



### **About this application**

Pan American Health Organization commissioned GEDIC and Pixeloide Studios for the development of this application. It is entirely based on the formula that the World Health Organization propose for estimating cardiovascular risk in Latin America, zone AMR-B. (2007 – ISBN: 978 92435 4728 2). This risk assessment score takes into account various regional adaptations based on the findings of Framingham study.

### **Choice of language and of cholesterol an metric units**

By selecting the gear icon you can change the language (English or Spanish), the units of cholesterol (mmol/l or mg/dl), and the metric units (decimal or imperial cm in feet and inches).

### **Initial calculation of individual risk**

It is very easy to use. By entering in six different criteria about the individual and selecting the option “calculate,” the approximate risk of developing significant cardiovascular diseases in the next 10 years is calculated (myocardial infarction, angina pectoris, stroke).

### **Result interpretation**

It is considered low risk to show an incidence rate less than 10% in 10 years, or less than 1% a year. Another way to interpret these results is that 1 out of 100 people in this situation is at risk each year; 10 people in a decade. On the other extreme, very high risk would be more than 40% in the next 10 years, indicating that of 100 people, 4 will suffer from cardiovascular disease per year, and 40 will show signs in the next 10 years; almost 1 out of 2.

The calculator is more precise when cholesterol levels are introduced, however it allows for calculation without this number- if it is not available.

### **What would happen if...**

Once the risk estimate is obtained, it evaluates different ways that it can be modified by correcting factors such as tobacco use, high blood pressure, and high cholesterol. It is considered ideal not to smoke, to have blood pressure lower than 140/90 and cholesterol levels under 200. Through this calculation, the users can see how quitting smoking lowers their risk by half, or that by changing any one of those 3 factors the estimated risk shifts from very high to very low, demonstrating how one can influence their outcome. Age and sex cannot be modified, and although diabetes is entered in as part of the analysis, it is not based on blood sugar levels or other criteria.

### **Validation of this application**

We created an algorithm that replicates the use of the classic color charts. The validation process took place in different phases. For the current version, 100 random cases were independently compiled and classified independently by a group of doctors and technicians, using the calculator and the form. Next, the discrepancies were analyzed. Of the 100 cases,

total concordance was found after correcting a typing error in the calculator and 4 classification errors in the color chart. This gives us the certainty that the algorithm reflects the exact use of the classic charts and facilitates the estimation of risk and the eventual benefits of making improvement. Nevertheless, we welcome any detection of unexpected errors.

### **Recommendations**

Recommendations are based on the prevention guides provided by PAHO and WHO. They include considerations concerning hypertension treatments, the use of statins, managing tobacco use, exercise, diet, etc.

### **Body Mass Index (BMI) Calculation**

The BMI is a relevant prognostic factor that was not initially included in these calculations. We prefer to facilitate the use of the BMI by entering in height and weight, so that later it can be compared to recommended criteria.

### **What the calculation doesn't include**

An array of risk factors were evaluated and excluded due to the lack of relevance compared to the 6 criteria used in the calculation; however these other factors may be very significant. Factors such as obesity, a sedentary lifestyle, work and family stress, family history of coronary heart disease or death due to cardiovascular causes at an early age (younger than 60 years). When in doubt about adopting strategies or preemptive interventions, the presence of one or more of these factors would indicate the need for more proactive behavior.

### **Precautions**

**Under no circumstance should this calculator be used as a replacement for a consultation with a doctor or a clinician's judgment.** We hope that the diffusion of this calculator will help doctors to quickly estimate cardiovascular risk, and discuss with patients in order to analyze ways the risks can be lowered through preventative measures. Another objective is to help people who are worried about their health to better estimate their need to consult with a doctor when their risk is not low.