

Regionalization of health services for medical care: an example from the Cardiocentro Ernesto Che Guevara

Regionalización de los servicios de salud para la asistencia médica en Cuba: Ejemplo del Cardiocentro Ernesto Che Guevara

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ABSTRACT

Regionalization in health services is a technical and administrative decentralization mechanism that involves the settlement of different levels of care. Gathering and interaction of these levels constitute the regional system of medical care that should be part of a national health system. In this paper, a chronological analysis of the implementation and development of this regionalization for the care of patients with cardiovascular diseases is discussed. The experience of the Cardiocentro Ernesto Che Guevara, main center of this activity in the central region of Cuba, is described.

constituyen el sistema regional de asistencia médica que debe ser parte integrante de un sistema nacional de salud. En este trabajo se hace un análisis cronológico de la implementación y desarrollo de dicha regionalización para la atención a los pacientes con enfermedades cardiovasculares. Se describe la experiencia del Cardiocentro Ernesto Che Guevara, centro rector de esta actividad en la región central de Cuba.

RESUMEN

La regionalización en los servicios de salud es un mecanismo de descentralización técnica y administrativa que comprende el establecimiento de diferentes niveles de atención. El conjunto y la interacción de estos niveles

INTRODUCTION

Regionalization is a technical and administrative decentralization mechanism that involves the settlement of different care levels (from primary in health areas to polyclinics and regional hospitals, reaching its maximum expression in tertiary hospitals or institutes)¹. These three levels' gathering and interaction constitute the regional system for medical care that should be part of a National Health System (NHS)¹. The limitations of an economically stricken country since 1962 have forced many sectors to work methodically, and the medical services regionalization has been of paramount importance to accomplish an

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effective work in our NHS.

This organizational process in the service network covers a specific regional area with full accessibility and coverage to the community, as well as decentralizing work to a single direction with well-defined programs^{1,2}. It is essential to achieve community participation that, if fails, would turn regionalization into a mere unproductive and bureaucratic exercise.

In Cuba, there are different health care levels starting from the primary: Family Doctor's office and polyclinics, which employ all necessary provincial hospital services and make use of research institutes and reference centers which innovate or facilitate the application of new knowledge and technologies in the sector³.

High-quality information is required for these working areas to function properly, flowing in both ways and constantly improving the organization's work. All of this, which has been called reference and counter-reference, has to do with the care level and obligation to inform and send every necessary element to personally and medically identify patients referred to the reception unit; which, firstly, must reevaluate diagnosis and send outcome information back to the sending unit and, secondly, be informed on any aspect to do patients follow up, who will then return to their care level base^{4,5}.

The history of regionalization in our country is closely related to the development of health services provided by the different centers. This paper analyzes how to expand highly specialized medical services in Cuba, and discusses the experience in its central region, particularly in the *Cardiocentro Ernesto Che Guevara* from Santa Clara, Villa Clara, which assists more than three and a half million population.

We address regionalization set-backs and how we currently work for achieving a reference and counter-reference to reach a higher quality in such a specialized medical care field.

REGIONALIZATION IN CUBA

Before 1959

We have been lucky that from early Republic, in 1902, a high personality in medical sciences, Carlos

J. Finlay, MD, assumed the Health Ministry in our young nation, and that on January 28, 1905 was created The Health and Welfare Ministry which constituted «the continent's first health ministry». During these years of pseudo-republic and every kind of puppet governments, only a regional organizational level of «first-aid posts» was achieved. In 1959 three incomplete and inequitable systems co-existed: the aforesaid state system, the private system and that of mutual societies⁶.

In August 1960, Law 959 attempted to integrate the country's health activities direction by making the *Ministerio de Salud Pública (MINSAP: Ministry of Public Health)* responsible for all of them which going through several stages, have reached to the present moment. Later on, all of this organizational process development in which regionalization has been refined is briefly commented.

The 60s

In the 60s, with the state services integration along with private and mutual clinics nationalization, the NHS was established in Cuba. The Primary Health Care (PHC) Network³ was based on the premise that care was accessible to the entire population. Since then, a need for effective communication between all units and components has been foreseen.

In the mid-60s, Mario Escalona defined regionalization as: “the way all different administrative units of production, services and health personnel training are interrelated in a given territory in order to raise the population's health level with an optimal use of the existing resources and means for these activities”⁷.

