

## Background

LEAN philosophy in healthcare settings gives emphasis on performance improvement as a means to develop clinical quality and patient safety standards. It takes into account the expenditure of resources and eliminates/reduces waste. Several types of waste have been identified in the medication use process namely waiting, motion, overproduction, errors, processing and transport.

## Purpose

Apply LEAN methodology to the medication distribution process in the Pharmacy department regarding urgent medication requests from the clinical wards, in a general hospital in Portugal, in order to improve the present inefficiencies.

## Material and Methods

The study took place in 2015 in a Hospital Pharmacy of an 800 bed hospital in Lisbon. The selected process was the request/distribution of urgent medication to the wards. Currently, nurses fill a paper form request and send a Hospital Operational (HO) to the pharmacy for the medicines to be dispensed by a Pharmacy Technician (PT).



The process was decomposed in several tasks and analyzed with a timetable worksheet (Image 1) and Spaghetti Diagram (Image 2). The LEAN team measured the times involved in each task, made a Value Stream Map (VSM) and discussed the process.

The pharmacy regular functioning hours is Monday to Friday from 9 a.m. to 4 p.m. We attend about 26 HO/day in this period, representing an average of 12 stock supply request (inventory replacement) and 51 medication requests to specific patients. Our PT walks an average of 2.05 km/day while attending these requests and the average of waiting time by the HO is 7min.

Tasks with no/little added value were identified.

Image 1: Timetable Worksheet

Processo: atendimento dos pedidos de medicação trazidos pelos AAM dos serviços

observações data e hora 17.9 (manhã)

Fases do processo	1	2	3	4	5	6	7	8	9	10
AAM	Toca à campainha	2"	2"	2"	2"	2"	2"	2"	2"	2"
	Abre a porta	2"	2"	2"	2"	2"	2"	2"	2"	2"
	Recebe o pedido	4"	4"	4"	4"	4"	4"	4"	4"	4"
	Vai ao computador	1' 19"	1' 19"	1' 19"	1' 19"	1' 19"	1' 19"	1' 19"	1' 19"	1' 19"
	Consulta a prescrição	3"	3"	3"	3"	3"	3"	3"	3"	3"
	Vai buscar os medicamentos	2"	2"	2"	2"	2"	2"	2"	2"	2"
	Tel. para tirar dúvida	2"	2"	2"	2"	2"	2"	2"	2"	2"
	Regista os débitos	2"	2"	2"	2"	2"	2"	2"	2"	2"
TDT	Entrega ao AAM	4"	4"	4"	4"	4"	4"	4"	4"	4"

