THE POWER OF TRANSFORMATION:
ACHIEVING HIGH-QUALITY HEART CARE IN A WORLD OF EMERGING ECONOMIES

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No conflict of interest to report

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THE POWER OF TRANSFORMATION: ACHIEVING HIGH-QUALITY HEART CARE IN A WORLD OF EMERGING ECONOMIES

A) Introduction
* The burden of CVD in Latin America: Epidemiology and economics
* Health care models, current challenges

B) Quality Initiatives, Performance Improvement and Best Practices
* Definitions, justification, methodology
* What, how and when to measure (tips and tools)
* Guidelines / AUC’s / Registries
* Implementation of improvement measures
* Patient safety / medical errors
* Public reporting / Patient reported outcomes measures

C) Providers vs. 3rd party payers
* Costs, resources and quality
* Value-based health care vs. Volume-based reimbursement

D) The Latin American horizon
* Ongoing initiatives
* How to start
* The future: Advocacy, research and innovation
Current Health Challenges Facing Latin America

- Access to health services (30% of people do not have it for economical reasons, 21% because of geographical barriers)
- Epidemiologic transition and chronic non-communicable diseases
- Training and distribution of human resources in health
- Inequalities in education, socio-cultural level, income and health
- Systems financed based on illness, not preventive policies

J. García Ramirez, World Economic Forum on Latin America, June 2016
The epidemiological transition

Starvation and Infection

Public Health Nutrition Hypertension

Tobacco Obesity/Lipids/DM (CHD, Stroke)

Life Expectancy in Years

% Deaths due to CVD

Prevention Treatment (Stroke, IHD, CHF)

Pestilence and Famine
Receding Pandemics
degenerative and Man
made Disease
Delayed Degenerative Diseases
Socioeconomic inequality and CV disease mortality

Progr in Cardiovasc Dis 57 (2014); 276-85
CV Disease in Latin America – prevalence* and costs

![World Heart Federation logo]

**World Congress of Cardiology & Cardiovascular Health**

Mexico City, Mexico

4-7 June 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Prevalence (20+ population)</th>
<th>Financial cost (USDbn)</th>
<th>Health cost (% financial)</th>
<th>Productivity loss (% GDP)</th>
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</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>32.0%</td>
<td>17.3</td>
<td>5.5%</td>
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<tr>
<td>Chile</td>
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<td>1.4</td>
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<td>0.6</td>
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<td>6.1</td>
<td>3.6%</td>
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<td>0.3</td>
<td>3.4%</td>
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<tr>
<td>Peru</td>
<td>16.0%</td>
<td>0.9</td>
<td>2.1%</td>
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</tr>
<tr>
<td>Venezuela</td>
<td>33.4%</td>
<td>1.7</td>
<td>2.2%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

* Includes Heart Attack, Atrial Fib, HTN and Heart Failure

**Figure 1.** Per capita income and National health Expenditure (NHEXP) as a % of GDP, LAC 2011

Source: Healthcare expenditure and Financing in Latin America and the Caribbean, Panamerican Health Organization, 2012
WHAT IS HIGH QUALITY HEALTH CARE?

“THE DEGREE IN WHICH HEALTH CARE SYSTEMS AND THEIR SERVICES AND TOOLS DIRECTED AT INDIVIDUALS OR POPULATIONS INCREASE THE LIKELIHOOD OF ACHIEVING GOALS THAT ARE CONSISTENT WITH UPDATED PROFESSIONAL KNOWLEDGE”

• The primary goal of health care is to help people live longer and better
• The degree in which this goal is reached determines health care quality
EXHIBIT 1
The Cycle Of Quality: Twelve Steps

1. FDA Roadmap
2. NIH Critical Path
3. Data standards
4. Network information
5. Empirical ethics
6. Priorities and processes
7. Inclusiveness
8. Use for feedback on priorities
9. Conflict-of-interest management
10. Evaluation of speed and fluency
11. Pay-for-performance
12. Transparency to consumers

Early translational steps

Discovery science

Outcomes

Measurement and education

Clinical trials

Clinical practice guidelines

Performance measures

Features of High-Quality Health Care

• **Safe**
  Avoids harming the patient with what it offers

• **Effective**
  Provides evidence-based services and avoids using them where there is no proven benefit

• **Patient-oriented**
  Respects individual values and preferences, allows them to guide clinical decisions
Quality: A Systemic Matter

• Individual decisions don’t go too far, a large-scale approach may get there
• Quality depends on a continuous, organized, scientific process
• This process must evaluate, plan, and measure
What leads to low quality health care?