The 70s

When the new political-administrative division of the country took place in 1976 and the *Órganos del Poder Popular* (People's Power executive committee) was formed, the NHS was structured into three administrative levels: central, provincial and municipal. At that time, regional hospitals and polyclinics contingent to the same level in the region became subordinated to different hierarchical levels, the hospital to the province and the polyclinics to the municipalities. Some small hospitals, depending on the region, came under municipal jurisdiction^{3,5}.

The 80s

Since 1984, with the *Policlínico de Lawton* (Lawton's polyclinic) experience and its subsequent generalization to the whole country, PHC team became part of the community where it worked. This trend changed quality and quantity of medical facilities by strengthening outpatient services. In this new stage the polyclinic became a supporting and controlling base for the Family Doctor. The different NHS medical care levels were organized according to complexity of preventive-curative, rehabilitative actions, and greater service specialization⁸.

From then on, progressive coverage was guaranteed to the population with the new Family Doctors and Nurses, until reaching 99% of the Cuban population through this new program. These Basic Health Teams main objective has been much more focused on promotion, disease prevention, early diagnosis, health problems solving, and patient's rehabilitation. On the other hand it is thought for hospitals to focus on the already established disease, and specialized institutes on doing research and studying those cases that due to complexity or singularity, require a «vertical» specialty attention^{3, 6,8}.

Close relationship

Undoubtedly, these changes not only involved Primary Care, but have also affected hospital and emergency medical care, witnessing every change in the Cuban health frame since the Family Doctor and Nurse Program exists^{7,9}. Many and different institutions are involved in this endeavor. But if adequate communication is not ensured, it will lead up to repeated use of many services or under-use, by ignorance, of others. All of this raises our NHS costs. It is necessary, therefore, to work closely interrelated¹⁰⁻¹².

Since regionalization was established, a whole process was developed within our NHS, which main objective was attaining polyclinic-hospital interrelation, but it did not work at its very best to identify and solve possible system deficiencies concerning the different levels of relationship. The polyclinic-hospital interrelation meetings, being part of this process, were limited to solving existing care problems within the different units, and left out difficulties on care delivery processes.

In general, the polyclinic-hospital interrelation (before Family Medicine) and the clinic-polyclinic-hospital interrelation (since 1984) have developed with great trouble. The insuring procedures have not fully achieved its objectives, as a result of organizational deficiencies and ignorance of the established norms.

In recent years, research has provided evidence showing irregularities in the cross-reference information mechanisms (reference – counter-reference) between the different NHS components. Besides, teaching, assistance, and research connection between institutions at different care levels presents difficulties, and there are problems to bring about the principle of sustained patients care.

The services provided by the *Cardiocentros* (where cardiovascular surgery and interventional cardiology are performed) have been an example of how, despite their high implementation-development costs, there is a political will to prioritize human beings and their needs.

REGIONALIZATION OF THE *CARDIOCENTROS* THROUGHOUT THE COUNTRY, PARTICULARLY IN THE CENTRAL REGION

From 1982, started the development of every medical specialty, as well as the creation of medical university faculties in all provinces, the development of existing research institutes was strengthened, and new units were created such as the *Hermanos Ameijeiras* Hospital and the *Centro de Investigaciones Médico-Quirúrgicas (CIMEQ: Center for medical-surgical research)* in the country's capital. Prior to this date, cardiovascular surgery was practiced only at the *Instituto de Cardiología y Cirugía Cardiovascular* in Havana. But this could not solve every need for this type of care that was generated due to the growing medical-services development that made it to the most remote places in the country.

An all-categories training movement for health personnel was carried out to develop this specialty as well as an investment process that finished with the creation of various services throughout the country. The *Cardiocentro* of *Saturnino Lora* Hospital was created in *Santiago de Cuba* to serve the eastern provinces; the *Cardiocentro* of the Provin-

cial Hospital in Santa Clara, to serve the central region, the *Cardiocentro* of *William Soler* Hospital in the capital, as the national reference center for pediatric cardiac surgery, and the *Cardiocentro* of *Hermanos Ameijeiras* Hospital as national reference for adult cardiac surgery. The Cardiology Surgery Department of the Cardiology Institute remained activated having a national character and reduced service with very specific purposes and application in the CIMEQ.

