



**Review Article**

Volume 14 Issue 3 - July 2019  
DOI: 10.19080/JOCCT.2019.14.555888

J Cardiol & Cardiovasc Ther

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# Cardiology One-Stop-Service *Changing Approach to Improve Appropriateness*



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**Submission:** July 08, 2019; **Published:** July 29, 2019

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## Abstract

Health needs, prevention, the increase of survivors, defense medicine are main factors contributing to the increase of specialistic examinations and instrumental exams with the consequence of inappropriateness increase, organization not always able to give the right answers to the patients and increase of unsatisfaction and inconvenience in the patients. The proposal presented in this paper is based on Cardiologist and General Practitioner cooperation agreement that on one side proposes a problem-approach of specialistic consultation and on the other side the availability of the Cardiologist to take the responsibility of the patient's pathway until it will be closed by a diagnosis or a therapeutical intervention. In this way, the offer for the patient is not the performed exams and its conclusion but the problem solution to his health need.

**Keywords:** Therapeutical intervention; Arterial hypertension; Vascular echocardiography

## Background

The current situation related to non-invasive specialistic outpatient activity in Cardiology based on exams and not on problem solving highlights:

- a) a continuous growth in demand for services that seems out of control.
- b) a high percentage of inappropriate health service (some as high as 60%), demand dropped from the clinical context and services that are often not used to give a full meaning to the diagnostic pathway.
- c) a continuous supply of isolated exams that does not consider the real overall need of the patient.
- d) a constant discontinuity of the patient's pathway with continuous postponements.
- e) a growing situation of discomfort for both patients and operators.
- f) an organization that, mainly based on examinations, does not respond to the real needs of both the patient and health operators.

The above make it difficult to understand a cohesive and complete pathway for the patient with cardiovascular pathology and the possibility of an "alliance" between Cardiologist (Card) and General Practitioner (GP). The image is that of diagnostic-therapeutic pathways inevitably based on interruptions, repeated examinations, time dilation and delays, fragmentation and discomfort for patients.

The health directions, that put the patient at the center, highlight the strong and decisive desire to promote a general reorganization of the territorial ambulatory activity, greater integration between the specialists and a more efficient articulation and synergy among the different skills. This will be possible not only with regard to the management of chronicity but also and above all for the management of patients with important cardiovascular risk factors that constitute a significant percentage of the adult population and that are one of the causes of an increase in health needs, given the associated complications, with consequent absorption of resources.

It is calculated, in fact, that at territorial level Arterial Hypertension is present in 30% of the adult population, Diabetes in 5%, Dyslipidemia (not of food origin) in 22% and the presence of

more risk factors in 15% of cases [1-3]. Furthermore, it is estimated that cardiovascular complications occur in approximately 45% of cases, cerebrovascular complications in 30% of cases, peripheral arterial ones in 15% of cases and nephrovascular cases in 20% of cases while mortality is approximately equal to 20% of cases. From the Italian register IN-CHF, approximately 39.4% of patients with ischemic heart disease and 15.8% of patients with arterial hypertension evolved into heart failure [4], about 55.3% had a history of repeated hospitalizations and an approximately 30% patients had a prevalence of associated diseases. The prevalence of heart failure is estimated at around 1% -3% of the general population and about 10% in patients over 75 years [5]. On the basis of the literature data, an appropriate assessment of the patients and an adequate intervention on those with hypertension determine a reduction of complications ranging between 13% and 30% depending on the pathology considered and a reduction in mortality of 13% -18%.

In the light of the above, an intervention that aims to adequately frame this patient population, treats it from a pharmacological point of view and plans its controls could lead to a reduction in the occurrence of complications and a lower consumption of resources.

### Objectives

The general objectives of the experimentation are to offer the patient with chronic degenerative pathology or with cardiovascular risk factors such as arterial hypertension, diabetes, dyslipidemia, multifactor, adequate responses through the definition of an adequate therapeutic diagnostic path based on the problem-based approach [6,7] and which provides for the supply of cardiovascular services possibly in the same structure and in a short time and to guarantee the completeness of its diagnostic-therapeutic pathways, avoiding dispersion, duplication and inconvenience. The modality is that of not booking single examinations but offering the possibility to problem solving, through a diagnosis, clinical classification and related therapeutic proposal in short times and with completed pathways.

