

National Physician Qualification Program in Cardiovascular Disease Prevention and Integral Care

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General Objective

To qualify public health physicians for the prevention and integral care to cardiovascular disease.

Specific Goals

- Cardiovascular disease prevention;
- Cardiovascular morbidity and mortality reduction in Brazil;
- Promotion of integral access to diagnosis and treatment of cardiovascular disease implementing standards of care in cardiovascular diseases;
- Implementing the National Physician Qualification Program for Cardiovascular Disease Prevention and Integral Care in at the Ministry of Health, CONASS (Conselho Nacional de Secretários de Saúde - National Health Secretaries Council) and CONASEMS (Conselho Nacional de Secretarias Municipais de Saúde - National Health Municipal Secretaries Council)

Subjects

- Arterial Hypertension
- Acute Myocardial Infarction;
- Heart Failure;
- Stroke.

Target Audience

Physicians involved in Public Health Activities

Introduction

Among the 57 million deaths that occurred worldwide in 2008, 63% (36 milion) were caused by chronic

Keywords

Cardiovascular Diseases / prevention & control; Cardiovascular Diseases / mortality; Credentialing; Physicians; Education, Medical / trends; Brazil.

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non-communicable diseases (CNCD); 48% of the deaths attributed to CNCDs (30% of the total deaths) were caused by cardiovascular diseases. Approximately 80% of all deaths due to Chronic Non-Communicable Diseases (CNCD) occurred in low or moderate income countries. One third of these deaths occurred in persons aged 60 years old or less¹.

In Brazil, CNCDs are the most important public health problem and correspond to 72% of the death causes, with great incidence in poor segments of the population and vulnerable groups².

Circulatory system diseases (CSDs) were the main causes of death in developed and developing countries in 2009, being among the 10 main causes of death and responding for 28,7% of the deaths in developing countries and 26,6% of the deaths in developed countries, according to the World Health Organization³. In Brazil, CSDs represent one third of all deaths and almost 30% of the deaths among people in the 20-59 years old age group, fully impacting the productive population. Among CSDs, we highlight cerebrovascular diseases (CBVDs) and ischemic heart diseases (IHD), which responded in 2009 for 32% and 30% of the CSD death toll, respectively⁴.

Still in 2009, the mortality rates adjusted to age and gender were 228.4 deaths per 100,000 population (266.7 and 196.1, for men and women respectively), with a slight predominance of cerebrovascular disease over ischemic heart disease (70.7 and 69.2 per 100,000 population, respectively). These are among the highest in the countries all over the American continent with an average to high income (gross national income per capita of US\$ 3,976 to US\$ 12,275), second only to Venezuela's adjusted mortality rates of 246.1 deaths per 100,000 inhabitants in 2007, the last year available in the series⁵.

At the end of the 1950's, mortality related to CSD started to decline in industrialized countries. In Brazil, this decline could be noted in the last years of the 1970's, with a significant reduction of mortality rates attributed to CSD, despite important regional differences. Reliable and comprehensive statistics did not exist until this time⁶.

The direct cost associated with management of CSD is high in Brazil, with a significant impact on the budgets of health funding agencies, especially regarding drug expenses, hospitalizations and high complexity procedures. For example, in 2007, 1,157,509 admissions due to CVD were registered by the Public Health System (Sistema Unificado de Saúde - SUS) (10.22% of the country's total) and heart

failure was the main cause. Regarding costs, in November 2009, 91,970 admissions due to CVD were registered, to a total cost of R\$ 165,461,644.33 according to the Ministry of Health (DATASUS). End-stage kidney disease, another condition present in CVD patients, led to the inclusion of 94,282 individuals in the SUS' dialysis program, claiming for a death toll of 9,486 fatalities in 2007⁷.

Even though some authors assign the 44% reduction in ischemic heart disease mortality in the US to the decrease of the classic cardiovascular diseases risk factors, they are still highly prevalent and have increased in the last decades. In Brazil, in 2010, Vigitel data from adults over 18 years old showed that smokers are 1.8 times more prevalent among individuals with less schooling, while those with better education eat 1.7 times more fruits and vegetables and are more physically active than the first group⁸.