Inexplicably these new services were not accompanied by an organization allowing adequate regionalization, because hierarchically, they were only services within provincial hospitals, having these centers usual administrative subordination, and an efficient interaction with similar care institutions in other provinces was sought. This resulted in patients and their primary care physicians lacking necessary information to adequately guide their patients. An insufficient solution was given to a new service that had very specific and definite characteristics.

Our center was the only one that, since the beginning of its activity in 1986, began visiting, by its own means, the Cardiology Services of the provincial units in the central region; and worked very hard to have the central level improve this situation in our center and promote it, first to a vice-principal administrative rank and then in 1998 to a budgeted-unit that being an independent organization took the name of *Cardiocentro Ernesto Che Guevara*.

Interrelation with provincial centers

These scheduled visits were part of the necessary counter-reference for this work to function properly and at the same time it helped to refer patients who should receive specialized medical care in health services they did

not have in their own provinces. On the other hand, there was a good statistical information level for taking decisions and knowing what was happening. In fact there was a document intended for the Family Doctor where he/she was informed about diagnosis, performed treatment and care required for better patient follow-up in his health area. This was kept even during the harsh economic conditions of the 90s.

In short, an interprovincial regionalization was achieved having the following interrelation system (**Figure 1**):

- It started from PHC, when the Family Doctor detected a patient who possibly a) needed cardiac or vascular surgery, b) needed diagnostic methods outside his province or c) needed to define a diagnosis to allow effective treatment.
- This family doctor interacted with the most qualified medical personnel at the polyclinic level and, subsequently, patients were received by the provincial cardiology department, called *Centros de Diagnóstico Cardiológico* (CDC: Cardiac Diagnostic Centers).
- Finally a consultation was made with the *Cardiocentro*-team assisting that province, and the next

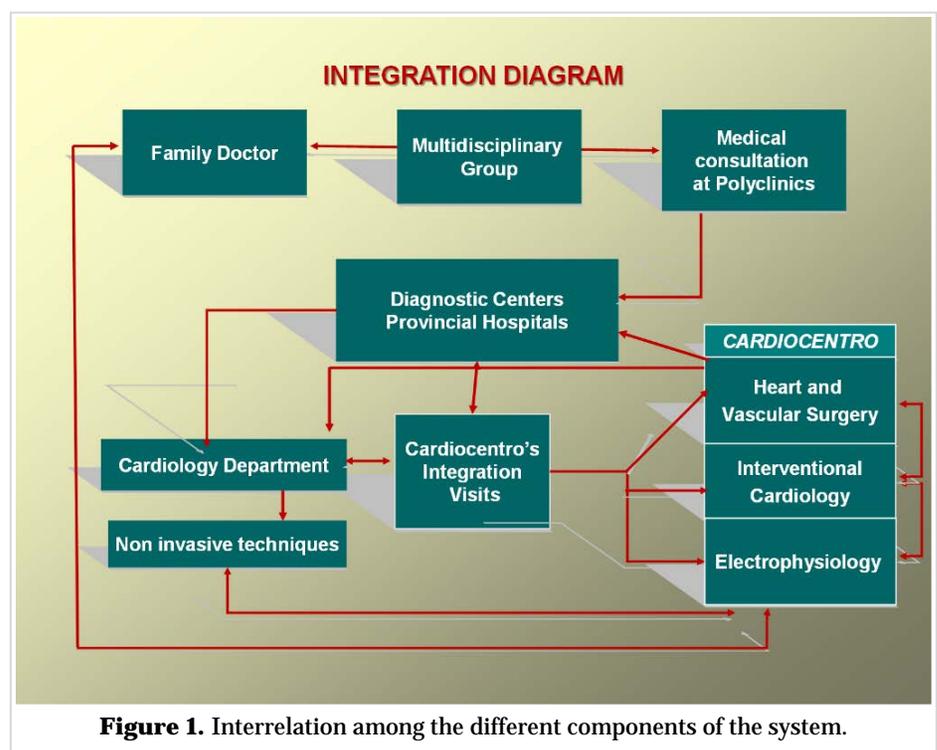


Figure 1. Interrelation among the different components of the system.

diagnostic and therapeutic steps were coordinated. The patient returned to his health area after going through this system.

