Prof. Massimo Volpe, MD, FAHA, FESC,
Dean of the Faculty of Medicine and Psychology
University of Rome “Sapienza”
Chair and Division of Cardiology
Sant’Andrea Hospital of Rome - Italy
e-mail: massimo.volpe@uniroma1.it
Change in U.S. Life Expectancy between 1970 and 2000

- Cardiovascular Disease
  - Coronary Heart Disease
  - Other Heart Disease
- Stroke
- Perinatal Disease
- Injuries
- Cancer
- Chronic Obstructive Pulmonary Disease
- HIV infection or the acquired immunodeficiency syndrome
- Other causes

Lenfant C. NEJM 2003; 349:868-874
Decline in Deaths from Cardiovascular Disease in Relation to Scientific Advances.

Nabel EG and Braunwald E. NEJM 2012;366:54-63.
Dimensione del problema

• Ogni anno le malattie cardiovascolari uccidono più di 4,3 milioni di persone in Europa essendo causa del 48% di tutti i decessi (54% per le donne, 43% per gli uomini).

• La Società europea di Cardiologia e la European Heart Network calcolano un costo per l'economia dell'Ue di oltre 196 miliardi di euro all'anno per la cura delle patologie cardiovascolari, con una spesa sanitaria che varia dal 4% del Lussemburgo al 17% di Estonia, Lettonia e Polonia.
Costo Totale delle Cure Mediche in Europa

59,1 bilioni di Euro

- Cure Intraospedaliere: 54%
- Cure Extraospedaliere: 6%
- Medicina Generale: 28%
- Farmaci: 2%
- Altro: 10%

Bridging science and health policy in cardiovascular disease: focus on lipid management.
A Report from a Session held during the 7th International Symposium on Multiple Risk Factors in CV Diseases: Prevention and Intervention – Health Policy, in Venice, Italy, on 25 October, 2008
Proiezione dei costi (diretti ed indiretti) per le malattie CV dal 2010 al 2030 (in miliardi 2008$)

Heidenreich PA, et al. Circulation. 2011;123
Use of the IMPACT mortality model to explain the fall in CHD deaths in England & Wales 1981-2000

Bridging science and health policy in cardiovascular disease: focus on lipid management
A Report from a Session held during the 7th International Symposium on Multiple Risk Factors in CV Diseases: Prevention and Intervention
– Health Policy, in Venice, Italy, on 25 October, 2008
Derived from Atherosclerosis Supplements 10 (2009) 3–21
Rising Global Burden: the morbidity constellation

- Obesity
- High blood pressure
- Metabolic Syndrome
- Glucose Intolerance
- Insulin Resistance/Diabetes
- Atherogenic Dyslipidemia
Sindrome Metabolica: Aspetti Socio-Culturali

lungo la 96esima strada continua a passare una frontiera, invisibile ai più.

A sud, dove i bianchi sono l’84% e le persone che vivono sotto la soglia dell’indigenza il 6,2%, i soggetti obesi sono il 7% ed i diabetici l’1%.

A nord, dove la popolazione è tuttora composta per l’88% da neri ed ispanici ed i poveri sono il 38%, i soggetti obesi sono il 31% ed i diabetici il 16%.
Potential Pharmacological and Non-pharmacological Interventions for CV Disease Management and Control

- Terapia farmacologica:
  - Farmaci antipertensivi
  - Farmaci che riducono il colesterolo
  - Farmaci antidiabetici
  - Farmaci antipiastrinici

- Interventi sullo Stile di Vita:
  - Dieta povera di calorie e grassi animali
  - Attività Fisica Aerobica
  - Abolizione del Fumo
  - Riduzione del consumo di Alcol

Controllo Domiciliare dei valori di glicemia o di pressione (Telemedicina)

Informazione nella Scuola e nei luoghi di lavoro Educazione Civica

Età / Invecchiamento
Sesso Maschile
Familiarità / Predisposizione Genetica
Menopausa

Campagne Nazionali o Locali per Abolizione del Fumo di Sigaretta
Sopporto Multimediale all’Esercizio
Uso della Rete Informatica e Telefonica
Riduzione dell’impatto dell’urbanizzazione
Miglioramento delle condizioni di lavoro

Ictus Cerebrale
Cardiopatia Ischemica
Infarto Miocardico
Arteriopatia Periferica
Scompenso Cardiaco
Morte Cardiovascolare