It is possible that other risk factors play an important role in the genesis of these diseases, together with the classic risk factors. These other risk factors include inflammatory phenomena, endothelial dysfunction, hypercoagulability, hyperhomocysteinemia, insulin resistance and genetic factors, among others. We can also cite literature data pointing to socioeconomic conditions as important determining factors of cardiovascular diseases⁸.

Approaching the classic risk factors by means of primary prevention is thus of great importance; the recommendations suggest that multifactorial action is necessary, setting more rigorous goals to this group of patients aiming to reduce morbimortality associated to CVD⁸.

The only classic risk factor whose prevalence decreased over the last years is smoking. According to the PNSN (Pesquisa Nacional de Saúde e Nutrição - National Health and Nutrition Survey), performed by IBGE (Instituto Brasileiro de Geografia e Estatística - Brazilian Geography and Statistics Institute), in 1989, smoking prevalence in Brazil was 31.7% (39.3% among men and 25.2% among women). The prevalence found in an epidemiologic survey in 16 Brazilian capitals, in 2002-2003, varied from 12.9% to 25.2% (men: 16.9% to 28.2%; women: 10.0% to 22.9%). Since the reduction in this risk factor is recent, its impact on mortality rates should be noted in future years⁹.

On the other hand, the number of persons with diabetes was estimated in 35 million in 2000 in the Americas and projected to 64 million in 2025. In developed countries, the increase will occur mainly in the advanced age group, due to the increased life expectancy and population growth; in developing countries, the increase is to be seen in all age groups, particularly the 45-64 age group, in which diabetes prevalence shall triple, and the 20-44 and over 65 years old groups, where it shall double¹⁰.

Besides increasing the absolute risk of cardiovascular disease to approximately two times the observed in non diabetic persons, diabetes is also associated with worse prognosis and smaller survival on the short range, worse response to high complexity procedures, an increased number of hospital readmissions and greater cost to the health care system¹⁰.

In Brazil, the prevalence of overweight (BMI \geq 25kg/m²)

in the 1974/1975 National Familiar Expense Survey (Estudo Nacional de Despesa Familiar - ENDEF) was 11% among men and 19% among women in the Northeast region and 20% among men and 29% among women in the Southeast region. These numbers have increased greatly and, nowadays, the estimated overweight prevalence in Brazil is 38,5% for men and 39% for women. Closely linked to overweight and obesity, dyslipidemias are found in 38% of men and 42% of women. These findings follow the trend observed in the western population as a whole, which eats more and more and moves less, leading to a caloric surplus and favoring the manifestation of these risk factors in genetically predisposed persons, thus becoming a threat to the health of the population of most nations. The vicious cycle intertwines overweight/obesity, dyslipidemias and physical inactivity and culminates with the increased prevalence of diabetes and arterial hypertension and their consequences, manifested as heart failure, acute coronary syndrome and stroke¹¹.

Systemic arterial hypertension is highly prevalent and loosely controlled and is considered one of the main modifiable risk factors and one of the most important public health problems in our country and worldwide. Mortality associated to CVD increases progressively as blood pressure increases above 115/75 mmHg in a linear, continuous and independent manner. In 2001, approximately 7.6 million deaths (14% of the total) were attributed worldwide to BP increase (54% due to stroke and 47% due to ischemic heart disease), most of them (approximately 80%) in countries with low to medium economic development, and more than half in individuals from 45 to 69 years old¹².

Population surveys in Brazilian cities have shown an arterial hypertension prevalence superior to 30% in the last 20 years^{13,14}. Using BP values \geq 140/90mmHg as indicative of arterial hypertension, 22 studies in Brazil found prevalences between 22.3% and 43.9% (mean 32.5%) overall, over 50% in the 60-69 age group and 75% in the over-70 age group¹⁵. According to gender, the prevalence of arterial hypertension ranged from 35.8% among men to 30% among women in 22 Brazilian cities, similar to other countries. A quantitative systematic review (2003-2008) of 44 studies in 35 countries revealed a global prevalence of arterial hypertension of 37.8% among men and 32.1% among women. Thus, it is assumed that the hypertensive population has grown from 600 million to 1 billion individuals between 1980 and 2008¹⁶. In 2025, it is estimated that 1,56 billion individuals will suffer from arterial hypertension worldwide.

