Medtronic

Integrated Health Solutions[SM]

Case study: Optimizing cardio-thoracic centre productivity

Erasmus Medical Centre, Netherlands

Overview

A major Dutch hospital could **treat 26 percent more patients** in just three months. This corresponds to an estimated **$800,000 of incremental value***, whilst also **shortening access times significally** – an encouraging start to a project aimed at growing their open-heart surgery business.

* Excluding material cost

The challenge

Erasmus Medical Centre, the university hospital in Rotterdam, is the largest hospital in the Netherlands and is in fiercely competitive surroundings. Its thoeracic surgery centre competes with seven others within an 80km radius – two of those within 40km.
Open-heart surgery is a major revenue driver and despite performing over 1000 open-heart surgeries in 2015, the team knew their market share was relatively low. This was primarily due to long waiting lists, access issues, and missed referral opportunities. In addition to external competition and internal performance pressure, the centre's surgeons faced challenges typical for their patient cohort; long and highly variable surgeries, many urgent patient cases, and lengthy pre-operative preparation.

In that context, the thoracic surgery centre set goals to:

Improve efficiency and utilisation of resources

Increases the number of open heart surgeries by 50% by end 2017

The solution

Erasmus thoracic surgery centre partnered with Medtronic Integrated Health Solutions (IHS) in October 2015.

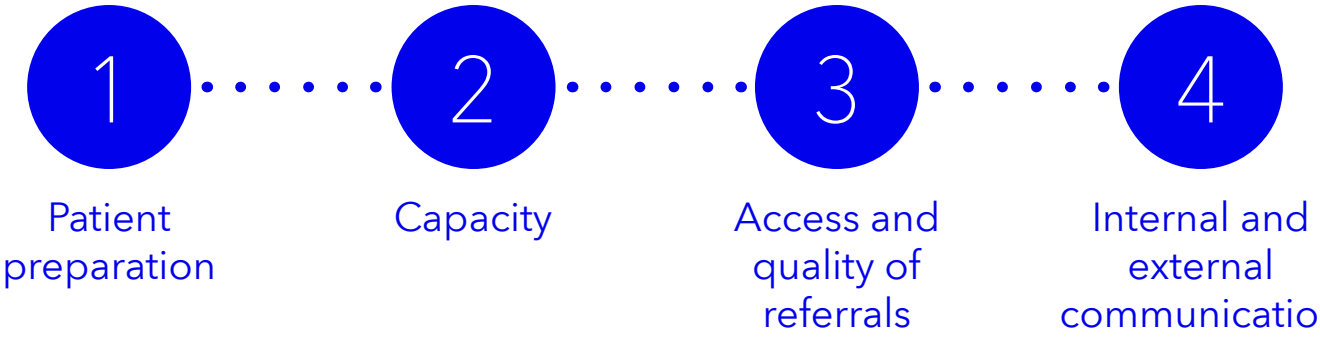
The objective was to optimise the surgical planning process, increase capacity and attract more referrals.
Working collaboratively with the clinical and management teams, we guided the team through a two-phase process:

Phase 1: Strategic Assessment

Through interviews with all relevant stakeholders and in-depth data analysis,
we identified the bottlenecks that were creating inefficiencies and hindering planning:

- Long waiting list (12-14 weeks vs. 1-2 weeks in best practice centres) affecting patient experience and the hospital's reputation with referrers
- Unreliable planning and frequent last-minute changes in the daily schedule
- Incorrect estimates of surgery duration
- Cancellations due to capacity issues and time-intensive pre-operative preparation

IHS consultants created an action plan to address four areas:



Phase 2: Change deployment

We created two multi-disciplinary project teams to align on the change
requirements and to gain buy-in and adoption of new working routines:

Project group	Steering group
Cardio-thoracic surgeon (deputy department head)	Cardio-thoracic surgeon (department head)
Cardio-thoracic surgeon (Staff member)	Director of Thoracic surgery centre
Cardio-thoracic anesthesiologist	Erasmus MC OR manager
ICU physician	Erasmus MC ICU manager
Director of Thoracic surgery centre	IHS consultant
OR manager	
ICU manager	
High/Medium care manager	
Outpatient clinic manager	
IHS consultant	

Table 1 - Project and steering groups composition
All managers within the project group were working solely for the thoracic surgery centre.
OR = Operatinf room, ICU = Intensive Care Unit.

We optimised patient preparation

- Supported surgeons in developing guidelines for referring cardiologists to ensure all required patient information and diagnostic tests are completed prior to referral
- Concentrated all pre-operative preparation activities into a single day at the outpatient clinic, under the supervision of a senior surgeon
- Required all pre-operative preparation activities to be completed prior to scheduling surgery

We maximised capacity

- Earmarked one OR for urgent cases, based on analysis showing a low probability of multiple urgent cases in a single day
- Created two “open-ticket” beds for elective patients who can be sent to surgery when there are no urgent cases

We improved access and quality of referrals

- Introduced a “surgeon of the day” role and required them to be available to discuss patient cases immediately with referring cardiologists
- Gave that “surgeon of the day” the final decision-making responsibility for OR planning in case of last-minute changes – avoiding time-consuming discussions among various stakeholders

We enhanced internal and external communication

- Introduced a daily staff meeting to discuss progress of ongoing sugeries and anticipate potential bottlenecks
- Improved communication between the OR, ICU, and High/Medium Care coordinators who oversee capacity
- Raised referrers awareness on the shorter wait times. Surgeons visited all hospitals within the Erasmus MC’s catchment area to share information on this significant improvement

To ensure lasting change and a smooth transition to all of these new processes, we involved staff throughout the project, conducting team workshops and individual coaching.