- Risky medical practices (“my experience”)
- Ineffective or erroneous interventions on the wrong patient
- Delays in access and attention
- Ultra specialized resources in the setting of marginal benefits
- Biased, differentiated attention based on age, gender, race, socioeconomical status…
Is health care quality a justified concern?

- Profound and progressive increment on costs
- Obvious deficiencies in the system
- No correlation between high costs and quality
How is quality evaluated?

Donabedian model

- **Structure**: resources (personnel, equipment, space, training, labs, protocols)
- **Processes**: “do the right thing for the right patient at the right time”
- **Outcomes**: centered on goals reached, morbidity, mortality, quality of life...
Why do we need to measure and improve quality?

1) Health care quality is evidence-based medicine
2) Is linked to learning, recertification and licensing
3) Represents the core of any health care reform initiative
4) Refers to responsibility and accountability
5) Progressively impacts compensation
6) Drives and determines health care system improvements
Instruments to measure quality

1) Clinical evidence
2) Practice Guidelines
3) Performance measures
4) Quality metrics
5) Appropriate Use Criteria
1. Clinical Evidence

- Clinical decisions must be guided by a systematic approach to collection and data analysis.
- The hierarchy of evidence is far from absolute.
- Evidence by itself will never be enough for clinical decisions.
2. Practice Guidelines

• They intend to summarize the body of evidence-based medicine
• Rely and are sustained on/by randomized studies
• In their absence, rely on expert consensus
3. Performance Measures

- Can evaluate processes as absolute, yes or no: ASA in STEMI
- Can measure results globally: mortality, quality of life…
- May or may not be fair given the complexity of populations
- They don’t tell what is being done correctly or incorrectly
- Must combine analysis of structures and processes
4. Quality Metrics

- Represent measures developed by institutions for internal use and self-evaluation
- May lead to more successful and wider impact quality indicators
- Examples: metrics for timing of test results, ER wait, ambulatory office delays, etc.
5. Appropriate Use Criteria

- Focus on risk / benefit of testing or procedures in the outcomes of patients
- Facilitate a rational and efficient use of medical resources
- Fundamental goal: identify overutilization of resources and by so, improve cost effectiveness and patient safety
- Examples: appropriate use of PCI, Cardiac CT, MR, etc.
Quality Indicators in the “real world”

• The clinicians
  Often perceive this topic as one belonging to administrators and politicians

• The public
  Disposes of access to information on providers and organizations performance

• The impact
  With increasing frequency indicators are used to measure professional quality, provide recertification and modify payments

• The results
  Indicators are essential in the process of Quality Improvement: without measurements we can not, and will not know how to improve
MEASURING...

- We understand why
- We all share the same vision/goal: patient outcomes
- How to measure remains unclear to many
- The path depends on where the starting point is but mostly, on the proposed goals to be reached
- Regardless, it is a process!

International Consortium for Health Outcomes Measurement
http://www.ichom.org
Measuring... The journey

1) Engage and prepare
• Identify key individuals
• Engage management leadership
• Involve work force
• Set up a true team
• Identify realistic goals
• Map out a plan

2) Data capture modelling
• Define when to
• Choose tools to be used (paper, EMR, charts)
• Select data to collect and store
• Review and update regularly
Measuring… The journey

3) Measure and analyze
   • Verify accuracy of data
   • Study and risk-adjust data according to goals
   • Create meaningful reporting

4) Learn and drive changes
   • Learn from your outcomes and identify best practices
   • Diagnose opportunities for improvement
   • Establish an “outcome culture”
Measuring... Things to remember

• There is no one-size-fits-all solution: it is a unique journey
• The approach may be similar, but challenges may differ
• Must have everyone on board
• Ensure administrative support

• Adjust data acquisition/storage to your resources
• Do not aim for the most complex / sophisticated goals at the onset
• This is an iterative learning process
What is really needed to implement QI initiatives?

