

Minimising ESWL Procedure with LEAN Initiatives

Hospital Universiti Sains Malaysia (HUSM) or better recognised as Hospital USM, located in Kubang Kerian Kelantan is regarded as one of the best teaching hospitals in Malaysia. HUSM started its operation on 1st October 1983 with 36 beds and now provides 767 beds with the strength of 3,455 staff. The mission of HUSM is 'HUSM will explore new areas of patient care services and become a medical centre of excellence with the provision of high quality and advanced technology'.

HUSM has taken proactive steps in order to be known as a teaching university hospital. It provides learning and research facilities in the fields of medical science, dentistry and general health. In addition, it also ensures USM graduates are skilled and competent and at the same time acts as a referral hospital that provides a higher level of medical science, dentistry and general health services to the public.

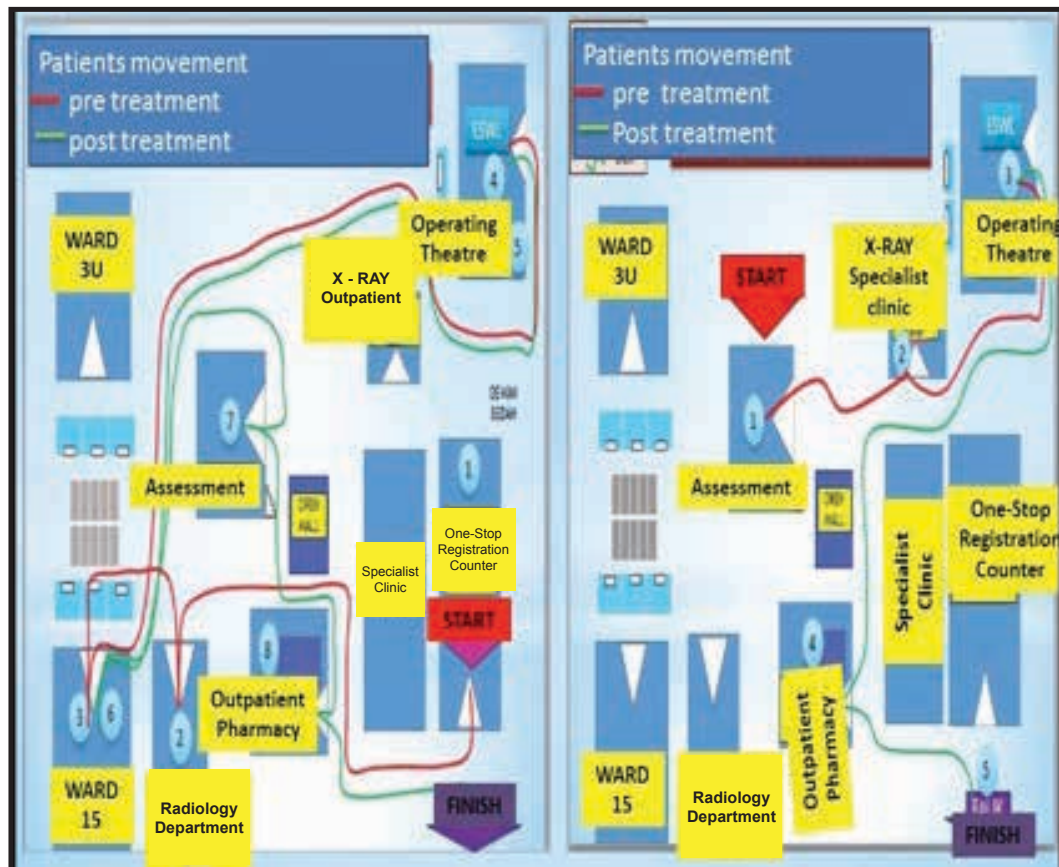
Prolong ESWL procedure for patients

The need for healthcare centres are mushrooming in today's millennium. In terms of quality and patient safety, healthcare centres have given more emphasis and priority to these two factors. This is to meet the demands of the global market. HUSM strives to give the best services and facilities to patients' demands by having the best quality and safety environment available such as in Extracorporeal Shock Wave Lithotripsy (ESWL) treatment. ESWL procedure is a non-invasive treatment of stones (renal stone and ureteric stone). It uses an acoustic pulse to break the stone into small pieces which travels easily through the urinary tract and passes out from the body. Previously, the ESWL procedure needed five hours of treatment time and each patient had to undergo 47 long essential steps. By improved time taken on ESWL procedure, a larger number of patients could be treated.

LEAN resolution to ESWL procedure

A team known as Kango-shi comprising 10 people had come up with a study on shortening the duration of time taken for ESWL patients. The hospital management also found issues pertaining to patients that needed to be addressed. This was done by having new creative ideas from staff for the benefits of the hospital. The Kango-shi team decided to use Kaizen initiatives in their latest ESWL procedure. Using Visual Stream

Spaghetti diagram of patients movement for ESWL treatment 'before' and 'after' LEAN project



Mapping (VSM) approach, the team managed to identify all the processes involved whether it was value added or non-value added. From a total of 46 steps, 27 non-value added steps were identified and needed to be eliminated as it had contributed to increase in waiting and process time of ESWL treatment. The team

also used Spaghetti diagram to oversee the patients' movement starting from the point of registration up to when they left the hospital.

The group did brainstorming sessions to generate ideas for Kaizen improvement. The Kaizen solutions to reduce time taken of ESWL treatment are as follows :

KAIZEN THEME	KAIZEN IMPROVEMENT
To speed up registration process	Registration will be done by staff nurse in the ESWL room.
To simplify/shorten the X-Ray procedures	X-Ray procedures carry out in X-Ray specialist clinic which is nearby the ESWL room.
To reduce time on looking up for medical records	Medical records to be ready a day prior to ESWL treatment.
To speed up waiting time instead of warding patients	Direct instant medical treatment in ESWL specialist room.
To speed up intervals of appointments	Appointments stage has been reduced to three different times, 0830hrs, 1030hrs and 1230hrs.

Analysis of LEAN project in HUSM

Through five Kaizen initiatives, the group has achieved 54.3 percent of reducing time wastages. The time spent on ESWL procedure takes only 2 hours and 17 minutes. After LEAN, 47 processes have shortened to 27 processes only. The current reading of 2,518 metres has shortened to 763 metres and only 12 staff are required as compared to 20 staff previously. These improvements have further increased the Process Efficiency ratio from 44 percent to 65 percent indicating the work efficiency level has gone up simultaneously.

For cost saving on patients, the expenses incurred has been reduced from RM651 to RM594 of which 8.7 percent is saved on patients expenditure. Currently, the total cost saving of ESWL expenses incurred in HUSM is RM33,222.72 and tremendously is reduced to RM14,104.32 with a percentage reduction of 57.6 percent. The customer satisfaction rate has also gone up to 93 percent as compared to 58.7 percent previously. These improvements have brought HUSM to new heights in terms of service excellence and a good ambience to HUSM.

Matrix before and after LEAN project

DESCRIPTION	BEFORE	AFTER
1. Number of processes	47	27
2. Lead time (minutes)	300	137
3. Distance (metres)	2,518	763
4. Number of staff	20	12
5. Process Efficiency ratio (%)	44	65
6. Patient expenses (RM)	651	594
7. Cost for ESWL treatment (RM)	33,222.72	14,104.32
8. Customer satisfaction rate (%)	58.7	93