This regionalization had many difficulties, since there were not enough specialists in cardiology, lacked the right amount of diagnostic means, and ironically there were no beds for patients with diseases that represented the first cause of death in Cuba. The other *Cardiocentros* did not interact with their supposed care areas and there was no official document to define which areas should be covered by each one. Everything remained to the patients spontaneity who showed up with their «referral» document where they wanted or could to, according to their geographic remoteness or economic possibilities; and far less was any specific documentation to use for the references or any other mandatory and specific document to be used for counter-reference.

The economic difficulties that hit the 90s along with regionalization shortcomings led this surgical specialty and cardiological development to several unfavorable consequences; among them: lack of care equity, because every surgical and cardiological procedures could only be performed in the centers of the capital, including interventional cardiology and electrophysiological studies. There

were no specific beds for cardiac conditions in the hospitals, and what is worst, many patients waited too long for assistance.

PRESENT AND FUTURE REGIONALIZATION

The *Cardiocentro Ernesto Che Guevara's* board of administration in Santa Clara has made efforts to reach a recovery that would allow them to keep those achievements that extended cardiac surgery for adults and children to their entire influence area, which was delimited, by its professionals' practice and work, to the provinces of Villa Clara, Cienfuegos, Sancti Spiritus, Ciego de Ávila and Camagüey (**Figure 2**), with a nearly 2.9 million population; plus, a part from the nearby province of Matanzas.

Most of the difficulties presented in this ambitious health project were analyzed in March 2001 during a working meeting with the Commander in Chief.

From this date and with his help the three regions with their provincial CDC and their regional and national counter-reference centers were officially defined in the country. In addition, cardiology rooms in the CDCs were implemented, being concluded in the central region in 2003. Along with these invest-

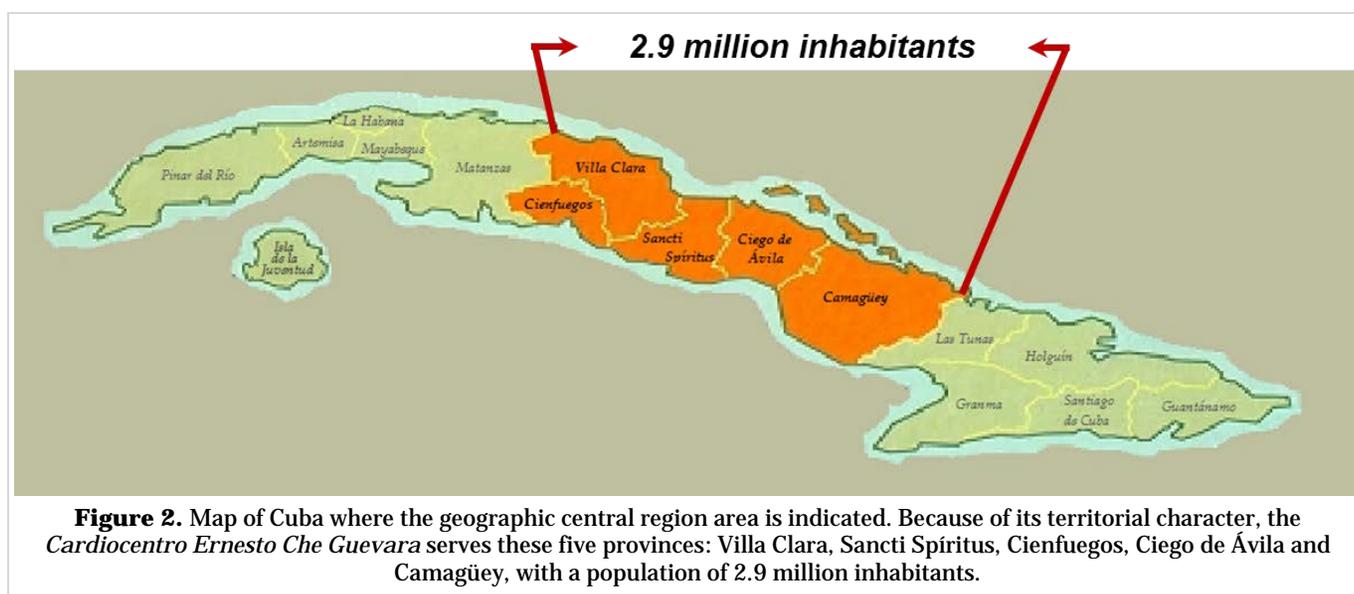


Figure 2. Map of Cuba where the geographic central region area is indicated. Because of its territorial character, the *Cardiocentro Ernesto Che Guevara* serves these five provinces: Villa Clara, Sancti Spiritus, Cienfuegos, Ciego de Ávila and Camagüey, with a population of 2.9 million inhabitants.

ment efforts, a minimum of equipment was completed for the *Cardiocentro Ernesto Che Guevara* and its central region (**Table 1**), and work to complete the other regions continues.