- Institutional will
- Medical leadership
- Administrative (staff) support
- Established plan of action (methodology of data collection, protocols to follow)
- Reporting and documenting mechanism
- Corrective structure / Reward?
<table>
<thead>
<tr>
<th>Quality Measures - examples</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Diabetes Mellitus</th>
<th>Congestive Heart Failure</th>
<th>Coronary Artery Disease</th>
<th>Preventive Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c Management</td>
<td>Left Ventricular Function Assessment</td>
<td>Antiplatelet Therapy</td>
<td>Blood Pressure Screening</td>
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<tr>
<td>HbA1c Control</td>
<td>Left Ventricular Ejection Fraction Testing</td>
<td>Drug Therapy for Lowering LDL Cholesterol</td>
<td>Blood Pressure Control</td>
</tr>
<tr>
<td>Blood Pressure Management</td>
<td>Weight Measurement</td>
<td>Beta-Blocker Therapy – Prior MI</td>
<td>Blood Pressure Control Plan of Care</td>
</tr>
<tr>
<td>Lipid Measurement</td>
<td>Blood Pressure Screening</td>
<td>Blood Pressure</td>
<td>Breast Cancer Screening</td>
</tr>
<tr>
<td>LDL Cholesterol Level</td>
<td>Patient Education</td>
<td>Lipid Profile</td>
<td>Colorectal Cancer Screening</td>
</tr>
<tr>
<td>Urine Protein Testing</td>
<td>Beta-Blocker Therapy</td>
<td>LDL Cholesterol Level</td>
<td></td>
</tr>
<tr>
<td>Eye Exam</td>
<td>Ace Inhibitor Therapy</td>
<td>Ace Inhibitor Therapy</td>
<td></td>
</tr>
<tr>
<td>Foot Exam</td>
<td>Warfarin Therapy for Patients HF</td>
<td></td>
<td></td>
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<tr>
<td>Influenza Vaccination</td>
<td>Influenza Vaccination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumonia Vaccination</td>
<td>Pneumonia Vaccination</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
QI implementation in LATAM

- STEMI management (Primary PCI)
- Cath / EP Lab complications rates
- Diagnostic cath / PCI / CABG ratios
- Cath tracking of normal coronaries
- Patient satisfaction post-discharge

- Length of stay committee
- BLS/ACLS AHA training
- Code Blue team implementation
- Code Blue team metrics
- CV surgery STS performance indicators
STEMI Primary PCI Program

- Administration engagement (ER and transfer policies; on-call compensation)
- Chest pain protocols
- ER physicians and nurses training (triage and ECG)

- ER physician direct access to the interventionalist
- WhatsApp use for ECG
- On-site cardiology Fellow 24/7
- Weekly case discussions
- Tracking of data by dedicated staff
THE FIRST PRIMARY ANGIOPLASTY PROGRAM FOR ST-ELEVATION MYOCARDIAL INFARCTION MANAGEMENT IN THE DOMINICAN REPUBLIC

Samuel Zorrilla, Carlos Garcia, Diogenes Cuevas, Jeffry Beltre and Cesar Herrera
CV Surgery Program
STS performance indicators

- Multidisciplinary weekly case discussions
- Pre-op urological evaluation / nasal swab culture
- A single Cardiologist follows the patient throughout
- Intra-op TEE vs. Swan Ganz
- Fast-track extubation
- Mediastinal chest tubes placement

- Antibiotic steering committee
- ICU procedures by cardiologist approved by surgical team
- Psychologist early involvement
- Protocolized early cardiac rehabilitation
- Early return appointment post discharge
How to start QI Implementation in LATAM

• # 1: Physicians leaders' willingness
• Recognition of the problem
• “Intention to treat”
• Find partners: co-worker, Hospital administration, local authorities and Professional Societies
• Design a realistic plan and strategy
• Educate the team before starting
• Test the plan
• Measure, measure, measure!!!
• Analyze
• Correct / modify
• Implement
Almost finished...

- Public reporting / Patient safety
- Patient-reported Outcomes
- Value-based Health Care
New York City Puts Hospital Error Data Online

The New York Times

By SARAH KERSHAW
SEPTEMBER 7, 2007

The New York City public health system is making hospital death and infection data available online as part of a push to improve patient care.