Clinical studies have shown that the detection, treatment and control of arterial hypertension are of paramount importance for the reduction of cardiovascular events¹². In Brazil, 14 population-based studies involving 14,873 persons in the South, Southeast and Central regions in the last 15 years (1995-2009) revealed that BP levels are adequately controlled in only 19.6% of the patient (considering BP \leq 140/90mmHg as the normal BP values)^{14,18}. These rates are supposedly overestimated due to the non-existence of national studies and the methodological heterogeneity of the studies performed to date^{14,18}. The comparison of the respective awareness, treatment and control rates obtained in the Brazilian studies with the ones from 44 studies in

35 countries¹⁵ revealed similar awareness rates (52.3% vs. 59.1%). On the other hand, treatment and control rates (34.9% and 13.7% vs. 67.3% and 26.1%) were significantly superior in Brazil, particularly in inland municipalities with broad coverage of the Family Health Program (Programa de Saúde da Família - PSF)¹⁴, indicating that the concentrated efforts of health professionals, scientific societies and government agencies are essential in order to achieve acceptable systemic arterial hypertension control and treatment goals.

BP control rates are also low in other developing countries, at least in most of them, but they are widely variable (5.4% in Korea to 58% in Barbados)^{15,19}. In the US, on the other hand, systemic arterial hypertension control practically doubled between 1998 and 2008 (27.3% vs. 53.5%)²⁰ and quintupled in Canada between 1992-2009 (13.2% vs. 64.6%)²¹, reflecting important advancements in the detection and treatment of arterial hypertension in these countries.

Among the causes of death and hospitalization due to CVD, we highlight the acute coronary syndromes (ACS) with and without ST segment elevation, stroke and decompensated heart failure.

In Brazil, heart failure (HF) motivates approximately 4% of overall admissions and 31% of the hospitalizations due to cardiovascular disease. The mean hospital stay is 5.8 days, and in-hospital mortality varies between 5.6% and 6.0%, yielding a cost over R\$ 200 million, according to Brazil's Ministry of Health. In the US, approximately 4% of the overall population have heart failure, generating an annual cost of more than US\$ 20 billion⁷.

Heart failure is often accompanied by distinct comorbidities that interfere with the treatment and natural course of the disease. The North American registry ADHERE²² gathered data from more than 100,000 patients admitted due to decompensated HF and showed that more than 90% of the analyzed patients had also systemic arterial hypertension, chronic coronary artery disease or diabetes mellitus. Besides, 35% of them had also chronic renal failure, 33% had asthma or chronic obstructive pulmonary disease and 19% had peripheral occlusive arterial disease. These comorbidities make treatment more difficult and the prognosis more severe.

Recent evidence indicate that HF is a common, high-cost and progressive condition, initiated by the presence of usual risk factors, such as arterial hypertension, diabetes and dyslipidemia (Stage A), followed by asymptomatic changes in cardiac structure and function (Stage B), signs and symptoms appearance (Stage C), disability and death (Stage D). This classification demonstrated the importance of early diagnoses and subsequent preventive strategies⁷.

The economic, social and medical impact of HF affects various continents and compromises significantly survival and life quality of patients, leading to frequent admissions, besides being responsible for high absenteeism and early retirement levels. The socioeconomic factor is considered essential in the disease course and low familiar income predicts hospital readmissions²³.

Stroke was responsible for 98,000 deaths in 2008 in Brazil in 2008, according to the Ministry of Health⁴, and the mortality rate due to cerebrovascular disease in Brazil is three times the one found in the US and Canada⁵; besides, in the North and Northeast of Brazil it is the main cause of death, and the second in the South and Southeast regions. In Brazil, the findings point to mortality rates very similar between men and women².

