

## Introduction

Health in Portugal faces a growing challenge: how to maintain or improve health care with current resources? The absence of health strategies and/or policies based on a value creation model is a fact. The vertical integration of care is a reality that necessarily needs our reflection. The provision of care without evidence of value creation must cease to be a reality. The optimization of the patient's path should be a strategic definition, knowing that its operationalization has a short geographical basis and sometimes a dispersed, complex, fragmented, inefficient care provision, with unexplained variation, and consequent waste of care and costs.

The focus should not be on a blind expenditure control mechanism but on creating value in terms of clinical outcomes that are of interest to patients and the outcome of which has a certain cost for maximizing these outcomes and consequent value creation in their total care cycle in a true patient-focused model. The concept of implementing the VBHC strategy leads to a break from the current paradigm. Health organizations are complex systems consisting of a variety of services with various specialties, different characteristics and where human and technical resources vary and articulate with each other in a dynamic way. This diversity leads to a very large autonomy, but on the other hand, it hinders a joint and articulated action of the services. In this way, care decisions should be organized in a multidisciplinary patient-centered approach, where transparency is the key competitive element of health outcomes. The VBHC has in its "DNA" this concept of shared decision-making, incorporating this change in the current paradigm of measuring results mainly by the concept of PROM ("Patient-Reported Outcome Measures") that often generate paradoxical behaviors. The current reality of health care is confronted with an emerging change in the paradigm of the evolution of economic evaluation models with a tendency to change in their design and evaluation of health outcomes and their relationship around all actors, especially payers. The evolution of an economic society of pressure on costs and new models of reduction of health expenditure means that the new health analysis instruments are part of the decision models. What is the value of gestures produced along the chain of care for a given disease? Consultations, complementary exams and treatments are repeated every day without a tangible demonstration of the value of each gesture to the caregiver and the caregiver, the patient and society at large.

The Luz Saúde Group as traditional training in the development of its mission has developed an integrated value model in its network of more than 30 hospitals, has the greatest experience in VBHC in Portugal, now with more than 40 pathologies, more than 5,000 patients with data collection along 8 years of activity around the concept. The VBHC whose modeling between specific clinical results by disease condition and outcomes that interest patients, associated with measuring the cost necessary to maximize these results, create a reality of measurement and creation of value and a change in the relationship between stakeholders creating a greater balance in the system and evaluation of reality in pathologies: Colorectal, Hepatobiliary, Pancreas, Gastric Esophagus, Pregnancy and Childbirth, Breast, Prostate, Obesity, Cardiovascular Risk/Thrombosis, Arterial Hypertension, Valvular Disease, Lung, COPD, Covid, Thyroid, Inflammatory Bowel Disease, Low Back, Dysphagia, Stroke, Endometriosis, Hypertrophic Cardiomyopathy, Auricular Fibrillation, Diabetes, Uterus Cancer, Hip, Knee, Cataract, Headache, Multimorbidity, Urgency/Emergency, Renal Lithiasis, Abdominal Wall, Cervical Pathology, Shoulder, Dyslipidemia, Asthma, Irritable Colon Syndrome, Coronary Heart Disease.

## Methods

The concept of implementing the VBHC strategy leads to a break in the paradigm. Today, organizations "demand the agility, mobility, innovation and change needed to address new threats and opportunities in an environment of intense change" (Porter, 2019). With VBHC, the results of the prediction of results were to add an important coverage of at least 80% of the health pathologies represented in our service package in compliance with 8 pathologies per year, progressively improving all measurable specific disease outcomes up to more than the fulfillment of results up to 80% at each step of the value chain reducing the inefficient 30% with the reduction of steps in the chain that do not contribute with added value, a reduction of the variation of global costs to 2 deviation patterns of deviation of the median cost of the value chain for each specified disease, and finally integrate the VBHC as a model of the health service in Portugal as a standard with all model-oriented actors in a balanced ecosystem the health system.

We were able to integrate a progressive model evaluated that incorporates:

**Culture & Clinical Transformation:**

- New approach with clinical practice as cutting-edge evidence measured in the value chain along the clinical pathway with the correct definition of what to measure. The use of a methodology to evaluate the cultural organizational with the correct tools leads to the correct strategy to implement.

**Voice of the Patient:**

- PROMs are up to 60% of the importance of evidence that can contribute to the clinical decision-making process.

**From Cost to Value:**

- It is mandatory to know the cost of each step along the value chain and its repercussion for a value creation, used methodology of micro costing, TDABC, ABC, patient level costing activity.

**From Price Taker to price maker:**

- Knowing the cost and results achieved, then we can talk about how this should be paid for. We have multiple contracts with payers in the methodology of Value pricing, outcome-based agreement, multi annual outcome-based agreement, indication-based pricing.

