CENTRO HOSPITALAR UNIVERSITÁRIO DE LISBOA CENTRAL

The Patient Costing System

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Health organizations **require integrated,** reliable, creative **information** systems, capable **of generate value** in a opportune time.

The Patient **Costing System** fits into this **strategic thinking.**

Introduction

The Patient Costing System (PCS) aims to address the need to quantify the resources involved in direct provision of care to patients at Centro Hospitalar Universitário de Lisboa Central (CHULC).
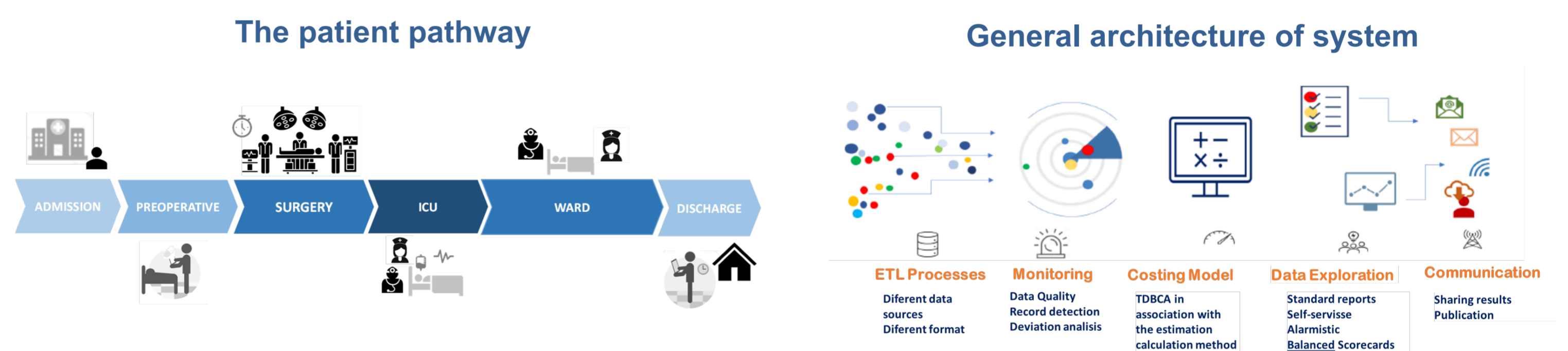
It focuses on monitoring patient´s pathway in the hospital, considering the multiple episodes of inpatient and outpatient care from admission to discharge.

This project designs a cost monitoring model supported by a data exploration tool developed in partnership between CHULC and Glintt.

This methodology establishes an interconnection between different tools and data sources in use at our hospital center, being able to provide reliable and real-time information that supports decision making, from the top management to operational management, through standardized reports with selected indicators.

Methods

This solution was based on: (1) the definition of a technical and functional architecture that allows the analysis of costs per patient, episode, pathology, outpatient circuit, medical and surgical hospitalizations, at different levels of the organic structure: hospital departments, clinical units and specialties; 2) in the audit and review of internal process and patient health records; 3) in the review of recording patient consumption of medical devices, reusable and single use, and the supply channels by optical reading system. To determine costs, it was define a set of rules and develop a series of algorithms and calculation formulas, capable of converting the original records/data into costs.

The patient pathway

ADMISSION · PREOPERATIVE · SURGERY · ICU · WARD · DISCHARGE

General architecture of system

ETL Processes
Diferent data sources
Diferent format

Monitoring
Data Quality
Record detection
Deviation analisis

Costing Model
TDBCA in association with the estimation calculation method

Data Exploration
Standard reports
Self-servisse
Alarmistic
Balanced Scorecards

Communication
Sharing results
Publication

Results

This solution allowed to centralize a set of information based on different databases. These are the main type of costs achieved:

Cost per patient
○ Average cost per patient
○ Total cost per patient
○ Cost of the patient's journey

Cost per activity
○ Cost of complementary exams
○ Cost of transports
○ Cost of food and cleaning

