

CASE STUDY

Sheba Medical Center

Unlocking Data to Become a Global Leader
in Healthcare Innovation

MDCLONE



Sheba Medical Center:

Providing the Highest Quality Care
While Unlocking Innovation

LOCATIONS

Ramat Gan, Israel

SIZE

160 Medical Departments and Clinics

10,000 Healthcare Professionals

1,700 Physicians

3,000 Nurses

Almost 2,000 Beds

75 Laboratories

More than 2M Patients Treated Yearly

Largest Hospital in Israel

SPECIALTIES

Cardiothoracic Surgery

General Surgery

OB/GYN

Fertility Treatments

Internal Medicine

ENT

Urology

Allergy and Immunology

Endocrinology

Dermatology

Ophthalmology

Genetics

Bariatrics

Sheba Medical Center, headquartered in Ramat Gan, Israel, was established in 1948 and is now the leading medical center in the Middle East and an internationally recognized healthcare facility. Located on a comprehensive campus, Sheba offers a wide range of medical divisions and specialties, with staff of more than 1,700 physicians. Sheba's highly qualified doctors are involved in many innovative treatments and cutting-edge research programs to advance the clinical care of patients everywhere. Sheba accommodates more than 90 research teams and conducts 4,000 research studies with 1,800 scientific publications a year. Sheba also functions as a tertiary care center and accepts referrals of complex cases from throughout the region and the world.

Sheba's skilled physicians and scientists collaborate regularly with international medical centers with the goal of advancing medical innovation, biotechnology, and patient care around the globe. Presently, more than one quarter of all medical clinical research in Israel is conducted at Sheba.

As Sheba strives to revolutionize the international healthcare industry, the hospital's expert and compassionate team remains focused on treating patients with the highest quality care.

Sheba seeks out the best resources for its innovation in order to:

- + Improve Operations
- + Enhance Quality of Clinical Care
- + Empower Research
- + Strengthen Cross-Institutional Collaboration
- + Facilitate Life Science Partnerships

MAJOR FACILITIES

- Acute Care Hospital
- Rehabilitation Hospital
- The Cancer Center
- Children's Hospital
- Women's Health Center
- Academic Campus
- Medical Research Complex
- Innovation Center
- Medical Simulation Center

DATA SOURCES

- EMR
- Chemotherapy Systems
- Cardiology Systems
- Pathology

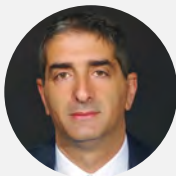
WEBSITE

shebaonline.org

In 2018, Sheba launched the ARC Innovation Center, which brings together physicians, researchers, startups, industry leaders, academia, investors, and top-tier medical centers to redesign healthcare. ARC's mission is to improve patient care, using innovation to provide real value to patients. ARC focuses on Accelerating innovation and Redesigning healthcare by Collaborating with partners.

"ARC is about creating an ecosystem that will change the future of medicine together. ARC is not about Sheba, it's about coming together in a network that shares a common vision, shares the same strategy, and is able to drive proactively toward that common vision," said Eyal Zimlichman, MD, Chief Transformation Officer and Chief Innovation Officer at Sheba Medical Center, Director and Founder of ARC Innovation.

This led to a partnership with MDClone, a digital health company that could offer a platform for self-service data analytics for accelerated research and innovation.



"Never resting on our laurels, Sheba will continue pushing the boundaries to find cures and treatments that will not only benefit our patients in Israel but also benefit mankind around the globe."

Professor Yitzhak Kreiss, Director General of Sheba Medical Center



Challenges

Data privacy regulations lead to difficulty researching and unlocking data. To perform research that would enhance patient safety and improve quality and population health, Sheba Medical Center needed to be able to easily access its data.

Sheba's challenges were:

- + **Patient Privacy Restrictions**
Guarded by privacy regulations, Sheba's data was unable to be efficiently accessed by clinicians and researchers.
- + **Insufficient Resources**
Sheba wanted quick results without the hassle of working with IT staff and other professionals to guide them through the process.
- + **Obstacles to Collaboration**
Sheba's ARC Innovation Hub was unable to network and collaborate with organizations that could share their data to find solutions together.

