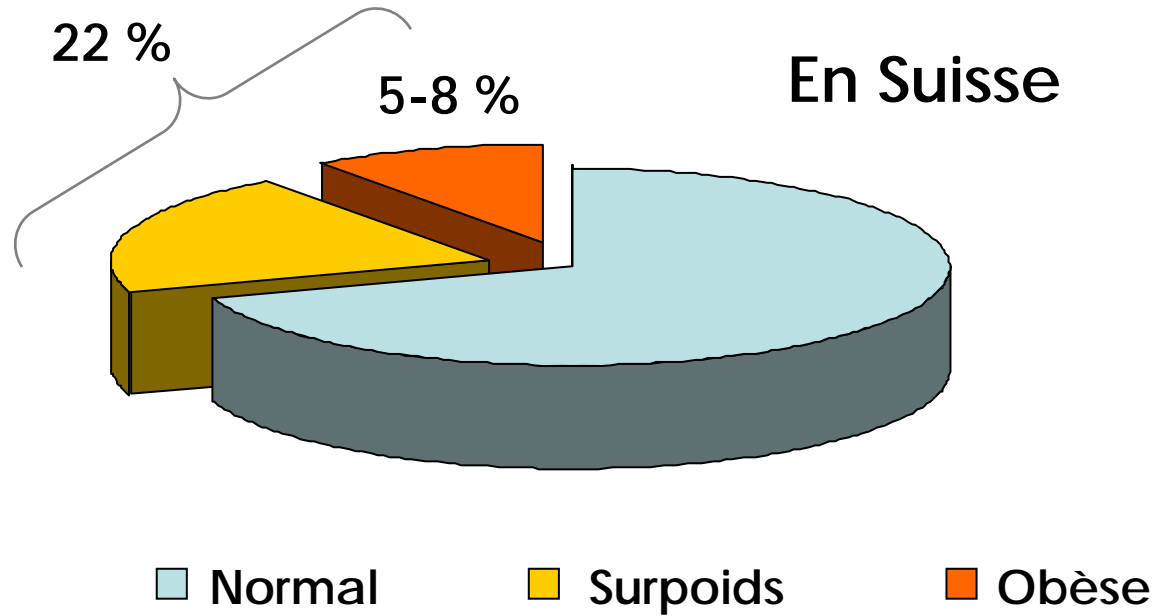
High waist circumference: ≥ 102 cm (≥ 40 in) in men or ≥ 88 cm (≥ 35 in) in women except in Germany (> 103 cm [41 in] and > 92 cm [36 in], respectively)

