

RecoMed

Reconciliation of medication in digital format from the list of usual medications for patients admitted to the Plastic Surgery and Burns department.

Decree-Law no. 30/2011 of 2 March created, the Centro Hospitalar e Universitário de Coimbra, E.P.E., a Public Institution. The Centro Hospitalar e Universitário de Coimbra, E.P.E. (CHUC) comprises the following hospitals: Hospitais da Universidade de Coimbra (HUC), Hospital Geral (HG), Hospital Pediátrico (HP), Maternidade Bissaya Barreto (MBB), Maternidade Daniel de Matos (MDD) and Hospital Sobral Cid (HSC).

CHUC's mission is to provide high quality, differentiated healthcare in a context of training, teaching, research, scientific knowledge, and innovation, and to be a national and international benchmark in areas considered to be centres of excellence.

According to its vision, CHUC is an open organisation, made up of a network of hospital units, services and technologies structured and integrated to provide society with humanised, complete, close, reliable, and transparent care with a positive impact on the community, guaranteeing efficiency and overall sustainability in the medium and long term.

It has a workforce of more than 8,000, around 1,700 acute beds, and in the first half of 2023 there were 1,3687 emergency appointments, 2,6745 patients discharged, 2,597 patients operated on, and 62,353 Day Hospital sessions.

Plastic Surgery is an extremely wide-ranging speciality, ensuring the diagnosis and treatment of multiple pathologies such as burns and their sequelae; skin and soft tissue tumours and their sequelae; breast reconstruction; pharyngeal-laryngeal reconstructions; scalp reconstructions (particularly in cochlear implant exposures); oesophageal reconstructions; traumatology and its sequelae (including the prevention and treatment of pressure ulcers); hand surgery; peripheral nerves and brachial plexus; congenital anomalies of the head and neck, trunk, genitals and limbs; gender reassignment surgery (including breast surgery, penis and vulvo-vaginal reconstructions); lymphatic surgery; body contouring surgery after bariatric surgery and aesthetic surgery. Plastic Surgery has an interface with all areas of surgery: from Gynaecology to Urology, including Head and Neck Surgery, Neurosurgery, Otorhinolaryngology, Thoracic Surgery, Dermatology, Orthopaedics and Paediatric Surgery.

Genetically, it is linked to the Burn Unit with which it shares clinical staff, and this is a perfect solution for the burn patient as it allows for continuity of care and the transmission of all clinical information and relevant patient characteristics.

The types of care provided by the service are the traditional ones for a surgical service, i.e.: Hospitalisation: 25 beds; Operating Theatre: access to the Peripheral Operating Theatre on a daily basis and some operating times in the Central Operating Theatre (1 operating time per week); Operating Theatre in the Paediatric Hospital (1 operating time per month); Ambulatory Surgery: operating times in the Ambulatory Surgery Unit (two days from 8.30am to 2pm - general anaesthesia - and one day from 2pm to 6pm - local anaesthesia); Outpatient Consultation: 2 offices - Consultation daily.

Challenge description

The hospital is a large and complex set of services where care is provided to promote the health of the population. An individual's visit to a health institution, either for a routine consultation,



a scheduled intervention, or an acute situation, most often leads to changes in medication. It has been described that failures in communication between transitions of care can lead to discrepancies and confusion in the usual medication.

Lack of communication during patient transition is the reason for 50% of medication-related errors and about 20% of adverse drug reactions (Institute for HealthCare Improvement, 2006).

This situation can lead to re-admissions, morbidity and mortality and increased health costs. The sustainability of resources, particularly in the health area, is a growing concern and medication reconciliation is one of the accessible and available tools to reduce the risk of these events, but also to reduce and/or minimize their consequences.

The National Plan for Patient Safety 2015-2020 (D.R. 2ª série - nº 28/2015, of February 10) and the current National Plan for Patient Safety 2021-2026 (D.R., 2ª nº 187/2021, of September 24) recognize its importance, including medication reconciliation in their objectives and setting targets for achievement.

Medication reconciliation is a formal and systematic process in which different healthcare professionals work together to obtain and evaluate the patient's medication list with the doctor's admission, transfer, or discharge prescriptions. It consists of obtaining and checking a complete and accurate list of the medicines that each patient is currently taking. This list is compared with the medicines that have been prescribed and where discrepancies are identified, these are discussed with the prescriber and the reasons for these changes are documented. When the patient is transferred, a current and accurate list of medicines is provided to the person who will be taking over the patient's care.

In CHUC's Plastic Surgery and Burns service, after the hospital implemented the electronic medical record, there is no therapeutic reconciliation process that implements the recommendations of the Directorate-General for Health (Norma 018/2016. Reconciliação da Medicação. Direção Geral de Saúde). The application for this project aims to respond with a digital solution that allows this process to be implemented.

Challenge main objectives

The main objective is to improve, with a digital solution integrated into the patient's electronic record, the accessibility and updating of the medication list of patients admitted to this clinical service, avoiding communication errors and negative consequences in terms of patient safety, with the aim, whenever possible, of active participation by the patient themselves, empowering them to better manage their medication.