EVENTI CARDIO-VASCOLARI

Ipertensione Arteriosa
Diabete Mellito
Ipercolesterolemia (C-LDL)
Basso Colesterolo HDL

Obesità
Sindrome Metabolica
Fumo
Sedentarietà
Stress Fisico ed Emotivo
E' vera questa teoria?
Comparazione tra peso corporeo e patologie nei PIMA, ‘800 versus terzo millennio

Two *Pima Indians* – Arizona, end of XIX century

Two *Pima Indians* – Arizona, 2010
Multiple Independent Risk Factors ("Silo" Risk Approach)

Traditional CV Risk Perspective

Hypertension
Dyslipidemia
Diabetes

New CV Risk Perspective

Organ Damage
Inflammation
Smoking
Hypertension
Dyslipidemia
Diabetes
Obesity

Integrated Guidelines for Total CV Risk Reduction ("Integrated" Risk Approach)

Cardiovascular Risk Factors ("Global" Risk Approach)

New Targets and Goals for Therapy

Reduction of Total CV Disease Risk

Traditional Targets for Therapy

Dyslipidemia
Hypertension
Diabetes

Traditional Goals for Therapy

Stroke Risk Reduction
MI Risk Reduction
CHF Risk Reduction
Renal Failure Risk Reduction

Life-style changes or Drugs for CVD prevention

The need for integrated population and clinical interventions to achieve a more effective strategy
Prospettive future:
la prevenzione preclinica integrata e globale
Documento di consenso e raccomandazioni per la prevenzione cardiovascolare in Italia 2018

Documento coordinato da Massimo Volpe,
Presidente Società Italiana per la Prevenzione Cardiovascolare (SIPREC)

in collaborazione con:

SIMI Società Italiana di Medicina Interna
SID Società Italiana di Diabetologia
SIIA Società Italiana dell’Ipertensione Arteriosa
SISA Società Italiana per lo Studio dell’Aterosclerosi
CNR Consiglio Nazionale delle Ricerche
FMSI Federazione Medico Sportiva Italiana
GICR- IACPR Gruppo Italiano di Cardiologia Riabilitativa e Preventiva
Italian Association for Cardiovascular Prevention, Rehabilitation and Epidemiology
SIF Società Italiana di Farmacologia
SITI Società Italiana di Igiene Medicina Preventiva e Sanità Pubblica
Burden of Disease and Societal Cost:
Do we need to treat patient A (low-risk)?

- Projected Population
- CV Risk
- Prevalence
- In Population
- Individual CV Risk

Patient A: Low CV Risk in low population
Patient B: Medium CV Risk in medium population
Patient C: High CV Risk in high population

Volpe M, 2005
Effect of three preventive strategies on deaths from coronary heart disease over 10 years in Canadians aged 20-74

<table>
<thead>
<tr>
<th>Strategy</th>
<th>No (%) of population treated</th>
<th>&lt;0.1% ( % of risk group treated)</th>
<th>0.1-0.99% ( % of risk group treated)</th>
<th>1-10% ( % of risk group treated)</th>
<th>&gt;10% ( % of risk group treated)</th>
<th>No of deaths avoided* Over 10 years</th>
<th>No of deaths avoided* Per 100 000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population health (Rose)</td>
<td>12 300 000 (100)</td>
<td>55.1 (100.0)</td>
<td>20.2 (100.0)</td>
<td>20.4 (100.0)</td>
<td>4.4 (100.0)</td>
<td>5 160</td>
<td>42</td>
</tr>
<tr>
<td>High baseline risk</td>
<td>1 590 000 (12.9)</td>
<td>0.1 (0.0)</td>
<td>2.2 (1.4)</td>
<td>64.0 (40.5)</td>
<td>33.8 (100.0)</td>
<td>35 800</td>
<td>290</td>
</tr>
<tr>
<td>Single risk factor</td>
<td>1 370 000 (11.1)</td>
<td>4.0 (0.8)</td>
<td>27.4 (15.1)</td>
<td>54.0 (29.5)</td>
<td>14.7 (37.5)</td>
<td>15 500</td>
<td>125</td>
</tr>
</tbody>
</table>

*Assuming 100% community effectiveness for the single risk factor and high baseline risk strategies and a 2% total cholesterol reduction for the Rose strategy.

Cardiovascular Disease Prevention and Equal Opportunities for patients

- The primary prevention of cardiovascular disease (CVD) is dependent on the effective reduction of the major risk factors for CVD, particularly tobacco control and a healthier diet.