Stroke is still the main disability cause in Brazil, where it is responsible for 40% of the early retirements². We must yet remember that stroke patients remain longer in hospital, have high rates of readmission, and are associated with huge expenses related to retirement, sickness leave and rehabilitation. The costs of post-atrial fibrillation stroke are 30% higher than stroke related to other etiologies due to its severity and the longest hospital stay.

Finally, we emphasize that the two main causes of stroke among us are uncontrolled arterial hypertension and atrial fibrillation². The course offered by SBC, in this proposal, approaches these two aspects extensively because an adequate medical intervention in these two areas would surely provide a huge contribution in health cost reduction and quality of life and full employment preservation.

Acute myocardial infarction (AMI) is a highly prevalent cardiovascular clinical syndrome in Brazil, corresponding now to the second cardiovascular death cause (48/100,000)⁴. Continuous growth is estimated for the next two decades, particularly in developing countries. The causes of the increased incidence of AMI in developing countries derive from the accelerated urbanization process, difficult access to the health care system, the absence of effective actions against cardiovascular risk factors and the accelerated population aging²⁴.

In-hospital acute myocardial infarction mortality may vary from 3 to 20%, according to the quality of care offered to patients, such as, for example, thrombolysis or primary angioplasty and access to coronary care units. Mortality in the first year post-infarction can vary between 5 and 15%, with heart failure as a major post-infarction complication²⁵.

Of the 1,099,131 deaths that occurred in Brazil in 2009, 99,835 were attributed to ischemic heart disease, of which 75,868 were due to acute myocardial infarction, representing 6.9% of overall deaths. It is interesting to note that almost half of the deaths (28,849) happened outside the hospital, illustrating the high mortality, particularly within the first hour, due to ventricular fibrillation. Sudden death can also be the first clinical presentation of coronary artery disease²⁵.

As ACS treatment advances, AMI mortality, according to observational studies, decreased from 30% in the 1950's to less than 5% according to the most recent data from developed countries. Numerous successful protocols were already established allowing large scale applicability based on simple measures and immediate access to treatment in Emergency and Basic Health Units. In Brazil, it is estimated that 900,000 patients present angina pectoris with 18,000 new cases per year. According to DATASUS, almost 100,000 deaths occur each year due to acute coronary syndromes.

Some predictions imply that Brazil is about to experience an explosion of CAD cases as population ages²⁵.

Acute coronary syndromes - myocardial infarction and unstable angina - represent one of the major causes of emergency care in Brazil and cardiac cath labs can be found in less than 20% of the emergency departments. The total cost of standard acute myocardial infarction care, including primary angioplasty, was estimated in R\$12,873.00 in 2008, and this cost doubles when coronary stents are employed. AMI cases leading to complications such as need for electrical cardioversion, pacemaker implantation, tracheal intubation or pericardial drainage, increase the costs up to 15 times. In 2010, the number of primary angioplasties corresponded to only 12% of the AMI cases and, if we take into account that thrombolytics were used in almost 20% of the cases, we would then achieve the Brazilian mean effective reperfusion treatment of only one third of STEMI cases²⁶.

Even though the therapies recommended for treating these diseases (such as TNK thrombolysis for AMI treatment, according to the 2011 Line of care of the Ministry of Health) are available in SUS, they have not achieved their estimated comprehensiveness and the cardiovascular disease mortality remains high, demanding joint action of the Ministry of Health, scientific societies, state and city health managers and hospitals²⁷.

Besides, chronic coronary patient care is essential to avoid new hospitalizations and new episodes of acute coronary syndrome: correct arterial hypertension, dyslipidemia and smoking control, healthy diet and adherence to drug therapy are crucial to avoid new acute problems and to decrease readmissions, cardiac decompensations and prevent future events. The correct utilization of the drugs available through the SUS network can surely contribute to achieving these goals. By approaching these subjects, we aim to increase awareness among the network physicians of the great quantity of resources that are available now for managing SUS patients²⁷.

The Pan-American Health Organization (PAHO) recognizes the need for an integrated action against CVD and will propose to its member countries the establishment of a global goal of reducing CVD mortality rate up to 20% between 2011-2020 (as compared to the previous decade).