The aim is to ensure accurate and complete knowledge of a patient's medication information in order to prevent medication-related incidents at all transition points in healthcare interfaces (Institute for HealthCare Improvement, 2006).

The end result will be the communication of the updated medication list to the next care provider or to the patient/caregiver.

Solution functional requirements

Compulsory functional requirements

The system to be implemented must respond to the following needs / propositions:

- Obtaining and verifying: the complete and accurate list of medicines that each patient is currently taking.
- Comparison: of the list of medicines that the patient is taking in relation to the medicines that have been prescribed.

- Documentation: where discrepancies are identified, these are discussed with the prescriber and the reasons for the changes are documented,
- Final document: when the patient is transferred, a current and accurate list of medicines (including the reasons for changes) is provided to the person who will be taking over the patient's care.

Therefore, the solution shall:

- Acquire the full list of medicines the patient is currently taking.
- Compare this list with the medicines that have been prescribed in hospital.
- Identify discrepancies.
- Emit a document with discrepancies, so that the prescriber can analyse and decide.
- To be able to export a final document, to be given to the patient, with the therapeutic list to follow, updated and exact (and with the possibility of including reasons for changes, as well as a field for free-text comments).
- Be integrated and communicate within national and hospital's medical records and hospital pharmacy systems.
- Be eased to use.

Desirable functional requirements

The solution could release alerts when occur discrepancies.

Pilot scope

The pilot will be developed in a total period of 12 months, including design, validation, testing and measuring of the impact of the co-created solution.

It will be expected to test the solution for 6 months.

The healthcare professional's teams will be composed especially with pharmacists and physicians.

End-user type	Role	Number
Pharmacists	Provide requirements, use, and validate the solution.	3
Physicians	Provide requirements, use, and validate the solution.	6
Patients	Beneficiaries (all the pilots will be developed based on different patients' medicine lists)	50

Table 1. Targeted users

Language

- The solution must be in Portuguese. There are no special language requirements for iteration with the end users in addition to those related to the description of the drugs.

Pilot set-up conditions

The pilot setup conditions correspond to the objective of capturing lists of medicines that patient is currently taken, comparing this list with what has been prescribed, identifying, and signaling the discrepancies and creating a document to be provided to patient or caregiver.



All the information must be managed around the clinical and pharmaceutical informatics system.

Ethical, legal, or regulatory

All CHUC employees, as well as the general public, including companies that collaborate with CHUC, are governed by the Privacy and Data Protection Policy (Publication of 11.08.2022, Board of Directors), which explains the terms under which CHUC processes the personal data of its users, as well as the rights they may exercise, in accordance with the provisions of Regulation (EU) 2016/679 of the European Parliament and of the Council - General Data Protection Regulation (GDPR) - and other applicable national legislation on privacy and data protection.

In addition to Privacy and Data Protection, all CHUC managers and employees must take into account the Code of Ethical Conduct (Publication of 22.09.2022, Board of Directors)

Technological

The system to be developed must be able to identify the list of medicines (name, dose, method of administration and schedule), integrate information from different sources, aggregate this information, have the capacity to analyse it and then export the discrepancies.

The final output will be a harmonised medication list before the patient leaves hospital, which must be integrated into the information systems in use.

Data access

The tool to be developed need to extract data from the hospital existing IT system about name, dose, method of administration and schedule medicines and then bring measurements and output to the system.

Expected impact and KPIs.

With the creation and implementation of this tool, we aim to obtain benefits centred on the patient and on the efficiency of the hospital system:

- Increasing safety, reducing errors related to inappropriate medication.
- Managing the economic resources spent on medication.
- And, indirectly, increasing the satisfaction levels of healthcare professionals and patients/carers.

As a process indicator:

- 75% of admissions/discharges of patients with medication reconciliation.

Business opportunity

Market size

As mentioned earlier in this document, CHUC is a large healthcare organisation with a high volume of production. It is concerned with providing quality and patient-centred care.

CHUC has many departments and services providing care in different areas and specialities, and the problem of therapeutic reconciliation is a cross-cutting issue.

Therefore, the solution developed as part of this pilot can be replicated in all of the hospital's care centres.

Taking the first half of 2023 into account, the figures are as follows: there were 134,687 emergency attendances, 26,745 patients discharged, 25,497 patients operated on, 62,353 Day Hospital sessions.

Adoption plans

If the pilot is successful, CHUC intends to adopt the solution, by shared ownership the solution co-created and procure its maintenance.

Resources

inDemand. (2020). [inDemand stories](#).

inDemand (2018). [EPICO Challenge](#) - inDemand Call for Companies Murcia Region.

inDemand (2019). [GRAVIDITY Challenge](#). inDemand Call for Companies Murcia Region.

InnoBuyer. (2023). [InnoBuyer Webinar](#): How to master innovation needs identification.