In detail, COSS activity had the following objectives:

- a) to Intercept the cardiology requests of GP.
- b) to transform the needs of cardiological exams into cardiological counseling.
- c) to manage in a complete manner, as far as possible, the therapeutic diagnostic path of the patient.
- d) to manage target pathologies with multi-specialist collaboration and with GP.
- e) to best manage the patients' needs in respect of effectiveness, efficiency, quality, appropriateness and equity.
- f) to increase the Customer satisfaction through the enhancement of interpersonal relationships.
- g) to better manage the care processes through path

rationalization, lower costs and less information asymmetries.

h) to create a filter in the structure that allowed reducing the number of accesses to the hospital and restoring its original mission to it.

i) to modulate the waiting list by improving the appropriateness.

j) to improve the health status of patients through adequate management of the disease.

### Definition of the organization model

The term *one-stop-shop* appeared first in the USA between the end of 1920 and the beginning of 1930 to identify that center able to offer more services in the same place, to satisfy the customer by offering all the services he needed. The principle was everything for that particular sector, achieved with just one stop, to save time and money. Today this model is applied in the commercial sector by creating shops, where it is possible to find everything that the customer needs both in a specific sector and in several sectors but also in the services' sector where the customer gets everything from a single branch unlike before it was obtained through the passage of several branches.

Applied in the health care or health service provision field, the one-stop-service model must be read as an offer point organization where the customer/patient finds his or her health needs partially or completely satisfied through the provision of a service whose level (performance, type, routes, mode) is defined in advance. This provides for the completeness of the diagnostic-therapeutic path, when possible, without further displacements or postponements in the area of specialist availability (presence of the specialist, type of diagnostics). Compared to the original model, what one intends to apply to the health service presupposes the taking in charge of the patient/customer to guarantee the continuity of the path even when the latter must be continued outside the center or inside the hospital structure.

This model was used to outline the COSS (Cardiology One-Stop-Service) as a point of non-invasive cardiological offer and as an organizational modality able to offer the patient all the basic services he needs within the same day and without further accesses. To this end, through the COSS, it is intended to implement a form of Outpatient Health Care Center or Community Medicine able to manage non-invasive diagnostic therapeutic pathways, especially for chronic degenerative diseases more frequent outside the hospital place in health facilities open-day (daytime opening) and with one-stop-shop mode (*all for health in a single stop*). The COSS represents a specialist outpatient health sector within a possible organization more extended to the medical field (MOSS - Medical one stop service) which aims to offer broader outpatient polyspecialistic basic services.

### Requirements

Important cardiovascular risk factors and the level of the same risk have been requirements both as first access and as control

and patients more generally with cardiovascular pathology in the first evaluation or with chronic degenerative that needed a new instrumental clinical assessment. The target population being evaluated in this project was represented by patients with the first detection of main risk factors and metabolic syndrome, by patients with associated risk factors, by patients in follow-up not adequately controlled by therapy or with onset of new cardiovascular problems to evaluate.

### Pathway

Approach for problems according to which the prescriber put a problem and the cardiologist tried to solve the problem using what was needed, taking charge of the patient's diagnostic path until its conclusion, including the therapeutic proposal. The flow is shown below:

- a) Patient presents a cardiovascular problem (risk factors, first visit, etc.)
- b) GP identifies the patient's need (known/suspected cardiovascular) and put the problem to Card
- c) Card takes care of the diagnostic path of his competence to solve the problem and sends the patient back to the GP once the path is closed.

### Cooperation agreement with GPs

Communication and information transfer deficits are frequent and have a negative influence on the path and management of the patient's illness, on the relationship with GP and on the correct use of health facilities [8]. This collaboration aimed at a direct connection between the Policlinic and GP, in such a way that there was the possibility of interacting each other directly and easily on particular clinical situations and, for some types of first visits, of putting problems and not asking examinations (on which need the Card would have decided). This was achieved through project presentation meetings, founding principles, organizational methods and objectives. In the initial phase the immediate offer in the outpatient structure was a visit, EKG and cardiac and vascular echocardiography; other instrumental investigations and specialist consultations have been initiated by the Card. An annual training program for GP was defined and implemented on the appropriate use of non-invasive diagnostics and the correct use of the information obtained.

The aim of this collaboration agreement was to reduce the discomforts of patients and to guarantee them adequate and appropriate answers within a reasonable time. Moreover, in respect of the professionalism and the respective competences, it had the purpose to:

- a) Promote the management of the patient's pathway
- b) Guarantee the completeness of the health and diagnostic pathway until the therapeutic proposal.
- c) Promote the prescription of exams within the anamnestic and clinical process (and not out of this context),

whenever possible, or in any case within a reasonable period of time with clinical needs and preferably in the same place.

- d) Ensure constant communication and continued exchange of information between professionals on the clinical status of the patient.
- e) Promote professional growth and the definition of paths.