o tempo que demora a fase  
o tempo de espera entre a fase anterior e a segunda

Image 2: Spaghetti Diagram

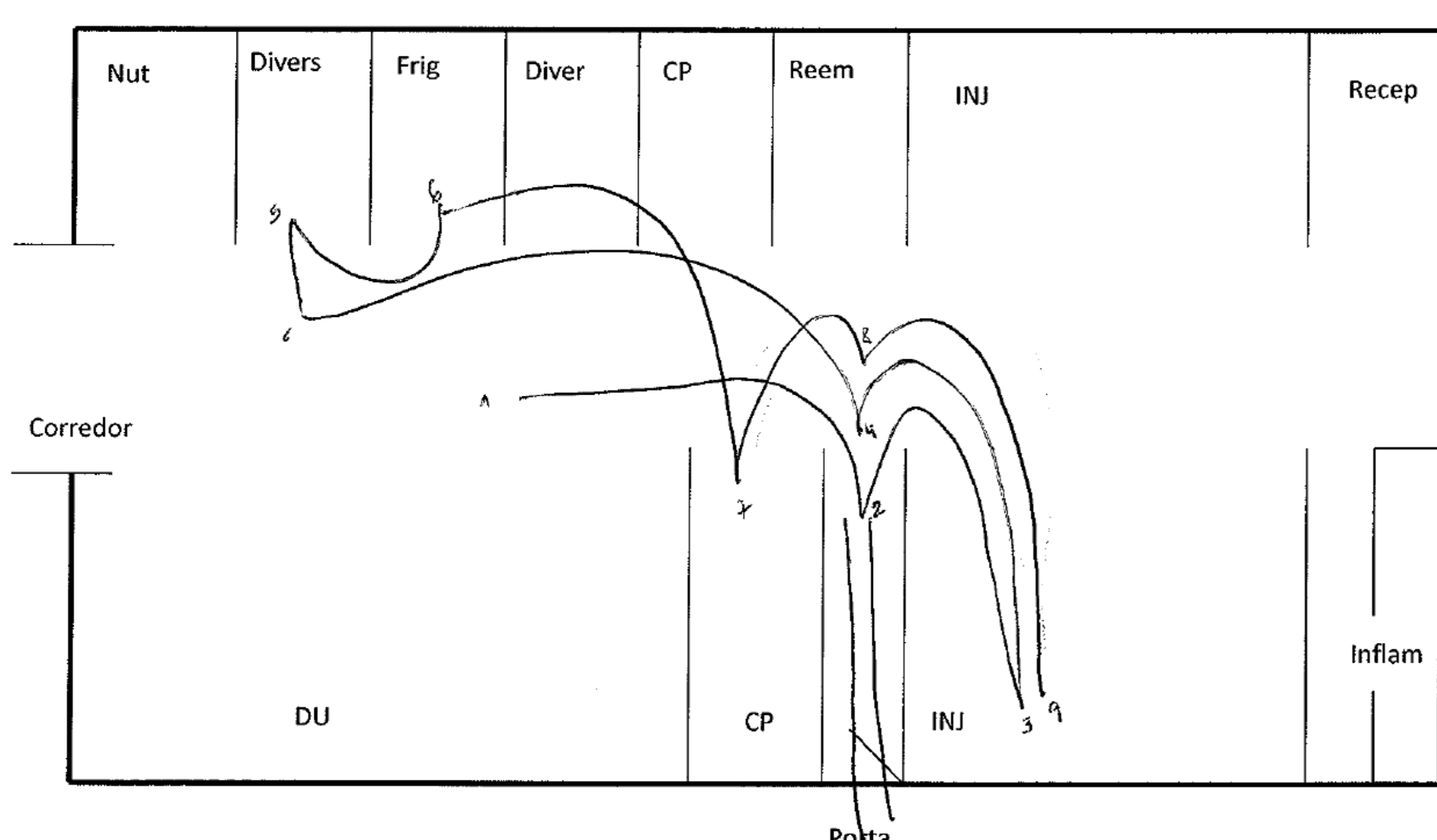
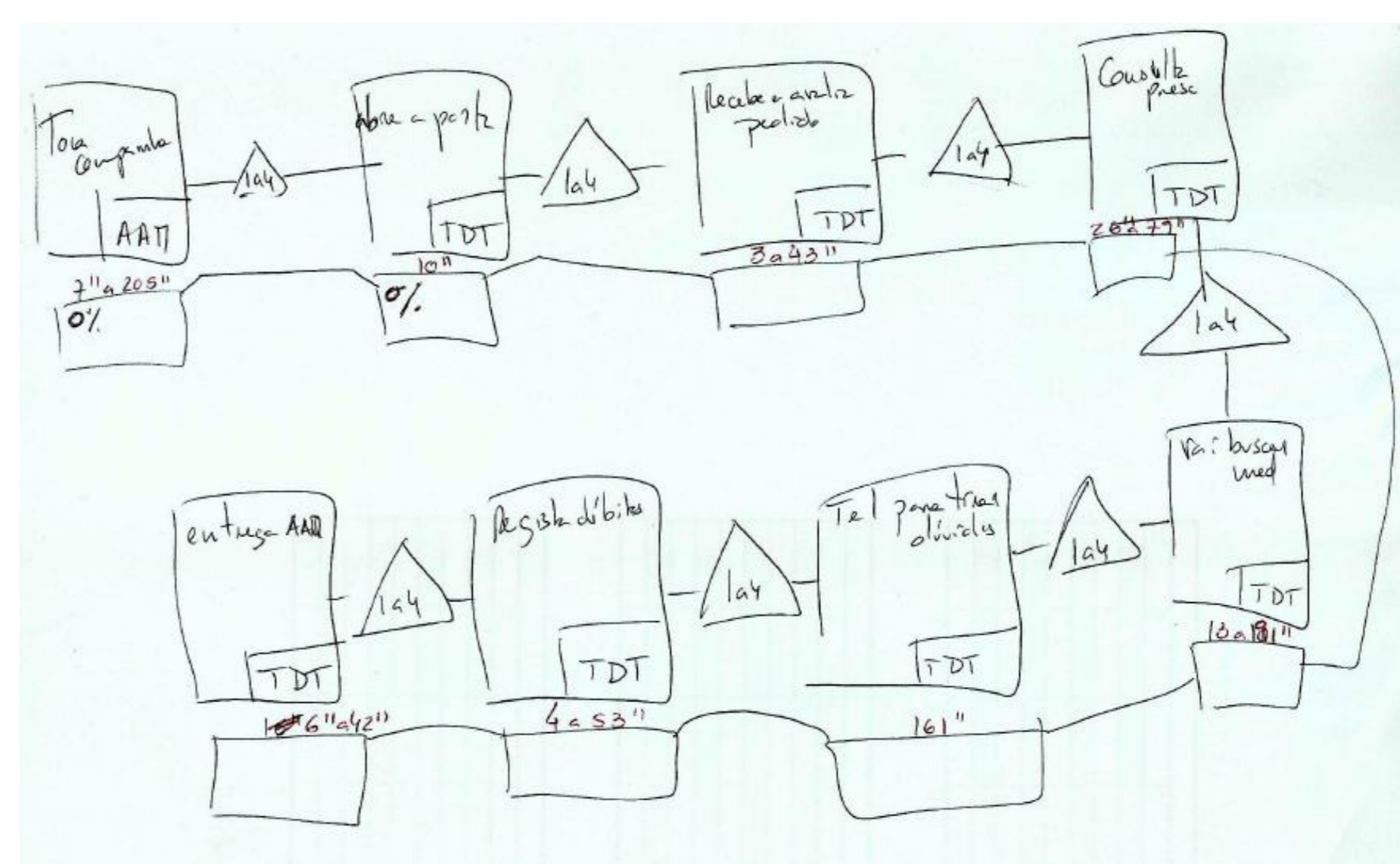