According to Dobachi BF, as stated in the prologue of the book "Caring for chronic conditions in primary health care settings is imperative for the consolidation of family health strategies", by Mendes EV¹⁰, "Breaking the paradigm of care of the acute episode, from healing to the continuous chronic conditions care, from health care to citizens and society participation is, without any doubt, a great challenge. The health care system must take care of people so that they do not get ill, and not only care for illness and ill people."

Taking into account the huge cost of CNCs, previously well demonstrated, combating this illness is now in every government agenda since they issued in September 2011 at the United Nations General Assembly, a proposal for reducing mortality due to CNCs by 2% per year until 2022.

The Brazilian Society of Cardiology, which congregates approximately 13,000 cardiologists, assuming its leadership role in the combat against CNCs, proposed a partnership with the Ministry of Health in order to implement public health policies toward the prevention and control of the CNCs. Continued education of health professionals acting at different complexity levels in our National Public Health System (SUS) offers a basis for the consolidation of these social actions, which will have an impact in the natural history of these diseases, modifying their prevalence and reducing their morbidity and mortality rates by implementing primary and secondary prevention measures for the cardiovascular diseases that represent today the larger proportion of the CNCs, as well as implementing disease prevention actions and promoting health to the population at risk at the Basic Health Units (Unidades Básicas de Saúde - UBS) that should be the gateway to SUS according to the chronic conditions care model¹⁰ (Figure 1), and taking into account the risk pyramid (Figure 2)^{10,28,29}.

This course provides a joint tool that totally complies with the recently released Standards of Care of the Ministry of Health and should allow us to improve acute and chronic patient care. The effective implementation of the measures recommended by the Standards of Care will only be successful if the professionals acting at the different complexity levels within the system have clear understanding of their general role, consequently leading to quality care as a result of the qualification of the outpatient clinics and emergency departments in the SUS network.

COURSE LAYOUT/CLASS DESIGN/ASSESSMENT

Online and Instructor-Led Course on Acute Myocardial Infarction, Stroke, Arterial Hypertension and Heart Failure

Description

This Plan consists in a partnership between the Brazilian Cardiology Society (SBC) and the Ministry of Health for qualification of physicians for caring for **the most prevalent cardiovascular diseases, as well as emphasizing the importance of disease prevention and health promotion for the population at risk.**

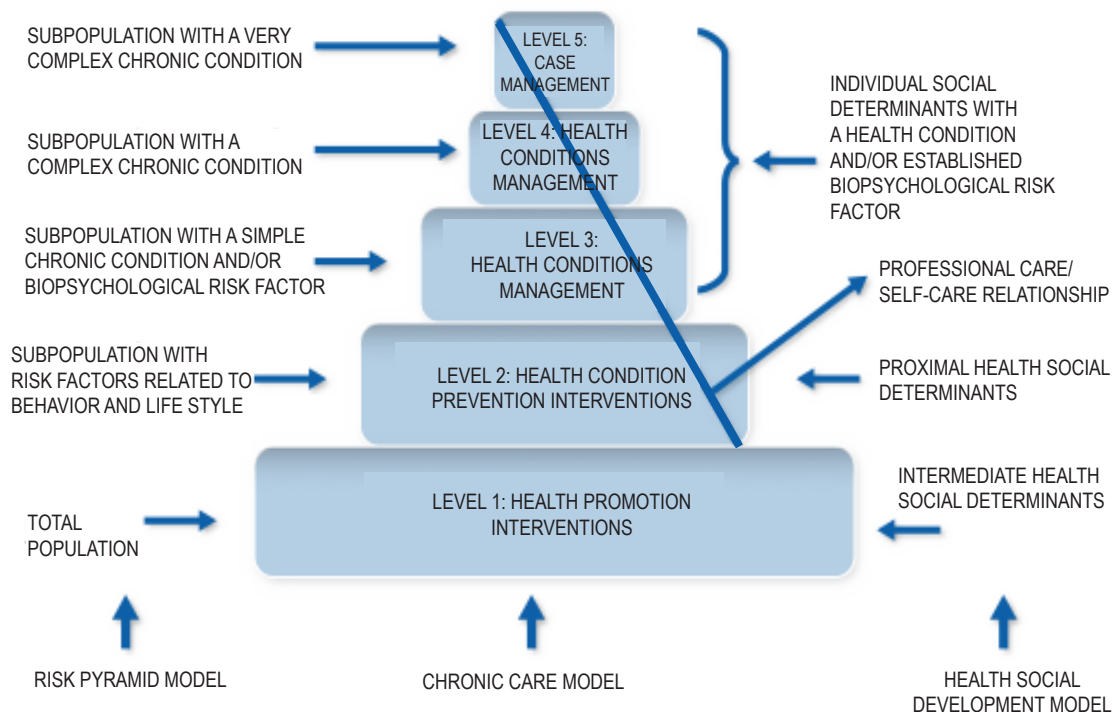
The initial target audience are the physicians working at different complexity levels within SUS.