Checklist Reduces Deaths in Surgery
MODERN MEDICINE  Published 9:31 AM ET Thu, 22 Feb 2018  Updated 9:39 AM, 28 Feb 2018

The third-leading cause of death in US most doctors don't want you to know about **Medical errors!**

- National cost: $25 billion
- 2% of hospitalizations

- A recent Johns Hopkins study claims more than 250,000 people in the U.S. die every year from medical errors. Other reports claim the numbers to be as high as 440,000.

- Medical errors are the third-leading cause of death after heart disease and cancer.

- Advocates are fighting back, pushing for greater legislation for patient safety.

Ray Sipherd, special to CNBC.com

Published 9:31 AM ET Thu, 22 Feb 2018 | Updated 9:39 AM ET Wed, 28 Feb 2018
Patient safety / Medical errors

• **To err is human, to hide errors is a big mistake**
• **No fault errors:**
  - silent disease, atypical presentation
• **System-related errors:**
  - delayed or missed diagnosis because of imperfections in the system
• **Cognitive errors:**
  - incomplete data collection
  - inaccurate reasoning
  - improper knowledge
  - incorrect interpretation
- Patient falls
- Incorrect dosing
- Transfusions reactions
- Allergy documentation
Patient-reported Outcomes

Experience of the Patient

- Functional Limitations
- Impact on Daily Activities
- Impact on Emotional Well-being
- Impact on Psychological Health
- Impact on Social Function

PATIENT-REPORTED OUTCOME

Potential Uses by the Physician

- Determine Baseline Status
- Clinical Trial Endpoints
- Monitor Therapy Effectiveness
- Assess Change in Status
- Prognosis Predictor

Patient-level modifiers

- Biological and physiological variables
- Psychological/psychological
- Physical and psychological functioning
- General health perceptions
- Overall quality of life
- Nonmedical factors

Environmental/community modifiers

- Psychological
- Social and economic
- Social and psychological

Remaining Problems with Quality Measures

- Not widely implemented
- Need standardization
- Restricted to specialties
- Exclude quality of life
- Must measure the whole cycle of patient care
- Quality has been linked to Guidelines, not outcomes

NEED A MULTIDISCIPLINARY, MULTIORGANIZATIONAL APPROACH

NEJM 2016; 374: 6
What is Value in Health Care?

IHI Triple Aim

- Better care
- Better Health
- Better Value

Value Equation:

\[ \text{Value} = \frac{\text{Outcomes}}{\text{Costs}} \]

Quality:

\[ \text{Quality} = \frac{\text{Appropriateness} \times (\text{Outcomes} + \text{Service})}{\text{Waste}} \]

- Clinical outcome measures
- Patient-reported outcome measures (PROMs)
- Patient-reported experience measures (PREMs)

Total costs of the full cycle of care
Focus on waste reduction

J Am Coll Cardiol 2017; 70: 904-6
Value-Based Health Care in Latin America

- LATAM faces a transition where CVD constitutes a major health threat
- Current annual costs of 4 CV conditions in the region = US$31 billion
- Fee-for-service payments systems based on volume and prices reward quantity over quality
- Urgent need to reduce health spending and reward provider-based value

*Katz, Franken and Makdisse. J Am Coll Cardiol 2017; 70: 904-6*
Guest Editors’ Page

Value-Based Health Care in Latin America: An Urgent Discussion

Marcelo Katz MD, PhD, Marcelo Franken MD, PhD, Marcia Makdisse MD, PhD, MBA

Show more

https://doi.org/10.1016/j.jacc.2017.06.050

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CVD in the political agenda
2011 Declaration

“Cardiovascular Disease represents one of the main obstacles to development in the 21st Century”
Tier 1. Health status achieved (survival and/or recovery)
Tier 2. Process of recovery (time to recover / how was recovery)
Tier 3. Sustainability of health (recovery long-term)

The Power for the Future…

• Advocacy
• Education
• Research
• Innovation
AHA POLICY STATEMENT

The American Heart Association's Recommendations for Expanding the Applications of Existing and Future Clinical Registries

A Policy Statement From the American Heart Association

Health Care Services: phenotypes

- **Overutilized**
  When it may not be necessary or when risk > benefit

- **Underutilized**
  When a proven beneficial intervention is not used

- **Poorly utilized**
  Caused by erroneous diagnoses or therapies
A taxonomy of terms