**Integrated practice in all facilities:**

- The creation of a value chain as an integrated vertical model cannot allow everyone to do everything so that the differentiation facilities and services are analyzed and integrated or not into the pathology chain.

**IT Platform:**

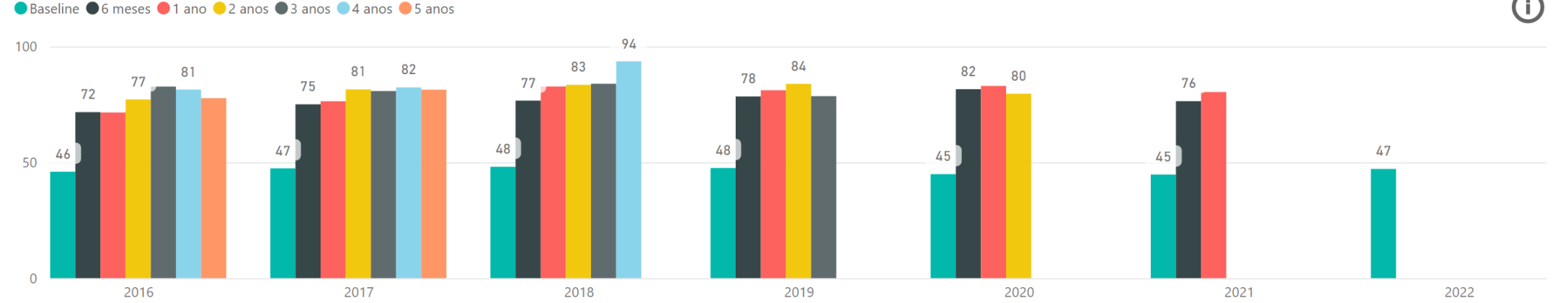
- To achieve a clear and easy way to evaluate at no additional charge for professionals it is important to create a correct and easy environment to collect correct data and transparency.

**Education/Communication:**

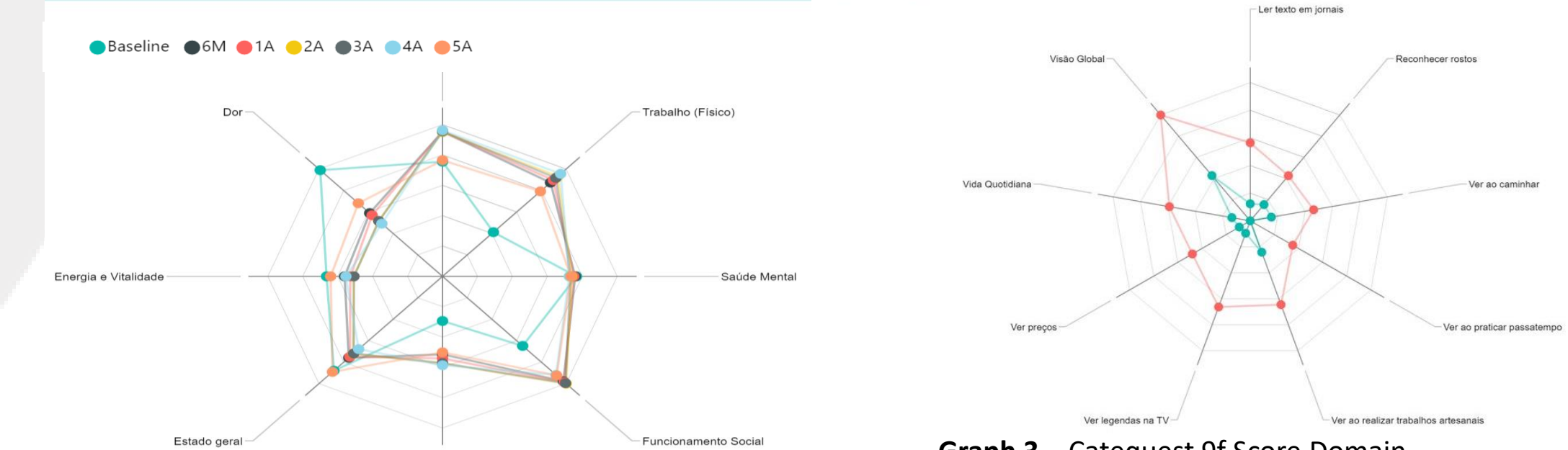
- With a training-based and problem-based learning model in a simulated environment we can provide for better training of our value chain with the actor to integrate knowledge along with the best results with the right cost to achieve.