- The high-risk approach to prevent CVD typically involves population screening.

- Those identified exceeding a risk threshold are then given lifestyle advice and/or tablets to reduce blood cholesterol and blood pressure.

- Evidence suggests this high-risk approach typically widens socioeconomic inequalities. Such inequalities have been reported in screening, healthy diet advice, smoking cessation, statin and anti-hypertensive prescribing, and adherence.

- The alternative approach is population-wide CVD prevention. For example, legislating for smoke-free public spaces, banning dietary transfats, or halving daily dietary salt intake. Such strategies are generally effective and cost-saving; there is also increasing evidence that they can reduce health inequalities.

- We conclude that screening and treating high-risk individuals represents a relatively ineffective CVD prevention approach that typically widens social inequalities.

Paradigm shift in CV risk estimation

PAST $\rightarrow$ Relative Risk
   Single Risk-based approach

PRESENT $\rightarrow$ Absolute Risk
   Multifactorial Risk approach
   10 yrs CHD risk estimation

FUTURE $\rightarrow$ Individual lifetime risk estimation
   Risk composition evaluation (genetic profile?)
Cardiovascular Disease Risk Factors Overlap

- High Blood Pressure
- High Cholesterol
- Smoking
- Diabetes
- Obesity

SIPREC Document on Metabolic Syndrome, High Blood Pressure and Cardiovascular Prevention
Diagnostic and Interventional Procedures in Italy (1/3)

GISE 2010
Diagnostic and Interventional Procedures in Italy (2/3)
Projected number of patients at risk of hospitalisation for CVD due to high levels of cholesterol. This number is forecasted to increase by more than 50% over the next 30 years. Calculation based on RGS and Ministry of Health data.
Call-To-Action:
Suggested Interventions (1/3)

1. To sustain and support **health policies** designed to promote or improve prevention of CV diseases in Italy.

2. To support and implement initiatives to quit smoking.

3. To identify **training and educational strategies** aimed at preventing CV diseases.

4. To increase **awareness** of the importance of medical management of total (or global) CV risk.

5. To understand and promote the concept that **life-style approach** in 2014 must **overcome the traditional “fences”** and should include communication and new technologies (e.g. mobile phone, television, network).

Call-To-Action:
Suggested Interventions (3/3)

11. Provide cultural and scientific support to multidisciplinary professional activities of all health professionals involved in preventing CV diseases.

12. Identify and support initiatives by industries, or public and private associations, which may have impact on CV disease prevention.


14. Harmonize initiatives and sanitary policies in terms of CV prevention in association with the EU.

15. Identify annual or periodic objectives, clearly specified, realistic and achievable, using criteria of periodic verification of the attained results.

6. Assess the global (or total) cardiovascular risk and projecting the estimate of CV risk over lifetime. Missing this exercise will unavoidably reduce the significance of risk charts or calculators. Use detection of potential indicators of high CV risk (family history, high blood pressure, cholesterol, blood glucose or other modifiable risk factors) as a starting point to perform the total CV risk stratification.

6. Discuss the importance of cardiovascular risk assessment and prevention of CV benefits with patients (physician/patient communication or alliance).

7. Start diagnostic and therapeutic interventions early.

8. Promote the use of recommendations for CV prevention, which should be simple, integrated and shared by the various scientific societies.

9. Promote the role of General Practitioners (GPs).

Cost effectiveness ratio is improved with the absolute risk approach

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-personal interventions</strong></td>
<td></td>
</tr>
<tr>
<td>N1</td>
<td>Salt reduction through voluntary agreements with industry</td>
</tr>
<tr>
<td>N2</td>
<td>Population-wide reduction in salt intake legislation</td>
</tr>
<tr>
<td>N3</td>
<td>Health education through mass media</td>
</tr>
<tr>
<td>N4</td>
<td>Combined intervention of N2 and N3</td>
</tr>
<tr>
<td><strong>Personal interventions</strong></td>
<td></td>
</tr>
<tr>
<td>P1 and P2</td>
<td>Individual-based hypertension treatment and education</td>
</tr>
<tr>
<td>P3 and P4</td>
<td>Individual treatment for high cholesterol concentrations and education</td>
</tr>
<tr>
<td>P5</td>
<td>Individual treatment and health education for SBP and cholesterol concentration</td>
</tr>
<tr>
<td>P6 to P9</td>
<td>Absolute risk approach</td>
</tr>
</tbody>
</table>