Obésité + surcharge pondérale en Suisse



Office Fédérale de la Statistique 2003

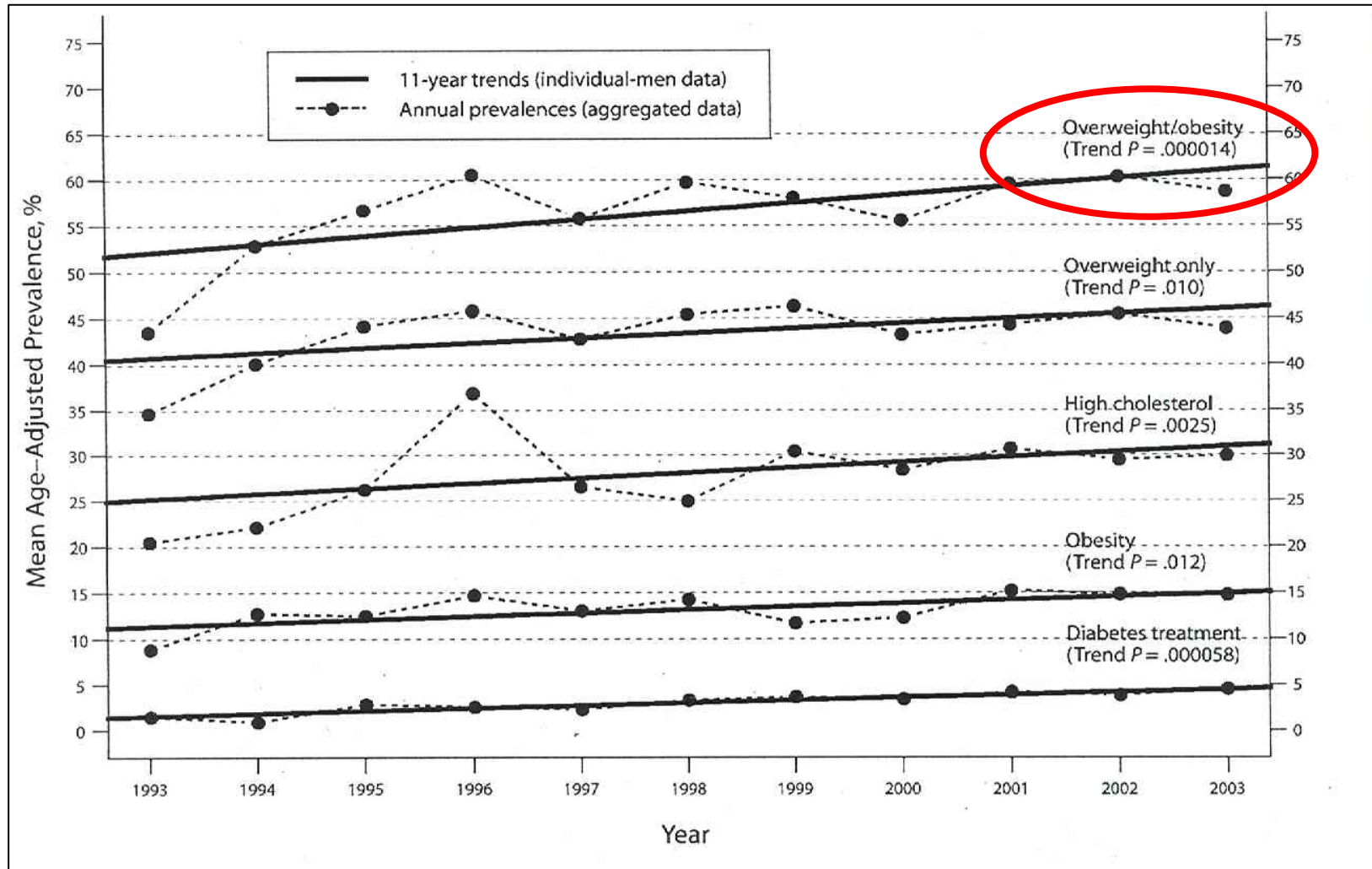
L'obésité de l'enfant est une véritable épidémie !



International

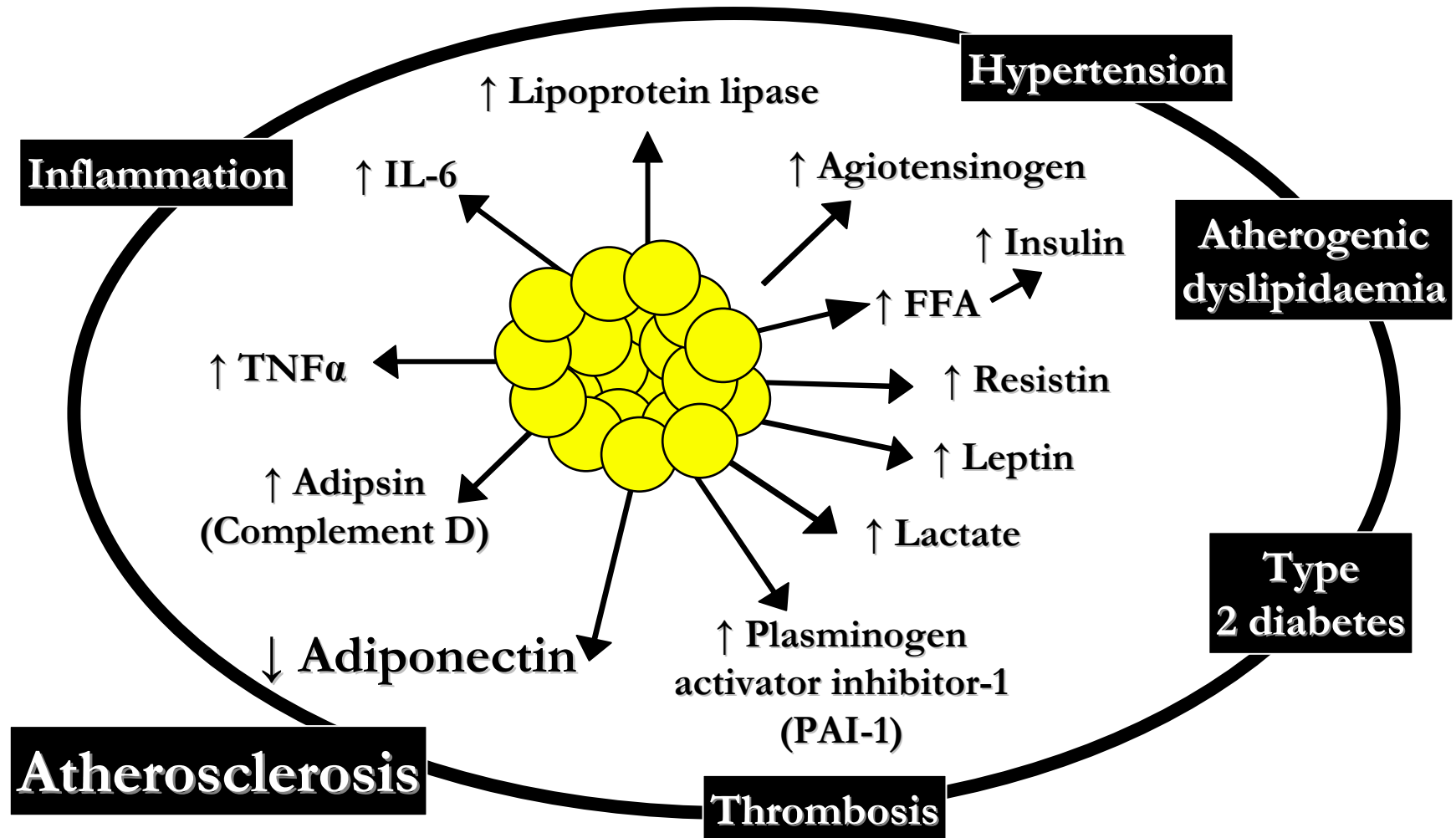
Augmentation de 2-4 x en 10-20 ans quelque soit la définition et le référentiel