### Activities

The activity was carried out in a hospital external structure (policlinic) in close collaboration with the Hospital's Cardiovascular Department using a separate booking agenda. The activities carried out within the Policlinic concerned the visit, EKG, Echocardiography, Vascular ultrasound, endocrinological and ophthalmology counseling. Other diagnostic investigations or specialistic consultations have been requested directly by the Card through a preferential pathway and sent to the Hospital's Cardiovascular Department. The final classification was carried out by the Card who took charge of the patient.

The following decisional points have been considered:

- a) Closure of the pathway based on the visit only + EKG.
- b) Need for ECOCG and / or Vascular Ultrasound. In this case the Card performed exams within the visit and closed the path.
- c) Need for other non-invasive or invasive instrumental cardiological examinations, or other specialist consultations. In this case the Card made the prescription and booking, followed the pathway, closed this after the results of examinations/consultations, with a final report to be sent to the GP.
- d) Need for other non-cardiological instrumental tests. In this case the Card made the proposal in the final report to the GP (he will decide whether to proceed or not).

### Achieved Results

On an experimental basis, the COSS project was implemented in 2010 for a period of 10 months with about two weekly sessions (total accesses 38, total approximately 130 hours, total number of patients visited 400) and in 2013-2014 for a period of 10 months with approximately four weekly sessions (total accesses around 150, total approximately 700 hours, total number of patients visited 2000).

The results have been as follows:

The total number of patients was 2400 (female 55%, male 45%, aged 14 to 92 years old, first access 67%, known cardiovascular patients 33%). The concordance between the diagnostic suspect put by prescriber and final diagnosis made by Card was 75%, in all of these no therapeutical modification has been made. The need of echo examination within the visit was 25%. New pathologies detected were ischemic heart disease in 5%, heart failure 3%, others 2% (A-V block, pericardial effusion, pleural effusion, mitral

valve insufficiency due to chordal rupture, atrial fibrillation); additional exams performed in one-stop-service modality were 35%, additional exams performed within the hospital cardiovascular department were 7% (coronary angiography, effort test, electrophysiology), extra cardiovascular examinations recommended were 10% (neurology, gastroenterology, rheumatology). Anxiety was the main symptom of patient presentation (80%), palpitation was present in 12% and chest pain in 16%; in 15% of the latter it was typical (11% in known cardiovascular patients and in 5% confirmed by specific tests, whereas in 84% chest pain was due to anxiety, gastroesophageal reflux, osteomuscular origin. In summary data have highlighted that:

- a) The diagnostic question has been often generic (control), did not put the clinical problem but rather defined the diagnosis (arterial hypertension), often it was discordant with what the patient reported (generic chest pain vs. palpitation or effort dyspnea due to obesity or anxiety), sometimes it did not correspond to a condition for which the consultation was required.
- b) The clinical-diagnostic pathway of the patient was often disorganized and did not give the Card the opportunity to assess appropriately the patient's clinical situation (for ex: cardiological consultation before other instrumental or hematochemical tests requested by the GP).
- c) In 75% of cases, the cardiological examination with EKG neither added any information, nor it modified the therapy; further, there was not the need to request additional examinations to close the pathway, considering the clinical stability of the patient, which in most cases presented asymptomatic (in this case the cardiological consultation made was not necessary but, however, the correct setting of the GP was confirmed)
- d) In a fair percentage of cases with chest pain a correct medical history, visit and clinical and instrumental classification led to a non-cardiac diagnosis of pain. In 5% of cases a new coronary artery disease has been demonstrated and treated.
- e) In six cases emergency hospitalization was required for acute symptoms (dyspnea or angor) which had appeared a few days before and treated with non-specific therapy. The clinical and instrumental framework allowed the immediate diagnosis of myocardial infarction in the subacute phase, heart failure, pericardial effusion, pleural effusion, atrioventricular block, rupture of mitral cord tendons; in other cases, hospitalization has been scheduled (for specific exams or electrical cardioversion for atrial fibrillation).
- f) An ECHOCG was necessary in one fourth of the patients visited, giving the possibility of completing the patient's diagnostic path in the same session. In 5% of patients a Carotid vascular Echo was necessary. Comparing the data with those

related to the patients with direct access for single exams, the number of ECHOCGs was reduced of 60%.

- g) The presence of the endocrinologist and ophthalmologist in the same external structure allowed specific contextual counseling (fundus, diabetes, dysthyroidism) giving the possibility of integrating the skills and completeness of the path.

### Comment

Usually, it is difficult to control the Demand due to the fact that the health need does not arise spontaneously but is often generated or self-generated. The Demand is often formed by a myriad of examinations and services put often outside a sequential and integrated path. The Offer is often limited or in any case not proportionate to the Demand to such an extent as to represent a funnel with continuous dispersions and chokes to the regular flow. The flood of requests for services often unhooked from the logical and appropriate process of diagnosis and care creates a continuous imbalance with penalization of those who really have the need compared to those who do not have a real one.