Cost per Organic Unit
○ Cost per discharge service, admission service
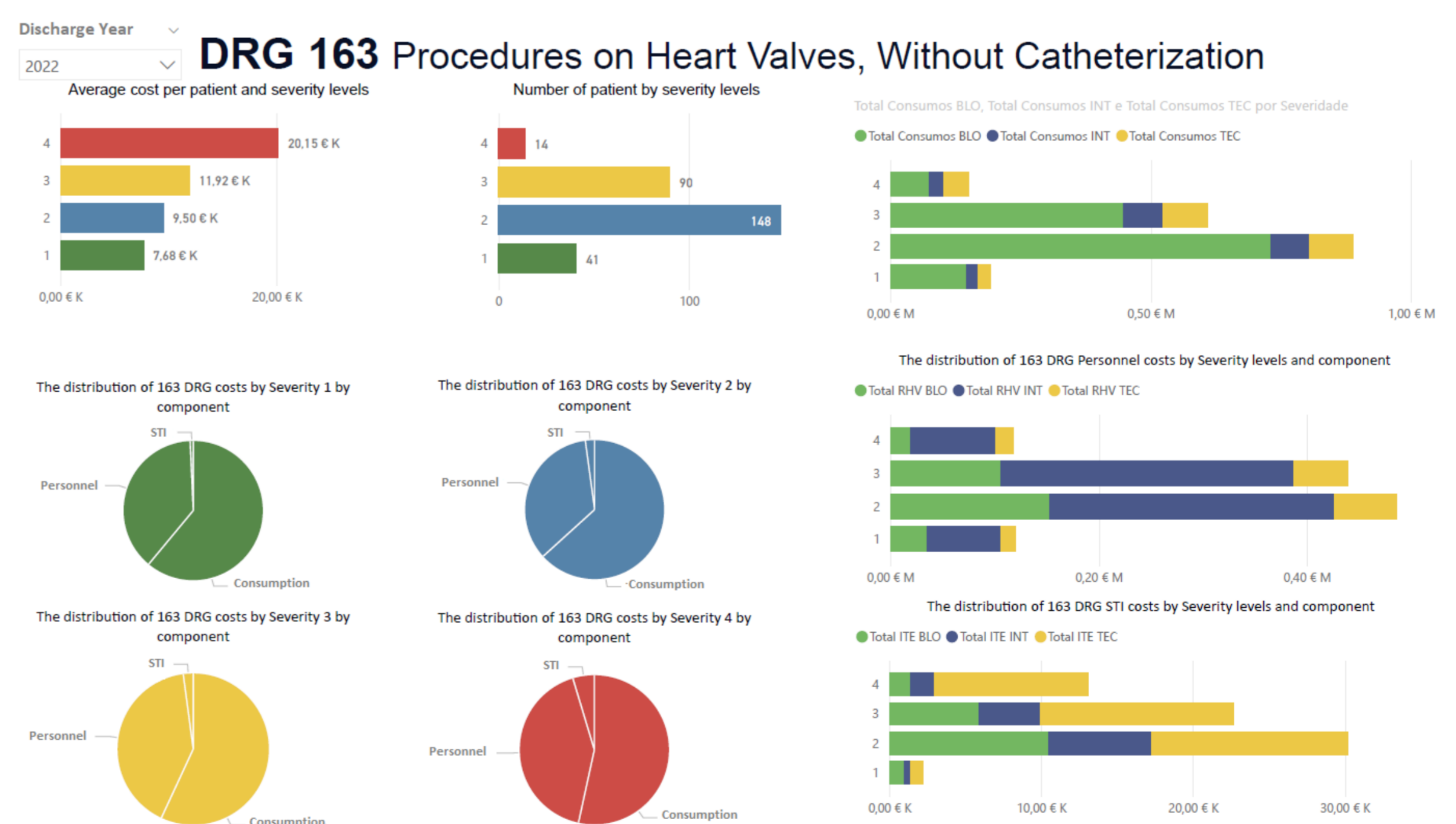○ Cost by department or specialty
○ Cost per reference center

Cost of patient characterization
○ Age and sex
○ Geographical origin (municipality; district)
○ Nationality

Cost for care processes
○ Surgical hospitalization
○ Medical hospitalization
○ Conventional and outpatient surgery

Cost of episode characterization
○ Cost per main diagnosis
○ Complexity cost (Case mix)
○ Costs per DRG and severity

Example of costs per DRG and severity

Discharge Year: 2022

DRG 163 Procedures on Heart Valves, Without Catheterization

Average cost per patient and severity levels
- 4: 20.15 € K
- 3: 11,92 € K
- 2: 9,50 € K
- 1: 7,68 € K

Number of patient by severity levels
- 4: 14
- 3: 90
- 2: 148
- 1: 41

Total Consumos BLO, Total Consumos INT e Total Consumos TEC por Severidade
(Total Consumos BLO ● Total Consumos INT ● Total Consumos TEC)

The distribution of 163 DRG costs by Severity 1 by component
STI / Personnel / Consumption

The distribution of 163 DRG costs by Severity 2 by component
STI / Personnel / Consumption

The distribution of 163 DRG costs by Severity 3 by component
STI / Personnel / Consumption

The distribution of 163 DRG costs by Severity 4 by component
STI / Personnel / Consumption

The distribution of 163 DRG Personnel costs by Severity levels and component
(Total RHV BLO ● Total RHV INT ● Total RHV TEC)

The distribution of 163 DRG STI costs by Severity levels and component
(Total ITE BLO ● Total ITE INT ● Total ITE TEC)

Conclusions

To collect, process, analyse and distribute data from any location or operating system, identifying cost patterns, behaviours, deviations and inefficiencies, generating in-depth knowledge of the cost structure in real time and converting them into powerful output that will generate actionable actions mitigating risks and maximizing the value generated in the organization. To know and manage production costs, in an individualized way focused on the patient, their illness and their hospital journey, **increasing the value that is extracted from available resources at the most appropriate cost possible in the operational and strategic process.**

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