This training will be based on three activities, namely:

- **Online Course**
- **Instructor-Led Course**
- **Realistic Simulation Course - TECA A (Physicians)**

The training methodology intends to offer to the participants information and currently accepted concepts of the Brazilian Cardiovascular Guidelines, providing practical and useful information on actual clinical cases and adapting these procedures to the daily practice of the Public Health System.

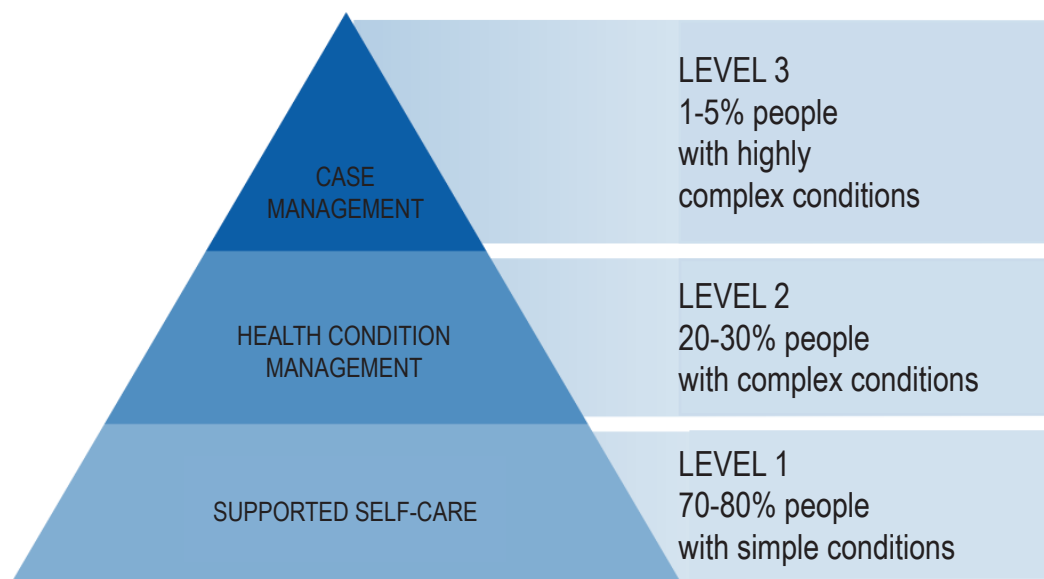
Editorial



Source: Mendes²⁷

Source: Vilaça¹⁰

Figure 1 - Chronic Conditions Care Model.



Source: Department of Health²⁸; Porter e Kellogg²⁹.

Figure 2 - Risk Pyramid.

Capacitation Plan Activities

Intended Audience - Physicians

(1) Online Course

SBC will make the Online Course available on the website of SBC Corporate University with a password, so that the physician can access training whenever his schedule allows. The online course introduction (before instruction-led training) will be a 4-hour exposure on 4 chapters (one hour each, respectively): Acute myocardial infarction, stroke, systemic arterial hypertension and heart failure. The 9-hour post-instruction-led training online course exhibit contents will take into account content assimilation and fixation (one hour of study for each hour of formal presentation) to a total workload of 18 hours for the whole unit.