On 2003 important organizational aspects were defined, such as the creation of a National Commission in charge of a highly prioritized plan for cardiology and cardiovascular surgery development (**Table 2**), the National Commission of Cardiology, the Rehabilitation and Intensive Care of Ischemic Patients, a Commission of Interventional Cardiology that extended these therapeutic means to the central and eastern regions of the country, installing angiographs and providing the necessary devices, another Commission of Arrhythmology and Electrophysiology, which opened, since December of that year, a service in the central region, and one of Teaching and Research which supported these specialties' work.

West and East centers began to practice reference and counter-reference, and use already completed CDC. This will be a long, arduous process to be perfected so that patients actually feel well assisted in their own regions. For this, doctors from their clinics, specialists from their health area polyclinic and specialists from the provincial CDC need to have all the information about the patients to guarantee the best way to help them. Unfortunately commissions have lacked work steadiness and there has been times when meetings, to evaluate plans and analyze the indicators to determine actions effectiveness are not held. This work is more efficient in the central region but there are obstacles we are hoping to solve in next work stages, if having the required support.

PRESENT AND FUTURE WORK PROJECTION FOR THE CENTRAL REGION

At present, and aiming to perfect region-

alization in the whole central attention area, it is necessary to achieve a computer network which, through Infomed (MINSAP's National Information Center of Medical Sciences web), will run parallel to the Medical Sciences Universities nodes and connect each CDC with the *Cardiocentro Ernesto Che Guevara* in Santa Clara. This network would transmit every patient's information detected in the PHC that has been collectively discussed at the provincial CDC level. This information is received and analyzed by the corresponding factors in the *Cardio-*

Table 1. Red Central de Cirugía Cardiovascular.

Diagnostic Centers	Municipality, Province
UH Arnaldo Milián Castro	Santa Clara, Villa Clara
UH Celestino Hernández Robau	Santa Clara, Villa Clara
UH Camilo Cienfuegos Gorriarán	Sancti Spiritus, Sancti Spiritus
UH Antonio Luaces Iraola	Ciego de Ávila, Ciego de Ávila
UH Manuel Ascunce Domenech	Camagüey, Camagüey
UH Gustavo Aldereguía Lima	Cienfuegos, Cienfuegos
UH Roberto Rodríguez Fernández*	Morón, Ciego de Ávila
UH Mártires del 9 de Abril*	Sagua la Grande, Villa Clara

* Diagnostic centers in municipalities
UH: University Hospital

Table 2. Medical care organization.

National Plan for Cardiology and Cardiovascular Surgery
Commissions
- National Commission of Interventional Cardiology
- National Commission of Arrhythmology and Electrophysiology
- National Commission of Cardiovascular Surgery
- National Commission of Pediatric Cardiology
- National Commission of Cardiology and Rehabilitation
- National Commission for Teaching and Research
Ruling Centers
- Instituto de Cardiología y Cirugía Cardiovascular (Western Region)
- <i>Cardiocentro Ernesto Che Guevara</i> (Central Region)
- <i>Cardiocentro</i> in Santiago de Cuba (Eastern Region)
- <i>Cardiocentro</i> at William Soler Hospital (Pediatric care)

centro which makes feedback with the cardiology department that sent the patient with necessary information, so he/she knows when to undergo pertinent studies and his subsequent behavior is defined, that is: a definitive diagnosis by imaging or hemodynamic examination, a surgical treatment by major cardiac or vascular surgery, coronary angioplasty by means of interventional cardiology or, finally, treatment for heart rhythm disorders in the Electrophysiology Lab. Subsequent follow-up is performed again at the primary care level where he/she is sent with all required information.

In this case, using informatics allows greater accuracy for disease treatment since documentation, being the same for all, prevents human errors and makes clinical assessment more collective. On the other hand, counter-reference is more accurate and offers easy access to the patient's data from any place. Together with that, it allows exchanging data between centers and increasing the development of individual and collective medical knowledge by putting international medical information at just a mouse click. In the long run we would do away with physical visits and the system would be more economical. This will be the second time an interprovincial network works in order to improve medical management and, among other virtues, to achieve a more adequate health services regionalization in a specific field.