## Results

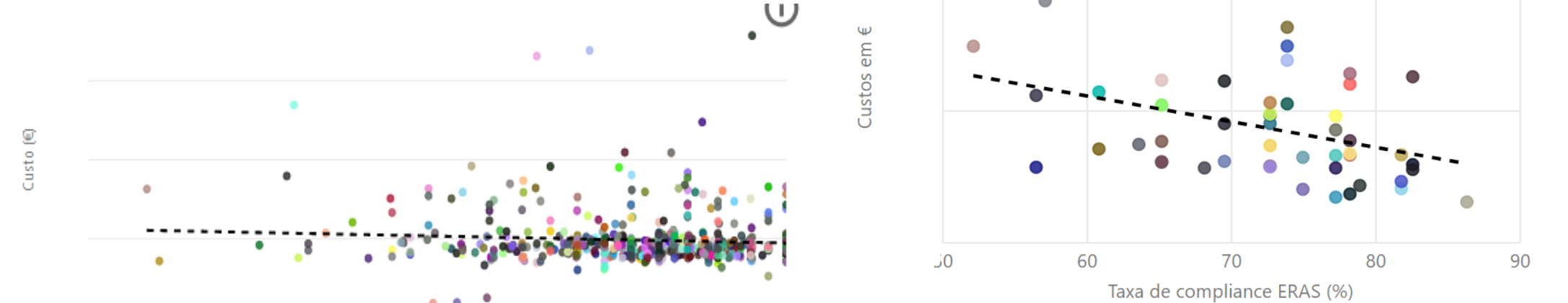
The initiative is a success, achieving an overall reduction of 6% in mortality, and 8% in complications in colorectal cancer for, for example, and growth of 60% in QoL for all dimensions, for example, in cataracts. Stroke- 100%- Rate of patients undergoing fibrinolytic therapy and/or angioplasty on time, increases patient satisfaction with care, 40%, increase of 25% at each stage of the patient pathway along the value chain e.g., breast cancer -Self-image - 40% improvement after surgery, Prostate Cancer- Potency 98% and Continence 97%, Pain reduction by 38% after low back pain intervention, reduction of frequent hospitalization and hospitalization in COPD less than 40% and Type II Diabetes by 30%, better survival rates for cancer patients: Better OS in pancreatic cancer 5 years and PFS . Improvement of more than 50% due to mobility and reduction of pain in hip and knee with standardization of the overall cost and devices. Despite these positive indicators, we still need a long integration of vision, along with the vertical integrated value chain, making this model a win-win situation. As providers it is already part of our mission and vision, but still in an unbalanced market along the common goal that brings challenges to a stable competitive environment that requires mandatory rules of engagement in makes the benefit around the value created. The cost reduction is about 32% in the overall cost of the full cycle of care due to the model of balanced between payers and suppliers, but mainly to the reduction of variability between the outcomes and the correct cost for each pathology. The main achievement was a direct correlation on the variability of the actors in the chain of value creating variability in outcomes and direct on variable costs. As a result, for some pathologies like hip and knee, you don't need to increase the cost to deliver better outcomes.



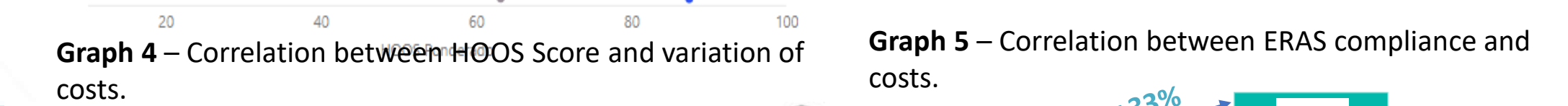
Graph 1 – Longitudinal Global Score for HOOS-PS



Graph 2 – SF-12 Score per domain for knee arthroplasty.



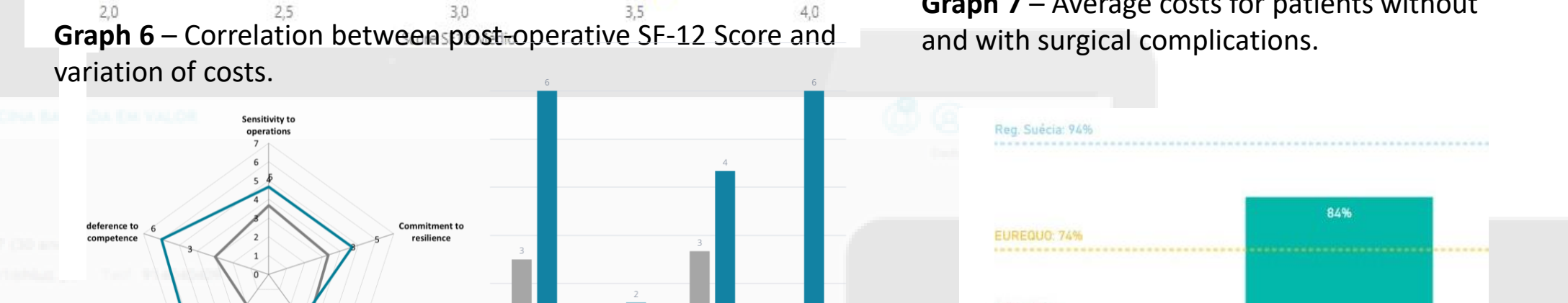
Graph 3 – Catequest 9f Score Domain



Graph 4 – Correlation between HOOS Score and variation of costs.