Obésité + surcharge pondérale à Genève



Male 35-74 year old
Data from the "Bus santé" Geneva

Adverse cardiometabolic effects of products of adipocytes



Solutions - Propositions

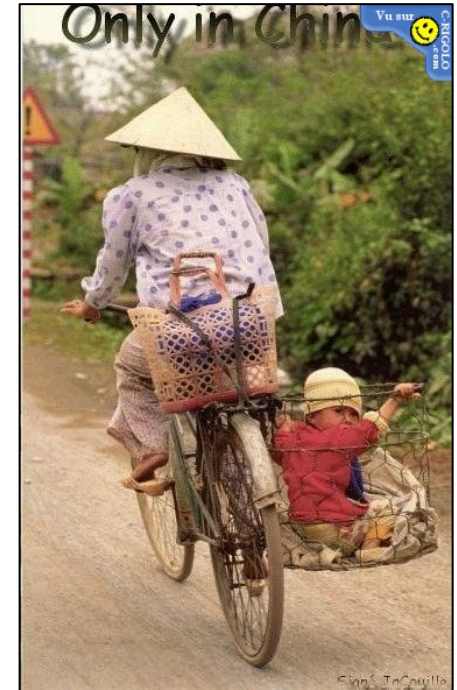
Stratégie de traitement des facteurs de risque cardio-vasculaire

| Facteur de risque | Intervention / Valeur d'intervention (VI) / Valeurs cibles (VC) |
|-----------------------------------|--|
| Mode de vie | |
| Alimentation | <ul style="list-style-type: none">■ Apport énergétique conforme aux besoins (maintien d'un poids corporel normal)■ Forte proportion de fruits et de légumes■ Lipides: réduction des acides gras saturés, remplacement par des acides gras mono- et poly-insaturés, en particulier des acides gras oméga 3■ Préférer les glucides dotés d'un faible index glycémique |
| Excès de poids / obésité | <ul style="list-style-type: none">■ Essayer d'atteindre un poids normal et le conserver■ Au minimum, éviter toute prise de poids supplémentaire |
| Manque d'activité physique | <ul style="list-style-type: none">■ Patients à haut risque: établir un programme sur la base d'une épreuve d'effort; idéal: 30 min. d'entraînement de l'endurance par jour■ Autres personnes (prévention primaire): développement de l'endurance 2 à 6 fois par semaine et développement modéré de la force 2 fois par semaine |
| Tabagisme | <ul style="list-style-type: none">■ Abstinence tabagique |

Solutions - Propositions

Transports

En Suisse, la majorité des personnes se déplacent par moyen de transport motorisé, en général sur de courtes distances qui pourraient être parcourues en 15 à 20 minutes à vélo ou en 30 à 50 minutes d'un bon pas.





Effet de l'utilisation des escaliers à la place des ascenseurs sur le lieu de travail en prévention cardiovasculaire primaire: une intervention chez des employés d'un hôpital universitaire suisse.