The impact

Erasmus thoracic surgery centre is now halfway to its +50 percent goal by the end of 2017 end of 2017 and is strongly encouraged by such early positive results. In just three months, they achieved:

+26%
in total number of surgeries

+20%
in open heart surgeries

14 to 3
weeks of reduced access time

- **$800,000 of incremental value*** - generated by the increased number of surgeries, taking into account the costs of staff and IHS consultants
- **Less variability** in the number of surgeries per month, resulting in stabilised production levels and improved use of hospital resources

With members of staff increasing by **only 14 percent.** In addition, they experienced:
- -20 percent in shorter length of stay in the nursing ward
- An improved working environment for staff
- A stronger referral network

*Excluding material cost

The key success factors were:

Quick decision making by all stakeholders

Very strong motivation and change readiness of surgeons

Involvement of the entire thoracic care chain
(OR, ICU, wards, surgeons, anesthesiologists, outpatient clinic)

Mutual trust in each other's complementary skills
IHS did not interfere with clinical processes (patient group selection or surgery length) but focused on the organisation of these clinical processes (planning of the selected patient groups or support to the surgeons in predicting surgery length)

Improve quality of care

Seasoned Medtronic IHS consultants with more than 10 years of best-practices experience

The planning & scheduling consultant's toolbox

Flexsim software for patient flow simulation

Provides a visual representation of patient flows for scenario analysis and enables evaluation of changes in workflow. Useful tool in gaining clinical staff buy-in.

Access time optimisation tools

Consist of framework and several calculation models, based on queueing theory, that allow for optimisation of outpatient clinic planning and procedure access times.

Disco

Offers unsight into patient flows, lead times, and contains features to help optimise processes.

Waiting time optimisation tools

Organise patient flows, redistribute and balance tasks among care providers, and minimise patient wait times during hospital visits.

Semi-elective and urgent patient planning tool

Determines how much time a CathLab or OR dedicates to semi-elective and urgent patients.

Walk-in consultation toolbox

Assesses the capacity required to provide walk-in consultations. Creates appointment schedules that combine walk-in consultations and regular appointments.

Multi-appointment/one-stop-shop toolbox

Enables outpatient clinics to perform all diagnostics and consultations on a single day.

For further reading

Zonderland ME, Boucherie RJ, Litvak N, Vleggeert-Lankamp CLAM (2010)
Planning and Scheduling of Semi-Urgent Surgeries. Health Care Management Science 13(3):256-267

Kortbeek N. Zonderland ME. Braaksma A. Vliegen IMH, Boucherie RJ, Litvak N, Hans EW (2014) Designing Cyclic Appointment Schedules for Outpatient Clinics with Scheduled and Unscheduled Patient Arrivals. Performance Evaluation 80:5-26

Zonderland ME (2014) Appointment Planning in Outpatient Clinics and Diagnostic Facilities. SpringerBriefs in Health Care Management and Economics

Hulshof, Peter JH, et al. Taxonomic classification of planning decisions in health care: a structured review of the state of the art in OR/MS. Health systems 1 (2) (2012): 129-175

Dexter, Franklin, et al. Systematic review of general thoracic surgery articles to identify predictors of operating room case durations. Anesthesia & Analgesia 106.4 (2008): 1232-1241

Green, Linda V. Using Operations Research to reduce delays for healthcare.
Tutorials in Operations Research 12.5 (2008): 290-302

What the hospital staff say:

"I liked the clear analysis of the problem and transparent communication. There was good interaction with people on the 'shop floor' so we could implement change."

"It was good to have independent contributors on the project because they can identify bottlenecks."

"IHS had very strong analytical skills, good representation of results and input."

"Good project management skills and leadership. I like that they can take over work that keeps us from doing our daily jobs and provide us with the tools to resolve issues."

About Medtronic IHS

Integrated Health Solutions℠ builds on Medtronic's unique combination of capital resources, process optimization expertise and therapy knowledge. In cooperation with medical institutions, IHS develops innovative services and solutions to improve efficiency, reduce costs, facilitate patients' access to different types of treatment, and improve outcomes.

Learn more about our solutions by visiting our website, reaching out to your Medtronic contact or emailing us at:
integratedhealthsolutions@medtronic.com

Medtronic

Medtronic International Trading Sarl
Route du Molliau 31
Case postale
1131 Tolochenaz
Switzerland
Tel: +41 (0) 21 802 70 00
Fax: +41 (0) 21 802 79 00

medtronic.eu

2023-ihs-erasmus-medical-centre-case-study-en-we-8592810