Image 3: Value Stream Map



## Results

The VSM identified several tasks with no/little added value, namely requests in paper form, lack of information in the requests, multiple dislocations and unnecessary waiting time in the Pharmacy by the HO and continuous disruption of the PT work while allocated to other tasks.

After internal debate, the LEAN TEAM decided to:

- Abolish/ limit the use of paper forms by using online requests thus reducing multiple dislocations, HO waiting time and issues related with lack of information or misinterpretation in the requests

- Definition of schedules with specific/ fixed times for distribution throughout the day by the Pharmacy HO, limiting the dislocation of the wards HO to the Pharmacy to urgent requests of medicines. These measures will hopefully reduce waiting time, improve PT work organization and ultimately lead to better management of healthcare resources.

We hope to achieve reductions of:

- 50% of HO waiting time
- 75% of dislocations to the Pharmacy
- 75% of paper requests
- 50% of PT dislocations within the Pharmacy

Planned Schedule for Implementation of the agreed measures (2016)

	April	May	June
Definition of urgent medicines			
Project presentation to nurses			
Hospital rollout			
Indicators measurement			
Evaluate the possibility to broaden the process to the pharmaceutical emergency period (4 to 8 pm)			

## Conclusion

LEAN philosophy can be applied to healthcare systems with gains in performance. It can be highly effective in reducing waste and displace resources to other important tasks.

Pharmacy team recognized the inefficiencies of the current medication distribution process and identified the necessary changes to improve it, releasing the involved Healthcare Professionals to other specific and value added tasks.

The Pharmacy and the hospital as a whole are committed to analyze the outcomes and apply LEAN to other activities.