**Health** A state of complete physical, mental, and social well-being and not merely the absence of infirmity

**Health status** Overlaps with the concept of health; ‘status’ implies a measurement focus, but the concept is not defined more clearly than health

**Quality of life** A complex, multidimensional concept that includes both positive and negative elements. No consensus on the definition exists. Includes health and many other non-health domains. Often involves the concepts of happiness, subjective well-being, and the meaning given to life

**Health-related quality of life** Restriction of the quality-of-life concept to domains affected by health; typically using the WHO definition of health or a modification of this definition

**Patient-reported outcomes** Any report of the status of a patient’s health that comes directly from the patient without interpretation by anyone else

*NATURE REVIEWS | CARDIOLOGY VOLUME 13; MAY 2016: 287*
Requirements to Achieve Secondary Prevention

Global Heart 2018; 13 (2): 83-91
CESCAS
—South American Centre of Excellence in CV Health—

GOALS
• Mobile health intervention to prevent progression of pre-HTN
• Comprehensive approach for HTN prevention and control
• Education to improve physician’s effectiveness in detection, treatment and control of hypercholesterolemia

BARRIERS
• Complexity of interventions with multifactorial aspects
• Poor evaluative/critical culture
• Limited human resources
• Lack of leadership and management skills
• Weak health system
• Complex cultural and sociopolitical context
• Local resistance to adopt interventions

Argentina, Guatemala, Peru
# A longitudinal study of cardiovascular disease and risk factors in Latin America

## Table 1 Data collection in the CESCAS I study

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Components</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>General information</td>
<td>Socio-demographic and economic data, and type of health services utilisation</td>
<td>HCHS/SOL*</td>
</tr>
<tr>
<td>Claudication</td>
<td>Location, functional class</td>
<td>HCHS/SOL*</td>
</tr>
<tr>
<td>History</td>
<td>Cardiovascular, respiratory, hypertension, dyslipidaemia, diabetes,</td>
<td>HCHS/SOL*</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Pharmacological and non-pharmacological treatment and cancer</td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>Level of consumption (daily quantity, frequency, type of alcoholic</td>
<td>HCHS/SOL*</td>
</tr>
<tr>
<td>Alcohol</td>
<td>beverage)</td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td>Type of activity, frequency and intensity, in free time and during work</td>
<td>IPAQ</td>
</tr>
<tr>
<td>Spirituality</td>
<td>Importance, religious practice</td>
<td>HCHS/SOL*</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Types of foods, quantity and frequency</td>
<td>FFQ</td>
</tr>
<tr>
<td>Smoking</td>
<td>Current, former and passive smoker; other types of tobacco use (pipe, cigar)</td>
<td>GATS</td>
</tr>
<tr>
<td>Mental health</td>
<td>Depression, traumatic events, anxiety</td>
<td>PHQ-9/HCHS/SOL*</td>
</tr>
<tr>
<td>Global health</td>
<td></td>
<td>SF-12</td>
</tr>
<tr>
<td>Quality of life</td>
<td></td>
<td>EQ-5D</td>
</tr>
<tr>
<td>Physical examination</td>
<td>Blood pressure, weight, height and waist circumference</td>
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</tr>
<tr>
<td>Laboratory</td>
<td>Total cholesterol, HDL cholesterol, triglycerides, glucose and creatinine</td>
<td></td>
</tr>
<tr>
<td>ECG</td>
<td>25 mm/s and at 1 mV of amplitude</td>
<td></td>
</tr>
</tbody>
</table>

*Forms from the Hispanic Community Health Study/Study of Latinos, cross-culturally adapted for use in Argentina, Chile and Uruguay. FFQ, Food Frequency Questionnaire; GATS, Global Adult Tobacco Survey; IPAQ, International Physical Activity Questionnaire; PHQ-9, Patient Health Questionnaire depression scale.
Mortality and Costs in LATAM

Reproduced with permission from the WHO
CV Mortality in Latin America
PAHO, Health Analysis and Statistics Unit. Washington DC, 2008

