2003 World Health Organization (WHO) / International Society of Hypertension (ISH) Statement on Management of Hypertension
Background

Hypertension worldwide causes
• 7.1 million premature deaths
• 4.5% of disease burden
• 64 million DALY’s lost

World Health Report 2002
Factors influencing prognosis

Risk factors for cardiovascular disease

- Levels of systolic and diastolic blood pressure (grades 1-3)
- Males >55 years
- Females >65 years
- Smoking
Consequences of hypertension

- Stroke
- Heart attack
- Heart failure
- Renal failure
- Cognitive impairment
- Dementia
- Prematurity
- Blindness
WHO/ISH Statement addresses

• Ascertainment of overall cardiovascular risk to establish thresholds of, and goals for treatment
• Treatment strategies
• Cost-effectiveness
Factors influencing prognosis

Risk factors for cardiovascular disease

• Total cholesterol >6.1 mmol/l (240 mg/dl) or LDL-cholesterol >4.0 mmol/l (160 mg/dl)*
• HDL-cholesterol M <1.0, F <1.2 mmol/l (<40, <45 mg/dl)
• History of cardiovascular disease in first-degree relatives before age 50
• Obesity, physical inactivity

* Lower levels of total and LDL-cholesterol are known to delineate increased risk but they were not used in the stratification table
Factors influencing prognosis

Target-organ damage (TOD)

• Left ventricular hypertrophy (electrocardiogram or echocardiogram)
• Microalbuminuria (20-300 mg/day)
• Radiological or ultrasound evidence of extensive atherosclerotic plaque (aorta, carotid, coronary, iliac and femoral arteries)
• Hypertensive retinopathy grade III or IV
Factors influencing prognosis

Associated clinical conditions (ACC)

• Diabetes
• Cerebrovascular disease
  Ischaemic stroke
  Cerebral haemorrhage
  Transient ischaemic attack
• Heart disease
  Myocardial infarction
  Angina
  Coronary revascularization
  Congestive heart failure
Factors influencing prognosis

Associated clinical conditions (ACC)

• Renal disease
  Plasma creatinine concentration:
  females >1.4, males >1.5 mg/dl
  (120, 133 μmol/L) Albuminuria >300 mg/day

• Peripheral vascular disease
### Stratification of risk to quantify prognosis

#### Blood pressure (mmHg)

<table>
<thead>
<tr>
<th>Other risk factors and disease history</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
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</thead>
<tbody>
<tr>
<td>I  No other risk factors</td>
<td>Low risk</td>
<td>Medium risk</td>
<td>High risk</td>
</tr>
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<td>III 3 or more risk factors, or TOD, or ACC</td>
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</tr>
</tbody>
</table>

- **SBP** systolic blood pressure
- **DBP** diastolic blood pressure

**Grade 3**
- SBP $\geq 180$
- DBP $\geq 110$

**Grade 2**
- SBP 160-179
- DBP 100-109

**Grade 1**
- SBP 140-159
- DBP 90-99

Other risk factors and disease history:
- ***High risk***
  - 3 or more risk factors, or TOD, or ACC
- ***Medium risk***
  - 1-2 risk factors
- ***Low risk***
  - No other risk factors
Life-style modifications

Effective in lowering BP and reducing incidence of hypertension

- Weight loss in overweight
- Physical activity
- Moderation of alcohol intake
- Diet (fruit, vegetables, low saturated fat)
- Reduction of dietary sodium intake
- Increased dietary potassium
Life-style modification

• Smoking cessation reduces mortality
• Weight reduction, dietary manipulation and physical activity reduce incidence of type 2 diabetes
• Low saturated fat diet improves dyslipidemia
Choice of initial drug therapy

• Multiple RCTs showing reductions in morbidity/mortality of placebo for
  Diuretics
  β-blockers
  CCBs

• Meta-analyses of RCTs comparing ACEI or CCBs against older drugs show no convincing differences (but do not exclude small differences on specific outcomes)
Choice of initial therapy

• Trial data suggest benefits largely derive from BP reduction but strong evidence that specific agents benefit patients with compelling indications
Choice of initial therapy

• For patients without compelling indications, on basis of comparative trial data, availability and cost, (low dose) diuretic should be considered for first line of therapy

• Monotherapy will be inadequate for the majority of patients