

Optimizing patient and procedure flows to treat patients more efficiently

The cardiac arrhythmias story at the Oslo University Hospital



About the Oslo University Hospital

Norway's largest hospital, with over 20,000 employees carrying out more than 1.2 million treatments each year. Responsible for approximately 50% of all medical and healthcare research conducted at Norwegian hospitals.

⚠️ What were the challenges?

The Oslo University Hospital was facing challenges in meeting increasing demands for their electrophysiology laboratories (EP lab), where catheter ablation is carried out, while maintaining the high quality of care that they deliver. The key barriers include:

- Absence of patient flow inside and outside of the EP lab
- Long waiting time (up to 6 months after referral)
- High amount of unutilized time in the EP lab (>25%)
- Complex scheduling process
- Inconsistent and long changeover times
- High patient drop-out rate (10%)
- High variation in inter-procedure times
- Lack of standardized procedures for referrals and follow-ups
- Lack of pre-procedure medical assessments and patient education

🎯 What were our objectives?

- 1 Optimize EP lab utilization
- 2 Increase the total number of ablations carried out with a focus on atrial fibrillation (AF) procedures

🔄 What did we do?

- 1 Worked closely with the hospital and their multidisciplinary team to carry out a comprehensive review (known as 'Diagnostic Health Check')
- 2 Using results from the 'Diagnostic Health Check', mapped out the current patient pathway through the process of 'value stream mapping', to identify the biggest hurdles and design an ideal pathway
- 3 Using Lean management principles, redesigned the patient journey to deliver value and results
- 4 Trained all involved stakeholders on the Process Improvement (known as 'Kaizen', a long-term approach to continuous improvement), co-creating measures to remove any non-value adding activities and organize care around the patient

🏆 What did we achieve? From 2017 to 2018:

↑ 24%
increase in number of AF cases

↓ Reduced waiting time after referral from 6 months to 17 weeks (less than 4 months for AF cases)

↓ Decreased patient drop-out rate from 10% to 0%

↓ Reduced unutilized time in EP lab from 25% to 10%

↓ 26% reduction in total procedure time for AF ablation*, resulting in significant decrease in nursing staff's overtime

*including changeover time when using two different techniques, from 9 hours 21 minutes to 6 hours 56 minutes

What is Lean management?

One of the most scientifically proven management solutions used to deliver value from the patient's perspective, eliminate waste, and improve continued overall performance.



The road to Lean thinking



Step 1: Correctly specify value for the Oslo University Hospital

Achieving true value for patients must become the overarching goal of healthcare delivery, with value defined as the health outcomes achieved per Kroner spent. The challenge is that, while focusing on the patient outcome, we cannot forget the non-value adding activities which consume a large portion of available budget. Together with the hospital project group, four main issues were identified:

1 Long waiting time:

Up to 6 months after referral



2 Lack of pre-procedure assessment and patient education in out-patient department (OPD):

Patients felt uninformed and 'surprised' by the procedure and/or treatment they had to go through, causing high patient fall-out rate of up to 10%



3 Complex scheduling process due to specific disease state:

- It takes a considerable amount of time when changing from one ablation technique to another in-between two AF procedures
- This leads to regular overtime for nursing staff and high unutilized time in the EP lab (>25%)



4 Lack of standardized protocols in the EP lab, leading to:

- High variation in pre-, inter- and post-procedure times
- Difficulties in collecting data and monitoring performance



Step 2: Identify the value stream and remove the waste

We followed the patient along the journey, from hospital admission to discharge, to identify the 'ideal' pathway:

OPD	Pre- and post-procedure processes	EP lab
Nurse coordinators are appointed to carry out medical assessments and patient education ahead of procedures, so patients are fully informed and prepared.	A pre-defined management protocol is in place for referrals and follow-ups, streamlining patient flow to reduce waiting time and unutilized time, increase flexibility in scheduling, and ultimately treat more patients.	Standardized work procedures are created to reduce variability in procedure times. Data collection is also made possible, making it easier to measure current performance and future improvements.



Step 3: Make the care flow

To go from the 'current way of working' to a new pathway design, it is crucial to involve all stakeholders and to make improvements to the process at every stage:



In the OPD

- Appointed nurse coordinators to carry out more detailed and all-rounded pre-procedure assessments and patient education
- A pre-defined referral management protocol was put in place for referrals and follow-ups



In the EP lab

- Implemented the 'quick changeover' approach to improve changeover time and reduce unutilized time
- As a result, the team has been able to schedule more cases per day



Training

- Trained all stakeholders involved in Lean Kaizen management, so that they can work as efficiently as possible around the new procedures and protocols being implemented, achieving measurable, sustainable change





Step 4: Tailored measurement for impactful results

In order to achieve continuous improvements and effective results, the focus group decided to set measurable targets with annual evaluations; the first evaluation showed positive results:

	Baseline prior to implementation (2017 data)	First evaluation – one year after implementation	Agreed long-term goal
Waiting time	6 months	17 weeks (<4 months for AF cases)	3 months
Patient drop-out rate	10%	0%	0%
Changeover time	N/A	N/A	45 minutes max.
Number of AF cases	280	347 (24% increase)	500
Unutilized time in EP lab	25%	10%	5%
CARTO* total procedure time (based on 10 observations)	4 hours 57 minutes	3 hours 45 minutes (1 hour 12 minutes time saving)	<3 hours
Total procedure time combining two AF ablation techniques	9 hours 21 minutes	6 hours 56 minutes (26% improvement)	Maintain level of improvement



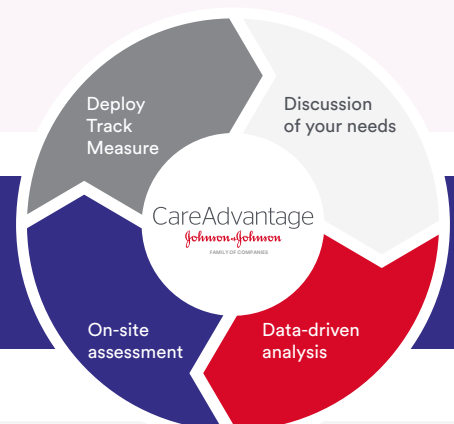
“We involved the whole department in the process and, through follow-up and assessment, they can see we’ve achieved something good by making changes that improve productivity and safety.”

Erik Kongsgård

*Head of Electrophysiology,
Oslo University Hospital*

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