### Adjusted mortality rates (100,000 pop) (2003-2005)

<table>
<thead>
<tr>
<th>Region</th>
<th>Stroke</th>
<th>Ischemic heart diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional</strong></td>
<td></td>
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</tr>
<tr>
<td>The Americas</td>
<td>42.3</td>
<td>81.0</td>
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<tr>
<td>North America</td>
<td>30.7</td>
<td>93.9</td>
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<tr>
<td>Latin America and the Caribbean</td>
<td>54.3</td>
<td>65.5</td>
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<tr>
<td><strong>Subregional</strong></td>
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<td></td>
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<tr>
<td>Latin America</td>
<td>54.1</td>
<td>65.2</td>
</tr>
<tr>
<td>Mexico</td>
<td>34.5</td>
<td>66.2</td>
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<tr>
<td>Central American</td>
<td>39.6</td>
<td>59.1</td>
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<tr>
<td>Latin Caribbean</td>
<td>69.1</td>
<td>82.1</td>
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<tr>
<td>Andean Area</td>
<td>44.2</td>
<td>73.1</td>
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<tr>
<td>Brazil</td>
<td>70.9</td>
<td>67.4</td>
</tr>
<tr>
<td>Southern Cone</td>
<td>48.6</td>
<td>44.6</td>
</tr>
<tr>
<td>English Caribbean</td>
<td>86.0</td>
<td>108.7</td>
</tr>
</tbody>
</table>

**CV mortality by illness. 2013**

*Progr in Cardiovasc Diseases 2014, 57 (3): 262*
### Risk Factors in Latin America

#### Table 2. INTERHEART Latin America: Prevalence of risk factors in the control group; odds ratios and population-attributable risks for males and females combined.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Prevalence in controls (%)</th>
<th>Odds ratio (95% CI)</th>
<th>PAR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ApoB/ApoA1 *</td>
<td>42.0</td>
<td>2.3 (1.8–9.4)</td>
<td>40.8 (30.3–52.2)</td>
</tr>
<tr>
<td>Tobacco †</td>
<td>48.1</td>
<td>2.3 (2.0–2.7)</td>
<td>38.4 (32.8–44.4)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>9.54</td>
<td>2.6 (2.1–3.2)</td>
<td>12.9 (10.3–16.1)</td>
</tr>
<tr>
<td>Arterial hypertension</td>
<td>29.1</td>
<td>2.8 (2.4–3.3)</td>
<td>32.9 (28.7–37.5)</td>
</tr>
<tr>
<td>Waist-to-hip ratio</td>
<td>48.6</td>
<td>2.5 (2.0–3.1)</td>
<td>45.8 (35.8–56.2)</td>
</tr>
<tr>
<td>Depression</td>
<td>28.9</td>
<td>1.2 (1.0–1.4)</td>
<td>4.7 (1.4–13.9)</td>
</tr>
<tr>
<td>Permanent stress ‡</td>
<td>6.8</td>
<td>2.8 (2.1–3.8)</td>
<td>28.1 (18.5–40.3)</td>
</tr>
<tr>
<td>Regular exercise</td>
<td>22.0</td>
<td>0.7 (0.6–0.8)</td>
<td>28.0 (17.7–41.3)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>19.4</td>
<td>1.1 (0.9–1.3)</td>
<td>–3.2 (–18–11.7)</td>
</tr>
<tr>
<td>Daily consumption of fruit or vegetables</td>
<td>85.0</td>
<td>0.7 (0.6–0.8)</td>
<td>6.9 (3.35–10.5)</td>
</tr>
</tbody>
</table>

Adapted from ref 16. $N = 3125$. Participating countries: Argentina, Brazil, Colombia, Chile, Guatemala and Mexico.

Population-attributable risk (PAR).

*1st vs. 3rd tertile, † Never vs. active and former smokers, ‡ Never vs. permanent.
Obesity Rates in Selected Latin American Countries

Age-standardized estimates for Obesity (BMI > 30 Kg/m²) by country for ages 15+ years, estimates for 2005

- Venezuela
- Uruguay
- Peru
- Mexico
- Guatemala
- El Salvador
- Chile
- Brazil
- Argentina

Prevalence (%)
Recommendations for when to focus on structure, process, or outcomes.

Patient-reported outcomes - example
A Model of Quality Improvement Implementation

- **Goals**: small, quantifiable, short-term, directed to specific groups
- **Measurements**: able to determine if a specific change leads to improvements in Quality Indicators
- **Choose changes**: the ones that likely will result in measurable improvement
- **Test changes**: improvement-specific change leads to a better QI (see PDSA cycle)