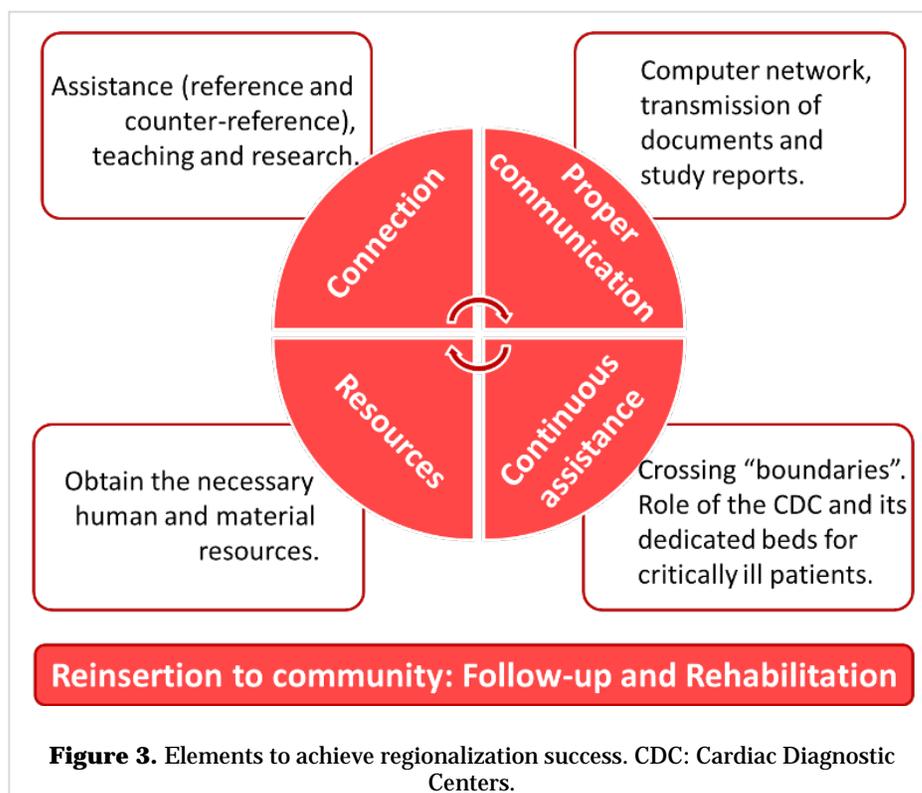
SUCCESSFUL REGIONALIZATION: CONCLUSIONS

In order to achieve a successful regionalization, it is necessary, in addition to planning an adequate organizational scheme (**Figure 3**):

- To keep an effective link between all members, so as to share scientific, assistance, teaching interests, and carry out joint

research.

- To hold check-up meetings with every provinces director, that is to say, a Network Board of Directors, with quarterly frequency, where the MINSAP Central Level would take part¹³.
- To keep good communication, through computer facilities (**Appendix**) allowing any professional to see data provided by the studies performed to the patient, no matter where they were done.
- To have the necessary human and material resources. Without them, is impossible to carry out the task at hand, and they must be evenly distributed in each province.
- Continuous care without regions or institutions boundaries must be guaranteed since the patient is the core of all activity.
- Finally, the patient must be reincorporated to his/her community, where the health team that assisted him/her at the beginning provides him/her with necessary follow-up and rehabilitation.



CONFLICTO DE INTERESES

R Dueñas Fernández is the Chief Executive Officer of the *Cardiocentro Ernesto Che Guevara*, and directs the Central Network of Cardiology and Cardiovascular Surgery in Cuba.

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APPENDIX

Computer development of the Central Network of Cardiology and Cardiovascular Surgery

For developing computer services and patient care quality in the network, it is necessary:

- To create a private internet network (IP-VPN) to connect CDC with the *Cardiocentro*.
- A Professional Rack Server.
- An adequate microprocessor, minimum Intel Xeon E5405 at 2.00GHz.
- A computer for each diagnostic center (8) with

the following characteristics (at least):

- Intel Core i3 3.10GHz microprocessor
- 2 GB-RAM
- 1 TB- hard drive