Besides the class contents, the physician will have access to the Guidelines, the Ministry of Health Protocols and Learning Exercises through the virtual environment.

At the end of each unit, as the physician assumes that he/she has properly absorbed the unit's concepts, he/she will access the Evaluation Area and will answer to a 10-question online test.

The units will be divided into pre and post-instruction-led course. The goal of the pre-instructor-led unit is to present the necessary knowledge and the post-instructor-led unit aims to knowledge retention. Ideally, a pre-instruction-led course would lead to better use of the course resources; it would also be very important that the participating physicians entered the instruction-led course with minimum knowledge on the subject and that they could bring questions to be answered.

On finishing the 8 post-instruction-led course units, the physicians who achieve average grades equal or superior to 7 (seven) will receive an *Approval Certificate* from SBC Corporate University.

The physician who do not achieve the required grade will be offered a second opportunity - a 60-question Final Test. Approval on this test will be granted to the physicians achieving grades equal or superior to 7 (seven).

The physicians who do not achieve the required grade on the second test will receive a **Participation Certificate** from SBC Corporate University.

The attendees will be able to access the Online Course information for 90 (ninety) days.

(2) Instructor-Led Course

Based on the established concept of the SBC's Continued Education Program, this training intends to promote a face-to-face encounter of the physicians participating in the course and the main opinion leaders in Cardiology in Brazil on the corresponding areas (acute myocardial infarction, stroke, arterial hypertension and heart failure).

The instruction-led courses intention is to be more useful than the plain exposure of information, promoting opinion exchange among the professionals (speakers and attendees) and discussing the main issues related to the applicability of the concepts included in the Cardiovascular Guidelines and Protocols of the Ministry of Health. The exchange of experiences with professionals coming from the states where

the course will be offered is essential for ensuring the future practical applicability of the subjects.

Each instructor-led course will have an optimized design with 14 hours divided in two days so the course can be more easily adapted to the workload of the participating physicians. The events intend to be objective and pragmatic and to privilege discussion and debate. In order to achieve this goal, each course will count on 8 speakers and a maximum audience of 50 (fifty) attendees.

Another alternative to be discussed is to offer two one-day instruction-led courses instead of a one course with 2-day duration. We would prefer the first alternative, but logistic and cost issues may make it necessary to discuss the second one.

(3) Realistic Simulation Course - Basic and Advanced Cardiovascular Emergency Training (TECA B and TECA A)

The correct initial care of a cardiorespiratory arrest victim and the situations that lead to it may decrease the risk of sequels and death up to 7 to 10%.

SBC, the pioneer in Cardiac Emergency and Resuscitation courses in Brazil, has already trained approximately 15,000 physicians and health care professional since 1997.

The current SBC's course on Advanced Life Support, TECA A (Treinamento de Emergências Cardiovasculares Avançado - Advanced Cardiovascular Emergency Training) approaches major cardiovascular emergency care, including the various settings preceding cardiorespiratory arrest (potentially lethal arrhythmias, initial management of acute myocardial infarction, stroke and decompensated heart failure); cardiorespiratory arrest mechanisms (ventricular fibrillation, pulseless ventricular tachycardia, pulseless electrical activity and asystole) and post-cardiorespiratory arrest care (hypothermia, and electrolytic, respiratory and hemodynamic stabilization)

Students are provided realistic training with real clinical cases in a simulated emergency setting that employs an active methodology with mannequins and other equipment as needed, and are able to build on the apprenticeship and work in a practical manner, reproducing daily situations (which helps fixating the learned lessons). This work makes the students able to employ their motor, affective and cognitive skills in their workplaces, simulating real situations with the national protocols created by the Brazilian and International Cardiology Societies and optimizing the learning process.

Each 2-day course will include 32 students in 4 groups sharing the training stations.

Instructor Course Implementation Strategy

Pre-conference courses:

- Brazilian Congress of Cardiology
- State and Regional Societies Congresses
- Study group and Department Congresses
- Dates and sites to be defined according to government need.

