Patients on Intensive cardiometabolic monitoring. Experience of a 6 years program from Córdoba, Argentina

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Introduction

To reduce the constantly increasing rate of non-communicable diseases is one of the main goals of the 21st century. Cardiovascular diseases, diabetes, cancer and chronic obstructive pulmonary disease cause 60% of all world deaths. In Argentina, in 2015, about 325,539 total deaths, 92,190 were due to cardiovascular causes (>28%) and the cardiovascular mortality rate was about 184,34 per 100000.

It is estimated that 90% of these diseases are preventable by optimizing risk factors such as healthy eating, exercise, avoidance of tobacco smoke and limiting alcohol intake. Since these risk factors are common to all these diseases, we can provide a similar approach for their prevention and control. To be effective, prevention programs must take into consideration strategies for changes in lifestyle to achieve lasting effects.

In recent years, systematic reviews of scientific evidence have identified clinical interventions that prevent illness and reduce mortality.

Experts estimate that social and economic environments contribute 50% in the level of health, while the health system contributes 25%.

Health services are currently focused on acute care problems and maternal & child population. Addressing chronic problems requires a model of care that promotes self-management of the disease and improves adherence to treatment. The WHO´s Innovative Care for Chronic Conditions (ICCC) Framework is a viable alternative to reorient health services for addressing these problems.

In Argentina we have driven a program for detection and monitoring of cardiometabolic risk patients, supported by a software management tool and multidisciplinary activities.

The objective of this program was to improve clinical and functional outcomes of patients by a model of comprehensive approach easily implemented in a health system.

Methods

The ICCC model was considered for the development of our Chronic Conditions Program including several activities such as CV Risk Factors Screening activities developed at work places and patient's home using Framingham score for patient stratification, pay-per-performance for professionals in the context of a Quality & Safety Program, Incentive Programs for patients who's risk factors were optimally controlled (full coverage of the of medication's cost), determination of subclinical atherosclerosis using carotid total plaque area (TPA) measurement for intensive treatment monitoring, implementation of electronic medical records software with integrated tools addressed to support clinical decision & Self Management (Movihealth®), Multi disciplinary approach, Continuous Education programs for Health Team members, patient education activities

Methods cont

through specific workshops, weight reduction program for patients with BMI> 30 Kg/m2, who voluntarily adhere and meet the admission criteria (motivation, comorbidities, etc.), Prevention & Treatment program for addictions (alcoholism, smoking, drugs), physical, sports and recreational activities at social clubs and Union's hotels.

Initially, patients were stratified by cardiovascular risk factors using the Framingham risk score (FRS). Patients with FRS <6% were followed by general physician, while those with FRS >6% were re-evaluated using carotid TPA determination. Then, patients with a score >20% were asigned to the High Cardiovascular Risk Clinic, which is composed by trained physician on cardiovasculr prevention, nutritionist, psicologists, sanitary agents, personal trainer, medical call center for high risk patient support.
Incidence of cardiovascular events were retrospectivelly evaluated.

Results

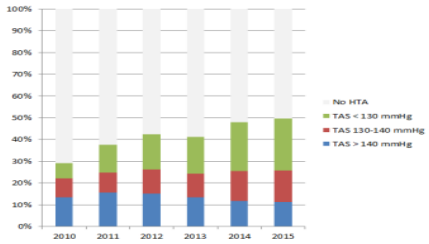
Table 1. Incorporation of patients to the program

	2008	2009	2010	2011	2012	2013	2014	2015
Total Population (>18 years old)	4901	4892	4735	5119	5063	4930	4944	5082
Patients under program	1317	2320	3019	3806	3400	3425	3315	3657
% of population under program	27%	47%	64%	74%	67%	69%	67%	72%

Table 2. Epidemiological information

	2010 (n=3019)	2011 (n=3806)	2012 (n=3400)	2013 (n=3425)	2014 (n=3315)	2015 (n=3657)
Men (%)	40.9	79.9	45.3	46.8	46.7	45.6
Age (years)	53	41	52	51	57	57
BMI (kg/m^2)	27.9±4.1	28.5±5.4	28.3±5.1	28.5±5.7	28.5±5.4	28.2±5.5
DM II (%)	17.1	7.1	14.6	14.2	16.7	16.5
HTA (%)	7.9	15.1	39.2	36.8	47.1	48.6
Fram$_{BMI}$ (%)	21.2±10.4	11.5±9.6	21.4±19.1	20.6±19.5	22.4±19.8	22.7±18.8

Figure 1. Optimizing Blood Pressure Control



Results Cont

Figure 2. Optimal Serum Cholesterol

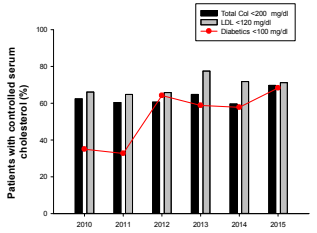


Figure 3. Diabetes control

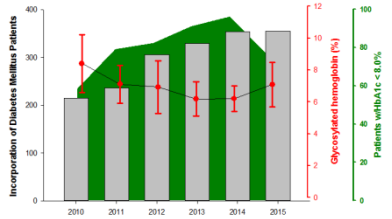


Table 3. Cardiovascular events rate

	Total patients			Patients > 65 years old		
Year	Total of patients	Total of events	Events rate	Total of patients	Total of events	Events rate
2011	6853	130	**1.89**	1675	98	**5.85**
2012	6800	98	**1.44**	1734	79	**4.55**
2013	6733	83	**1.23**	1834	65	**3.54**
2014	6695	69	**1.03**	1916	52	**2.71**
2015	6893	68	**0.99**	2000	47	**2.35**

Figure 4. Cardiovascular events rate, total population

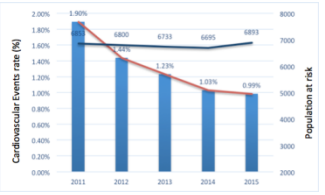


Figure 5. Cardiovascular events rate, >65 years

Conclusions

We developed a clinical program to efficiently identify patients at high cardiovascular risk and follow-up to achieve optimal control of most risk factors.
The program uses several strategies for the Prevention and Control of NCDs incorporating interventions to control risk factors, reduce morbidity, in addition to improve accessibility and quality of health care, and to stimulate health promotion and self care.

We observed an increasing rate for patient incorporation, progressive control of Hypertension, improved glycosylated hemoglobin (HbA1c) and serum cholesterol values, reaching most of the patients the therapeutic objectives.

These optimal control of risk factors in our population may have lead to the reduction of cardiovascular events observed in our retrospective analysis.

Our results are consistent with other reports about benefits of ICCC model based programs. A progressive development of community and health care activities, supported by a comprehensive chronic care management software, seems to be an effective way to start implementation of this kind of programs.

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