Intervention

- Ne plus utiliser l'ascenseur mais l'escalier sur votre lieu de travail
- Pendant 12 semaines
- Dès mars 2007



Pour qui ?



- Tout employé des HUG
- En bonne santé
- Souhaitant augmenter son activité physique



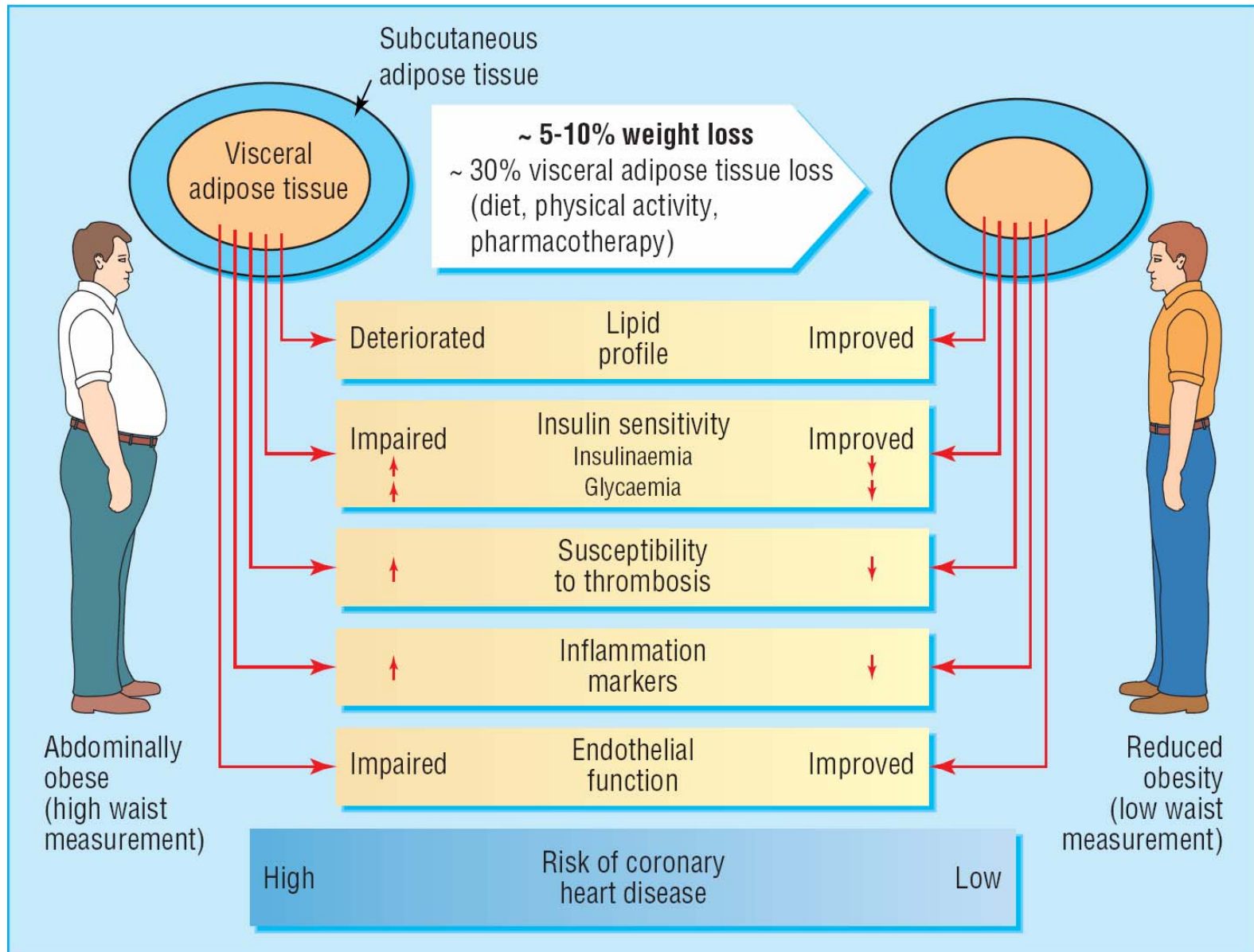
Mesures

3 visites de 60 minutes à 0, 3 mois et 6 mois

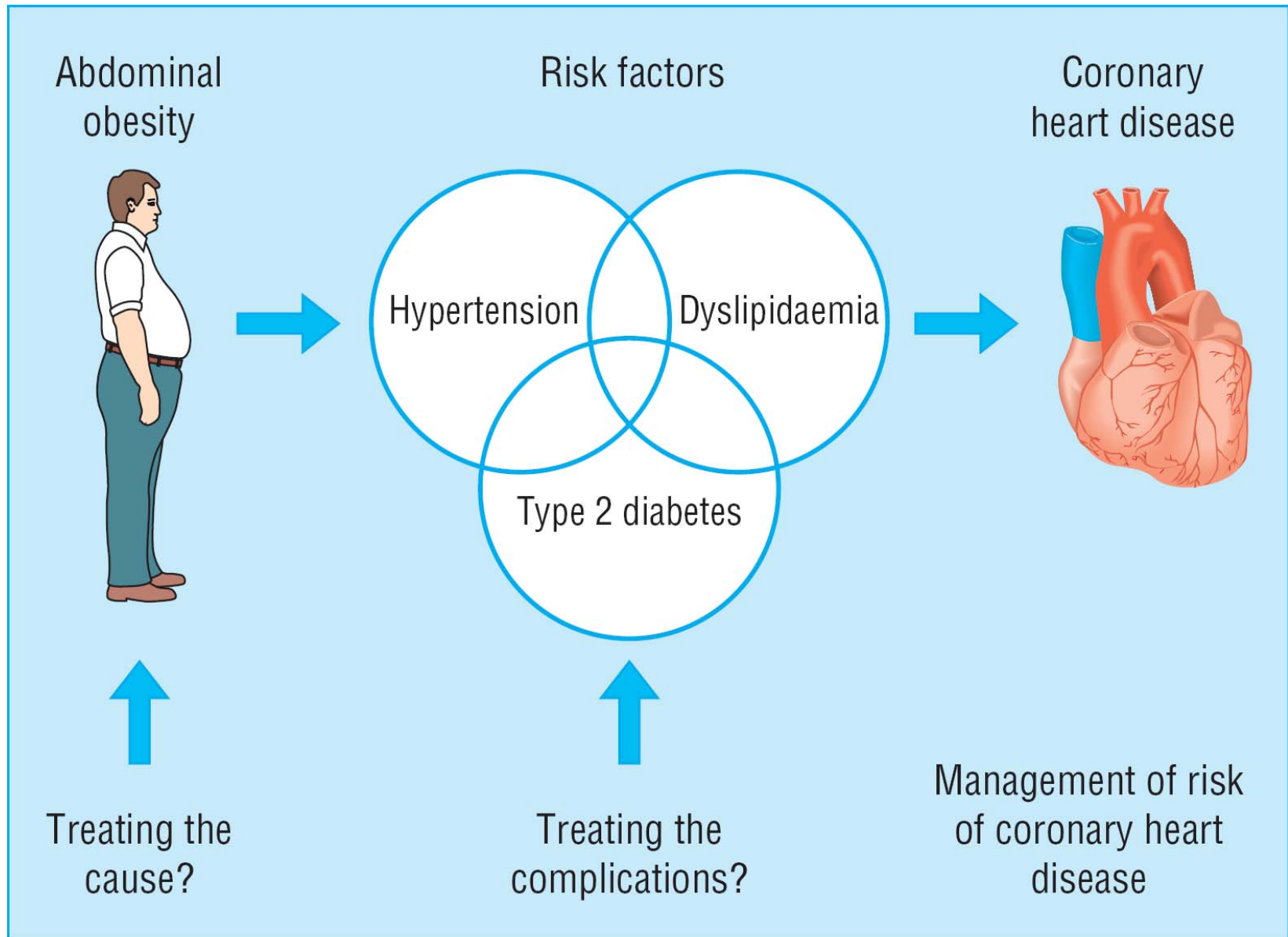
- Questionnaires (alimentation/activité physique)
- Poids, taille, pression artérielle, périmètre abdominal
- Mesure de la masse grasseuse (bio-impédance)
- Prise de sang (bilan lipidique, glucose, insuline)
- Mesure de l'activité physique journalière (accéléromètre)
- Test de capacité physique (step test)

Secrétariat cardio/HUG tél: 27 200
Philippe.Sigaud@hcuge.ch

Intra-abdominal adiposity and cardiovascular risk



Intra-abdominal adiposity and cardiovascular risk



Management of the CV Risk Factors

- Appropriate and persistent therapy is essential for reducing patient risk of cardiovascular disease
- Lifestyle measures should be the first action
- Pharmacotherapy should have beneficial effects on
 - Glucose intolerance / diabetes
 - Dyslipidemia
 - Hypertension
 - Obesity

Genève, le 20 mars 2007

Merci