Online Course:

Promoted by the SBC Corporate University

Access:

SBC website
SBC online magazine

Program's results evaluation

Pre-course application evaluation
Online and instructor-led course post-application evaluation
Certification
Indicators' evaluation

Certification

Methods

On the date scheduled for the training, all the physicians will be submitted to a pre-test elaborated by the Brazilian Society of Cardiology. This pre-test will encompass 24 (twenty-four) subjective multiple-choice questions on arterial hypertension, myocardial infarction, heart failure and stroke epidemiology, diagnosis, pharmacology and treatment. The pre-test duration will be 25 (twenty five) minutes.

After the training course, another 25 (twenty five) minutes will be destined to the post-test which is, in fact, a repetition of the pre-test with the questions and alternatives presented randomly to the trainees, so that the already trained professionals will have to concentrate on the answers.

Both tests are exclusively for SBC's internal uses (evaluation of the knowledge levels of the trainees, the performance of the speakers and the construction of continuous improvement of the approach to the subjects offered in this course).

The attendees that achieve a final average equal or superior to 6.0 (six) at the three stages will be approved and shall receive a certificate from the Brazilian Society of Cardiology Corporate University, besides bonus (a suggestion) both from the Brazilian Society of Cardiology and the Ministry of Health.

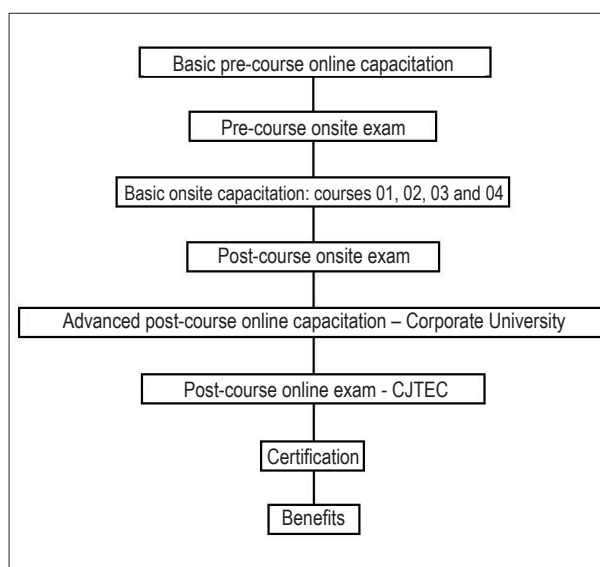
From the Brazilian Society of Cardiology, the bonuses would be: discounts in State and National Conferences fees, discounts for buying the textbook of the Brazilian Society of Cardiology, educational material receipt, etc..

From the Ministry of Health: to be discussed.

Those who fail the courses shall participate in future Training Courses and accomplish again all the corresponding stages.

Program's Promotion:

- Presentation to the Ministry of Health, CONASS and CONASEMS and the Tripartite Intermanager Committee.
- Promotion to COSEMs and State and City Health Agencies.
- Press releases.
- Publishing in the Brazilian Archives of Cardiology.
- Presentation on SBC Congresses.
- Publishing in international journals



Annexes

Accomplishment

Brazilian Society of Cardiology
Cardiovascular Health Promotion Branch
Arterial Hypertension Department
Heart Failure Department
Clinical Cardiology Department
SBC Continued Education Program
SBC Corporate University

Program Structure Committee

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• Online and instructor-led course on acute myocardial infarction, stroke, arterial hypertension and heart failure

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• Program's implementation actions

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• Program's Cost-Benefit

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SBC commercial

• Program's promotion actions

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• Pre- and Post-Testing Program Results' Evaluation and Certification

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Author contributions

Conception and design of the research; Writing of the manuscript and Critical revision of the manuscript for intellectual content: Andrade JP, Mattos LA, Carvalho AC, Machado CA, Oliveira GMM; Acquisition of data and Analysis and interpretation of the data: Andrade JP, Mattos LA, Carvalho AC, Oliveira GMM; Statistical analysis and Obtaining funding: Andrade JP, Mattos LA, Oliveira GMM.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

This study is not associated with any post-graduation program.

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