Implementation of a Digital Patient-Reported Outcome Measures Model (PROM HUSE Model) to Improve the Quality of Value-Based Healthcare

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Son ESOases

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INTRODUCTION

Patient-Reported Outcomes (PROs) are health aspects that cannot be objectively evaluated and are obtained through the patient's own perception. These outcomes are important for measuring changes in patients' health and quality of life. PROs are crucial for individualizing healthcare, supporting clinical decision-making, and evaluating the performance of healthcare organizations. The tools used to collect patient-reported outcomes are known as PROMs. The primary objective of the PROM Program is to enhance care management and the quality of value-based patient care





The program includes fifteen pathologies/conditions in different phases with 1,963 patients. (Fig. 3) Eight pathologies are fully developed with patient information loaded into the EHR and data analysis incorporated into the hospital's BI system (SIHUSE); seven more load information into the EHR but are pending data analysis in the BI. Additionally, the following pathologies are in development for imminent production: migraine, pulmonary fibrosis, trigeminal nerve vascular decompression, endoscopic pituitary adenoma surgery, endometriosis, and cleft palate.

A notable result of the PROM HUSE model implementation is the integration of patient outcomes into their EHR, enabling immediate access to information (Fig. 4), result-based alert generation, inclusion of PROs as a standard clinical outcome, and immediate data analysis. This integration has optimized processes, protocols, and workflows embedded

Figure 1. PROM HUSE Model

METHODS

The implementation of PROMs at Son Espases University Hospital (HUSE), was initiated in accordance with the 2018-2022 Strategic Plan, which established a value-based healthcare (VBHC) plan. The PROM HUSE Model is designed to enhance patient-relevant outcomes by digitally capturing reported data and integrating the process into Electronic Health Record (EHR). This model is founded upon four fundamental pillars (Fig. 1):

- HUSE PROM Tracker (HPT): A digital platform for the electronic capture of patient-reported outcomes from smartphones. (Fig. 2)

- Integration of HPT results into the EHR of the hospital, Oracle Millennium.

- ICHOM Standards: The use of ICHOM standards as the primary option for each pathology/condition.

- Data Analysis System: The use of Power BI for data analysis.

The HUSE PROM Tracker platform, was developed in collaboration with the Balearic Innovation and Technology Foundation (FBit), and allows patients to complete questionnaires from their own devices and environments, thereby improving participation and centralised monitoring. Furthermore, the integration of information into the EHR (Millennium) enables immediate (within 10 minutes) access to data by clinical professionals, which in turn generates alerts and facilitates uninterrupted clinical decision-making. HUSE has a Business Intelligence (BI) system, called Son Espases University Hospital Information Systems (SIHUSE), which supports clinical and management decisions. This system was developed using Microsoft's Power BI platform.



Pacientes programa PROM

Patología	Pacientes	% Pacientes
Artoplastia Hombro Dcho	12	0.5%
Artoplastia Hombro Izq.	4	0.2%
Ca Pulmón	15	0.6%

in the EHR and improved patient trust and loyalty to the program. The electronic implementation via the mobile app facilitates questionnaire completion, allowing patients to respond thoughtfully and enhancing centralized monitoring.

The program's implementation has presented several challenges for the hospital, warranting reflection for future technological, organizational, and cultural developments. While digitalization and technological integration have been successful, organizational challenges, especially the variability of pathologies and the required flexibility, have been significant. Training and raising staff awareness about the benefits of PROMs have been fundamental from the outset to overcome cultural and strategic challenges. However, there is still a long way to go, and continuous education on PROMs remains necessary. Thanks to the hospital's proprietary tool, it will be possible to implement the PROM Program in other public hospitals in the Balearic Islands in the



Figure 2. HUSE PROM Tracker. Mobile



Cáncer Próstata	48	2.0%
Cataratas OD	71	3.0%
Cataratas OI	69	2.9%
Demencia	7	0.3%
Dolor Lumbar	6	0.3%
Esclerosis Múltiple	272	11.5%
Ictus	316	13.4%
Inestabilidad HG Izq.	2	0.1%
Insuficiencia Cardiaca	54	2.3%
Lípidos	37	1.6%
Lumbalgia	23	1.0%
Manguito Dcho.	8	0.3%
Manguito Izq.	5	0.2%
Mano General Dcha.	18	0.8%
Mano General Izq.	7	0.3%
Mano Ortopédica Dcha.	12	0.5%
Mano Ortopédica Izq.	10	0.4%
Migraña	8	0.3%
Parkinson	28	1.2%
Parto	846	35.9%
Psicosis	52	2.2%
QMT Efectos Secundarios	348	14.8%
Valvulopatía Cardiaca	79	3.4%
Total	2357	100%

Figure 3. List of patients by pathologies of the prom program application screenshot

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The PROM HUSE model illustrates that through integration and digital transformation, it is feasible to implement a patient-reported outcomes program to enhance the quality of value-based patient care. The PROM HUSE Model not only improves the quality of care for individual patients but also sets a precedent for other healthcare organizations seeking to implement PROMs effectively.



Figure 5. Screenshot of the Power BI program with stroke PROM data