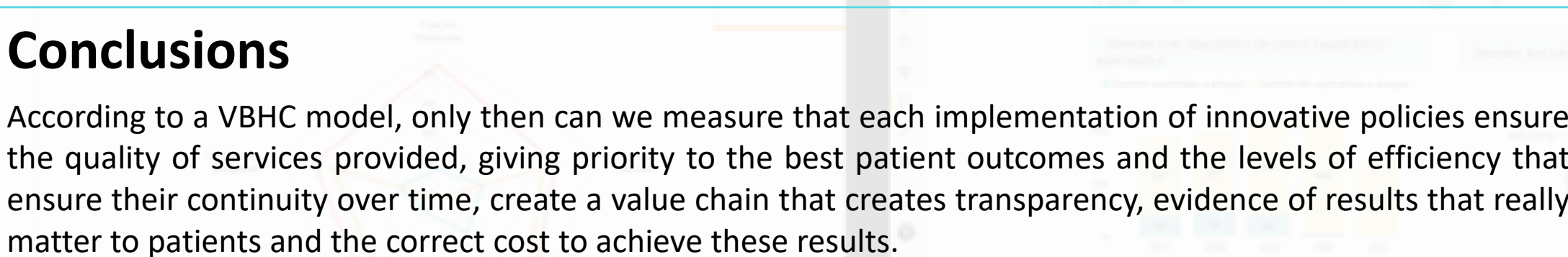
Graph 5 – Correlation between ERAS compliance and costs.



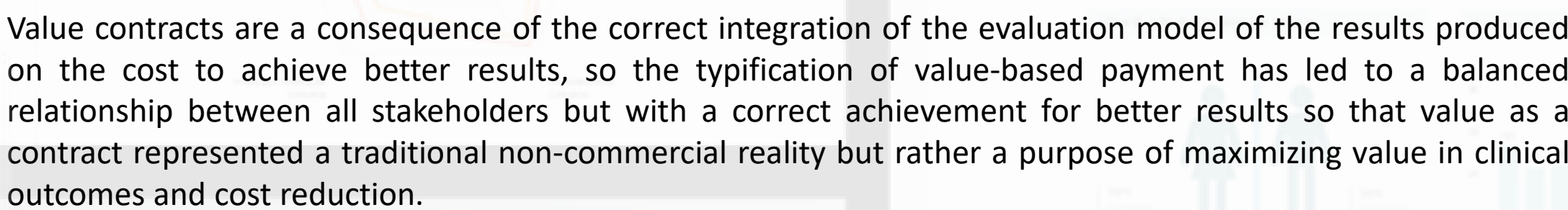
Graph 6 – Correlation between post-operative SF-12 Score and variation of costs.



Graph 7 – Average costs for patients without and with surgical complications.



Graph 8 – Evolution of the Culture Organization using HRO



Graph 9 – Benchmark in Cataract with 2 European Register

## Conclusions

According to a VBHC model, only then can we measure that each implementation of innovative policies ensure the quality of services provided, giving priority to the best patient outcomes and the levels of efficiency that ensure their continuity over time, create a value chain that creates transparency, evidence of results that really matter to patients and the correct cost to achieve these results.

Value contracts are a consequence of the correct integration of the evaluation model of the results produced on the cost to achieve better results, so the typification of value-based payment has led to a balanced relationship between all stakeholders but with a correct achievement for better results so that value as a contract represented a traditional non-commercial reality but rather a purpose of maximizing value in clinical outcomes and cost reduction.

The growing concern with improving quality and efficiency in the health system as an integrated model throughout our total capacity has led to greater importance for the analysis of differentiation with a permanent analysis of the organizational culture change strategy for a new concept such as VBHC that aims to provide relevant information for decision-making on alternatives that best respond to the needs of management and changes from a health organization's internal philosophy to a system that really cares about what really matters to patients. A multidisciplinary approach is a challenge that brings professionals and entities to a reduction of cognitive dissonance in the implementation of the VBHC Model; thus, all departments and entities bring a matrix strategy with doctors, nurses, care, managers, pharmacists, engineers, who are key strategic partners in a value chain that ended with the creation of better outcomes for patients and the reduction of the variation of overall costs for the value chain by 32 %.

The reality of VBHC brought to Luz Saúde a reality of privileges for each of the stakeholders that maximized efficiency but also each function that brings the best of each professional due to a specialization, and a final vision of reality and not perception of healthcare that could contribute to a value improvement for all stakeholders and a better-balanced ecosystem. The ICHOM measures were a good starting point put still they have some limitations for a full emerging and implementation of a full value-based healthcare project its full integration.