In the light of the above, a change of approach to the problem is necessary evaluating innovative ways that can facilitate a significant improvement in an articulated way. To do this we must strive to get out of the performance logic, proposing a different way of seeing both demand and offer.

### Demand

The demand generated by the need for health should no longer be put as a demand for services but as a problem, that is, the perceived need for health in itself generates a problem that must be put as such for its resolution, in compliance with the principle of the patient at the center.

### Offer

The solution of a health problem (closely related to the satisfaction of the health need presented by the patient) is the final result of a simple or complex articulated process that as such presents different phases and levels of activity configuring the real clinical-diagnostic pathway. In this context, each phase of the process can be conclusive or prelude to the next one and every health worker (GP or Card) will have the responsibility to close the phase of the path that competes with him only when he considers that the patient's health need is sufficiently satisfied.

### Offer/demand integration

The patient's need for health can be diagnostic or therapeutic. In the first case it is necessary to talk about the diagnostic path in the second of clinical assistance complexity. In the context of modern medicine that aims to satisfy health needs in accordance with the clinical-diagnostic-therapeutic process based on the problem-based approach, the diagnostic path may be at two levels of complexity (diagnosis carried out at the first clinical and instrumental level and diagnosis which requires more complex and higher level surveys); the clinical-assistential complexity of

low, medium and high level implies an organization that places the patient at the center and the active collaboration among the different health operators for an appropriate management of the clinical, therapeutic and care aspects. In both cases the path starts with the patient's problem (perceived need) for which the GP and the Card will be involved in subsequent phases and integrated according to a linear path with regards to the diagnosis, and according to an active collaboration (circular path) regarding care.

### Continuity of care and process integration

The concept highlights an "exhaustive treatment process" guided by a doctor who represents the central point of reference for the integration and continuity of all the processes necessary to close the path of that patient with that given need for health. According to international literature, continuity of care can refer to the use of information related to the patient's clinical history to make the most appropriate decisions (Informational continuity), to the responsible approach to managing the patient's health needs (Management continuity) and to the personal relationship between patient and doctor (Relational continuity) [9]. It is evident from these definitions that the continuity of care represents three moments of a single process that foresees the information, management and relational phases that must be coordinated and integrated, with all the health workers involved, with the aim of giving answers appropriate, concrete and fulfilled to the patient's need for health. So, the continuity of the care represents the path and integration of care and the way in which we try to achieve our goals.

A final aspect to be emphasized is that relating to the dimensions of continuity of care: the first is the individual one, relative to the individual patient and his care process, the second is the longitudinal one, relative to the time and evolution of the relations between patient and patient doctor, the third is the strategic one, relative to the orientation of the diagnostic-therapeutic path and, finally, the fourth is the informative one, relative to the past and present history of the patient and to the identification of his problems and needs [9-34].

### Conclusion

The data reported in the present paper highlight the validity of a new organizational model that aims to intercept out patients from the hospital, in polyclinical structures, needing cardiological counseling (first visit or new problem), completing the diagnostic therapeutic path whether this is closed at the moment or whether it needs further instrumental investigations or specialist advices. In this way we tried to get out of the performance logic by reintroducing the approach to problems, taking charge of the patient's path and completeness, intervening on the appropriateness of the performances and thus reducing the number of inappropriate and often useless services and discomfort for patients.

The organizational model, limited for now to Cardiology, may be extended to all specialistic outpatient activities by creating

an organization that allows interaction, when necessary, among the various specialties involved in the management of patients with chronic degenerative pathology that represents the highest share consistent with performance claims. From Cardiological to Medical one stop service. The advantages linked to the filter and the completeness of the pathway is evident. Another advantage is the increase in appropriateness, reduction of the event occurrence and of health consumption.

On the basis of the data and considerations reported, a hypothesis of future work is the realization of an organizational plan articulated on the path of the incoming and outgoing patient to develop the territorial function of the Hospital in the outpatient structures, placing them in continuity with the GP, with the following objectives:

a) COSS - Gate on the way in

to improve the appropriateness of examinations and hospitalizations by assessing patients with cardiovascular risk factors outside the hospital, or with cardiovascular disease in the first assessment by closing the diagnostic therapeutic path or planning the necessary high-level path within the hospital or hospitalization itself.

b) COSS - Gate on the way out

to improve clinical care management and reduce re-hospitalization by assessing and treating patients with chronic degenerative pathology and follow-up control of patients discharged from the hospital.

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DOI: [10.19080/JOCCT.2019.14.555888](https://doi.org/10.19080/JOCCT.2019.14.555888)

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