In addition to the challenges Sheba faced, Sheba's ARC Innovation Hub aimed to further its innovation goals of:

- + Designing research and meeting regulatory standards
- + Retrieving and analyzing data to build predictive models and develop AI tools
- + Planning projects, including assisting with the hospital's organization infrastructure and closing external contracts

Solution

Sheba knew that the power to innovate was within organizations that could share their data. In 2017, they partnered with MDClone, which gave them a solution that allowed them to:

- + Liberate their data, accessing it without having to cater to privacy regulations to give them a boost for innovation
- + Work on top of their data in a day-to-day fashion, running quick queries on the data for instantaneous results
- + Upload synthetic data to enable multiple parties to work on the data together
- + Establish a virtual research data room to enable partnerships with third parties
- + Enhance their research platform for increased publications
- + Employ their data outcomes to improve quality and operations of patient care

Sheba began utilizing the MDClone ADAMS Platform and built its own dataset in the cloud. Then through MDClone's The Global Network, of which Sheba is a founding member, Sheba provided access to this dataset to around 40 different data groups that were researching COVID-19 as part of Sheba's ARC Innovation Center. The Global Network is a member-driven, collaborative environment in which members and third parties can explore and develop solutions together, with data-driven insights available on demand for never-before-possible collaboration. Sheba ARC then shared their data with other Global Network member hospitals across the world, including the Ottawa Hospital and the Thomas Jefferson University Hospital.

In addition, an ADAMS center has been launched in Sheba. This center consists of a headquarters – including medical, operational, and IT managers – as well as ADAMS champions, which are representatives from different disciplines (OR, ER, OBGYN, pediatrics, oncology, infectious diseases, rehabilitation, etc.). Together, these create a working team that promotes different clinical, operational, and financial data-driven projects all using MDClone's platform.



"Instead of just uploading one provider's data, we can upload different providers into the same cloud and form a huge sandbox that will be a game-changer in how we're accessing data. With synthetic data, regulations become a non-issue."

Eyal Zimlichman, MD
Chief Transformation Officer and Chief Innovation Officer at Sheba Medical Center
Director and Founder of ARC Innovation

Outcomes

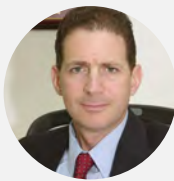
Within The Global Network, Sheba ARC used data from other institutions' HMOs to look at patients and see what happened before and after hospitalizations for COVID-19. They teamed up with Maccabi Health Services, a large HMO in Israel, and merged their data.

"Within 48 hours, they were already seeing data coming in from a cubby on the patients that had come through Sheba, and it was a huge demonstration of the capabilities of the system once you have two organizations that both are completely functional with MDClone," said Eyal Zimlichman, MD, Chief Transformation Officer and Chief Innovation Officer at Sheba Medical Center, Director and Founder of ARC Innovation.

Sheba also signed an agreement with Leumit, a major healthcare provider in Israel, and in part of the agreement, established a joint data lake with Leumit. The joint data lake contains half a million patients with their continuum of care data from community health centers and hospitals. This enabled Sheba and Leumit to analyze patients who had undergone procedures in hospitals, determine their health statuses before they were diagnosed at clinics, look at their outcomes after procedures and during rehabilitation, and see their outcomes in the community.

Using MDClone's ADAMS, Sheba Medical Center is:

- + Determining patterns among hospitalized COVID-19 patients
- + Developing algorithms that they're implementing to identify patients that have COPD and are about to deteriorate
- + Better triaging patients coming into the ER by seeing whether a patient who is coming in has COPD based on initial symptoms and vital signs
- + Examining drug usage for reverse anesthesia and topical hemostasis in the operating rooms in an attempt to generate data-derived rationale for the use of Sugammadex and topical thrombin
- + Examining CT scans' findings and clinical outcomes among anticoagulated patients presenting to the ER with minor head trauma in an attempt to minimize hospitalizations for observation in these patients
- + Developing algorithms for the optimal frequency of therapeutic drug monitoring for mood-stabilizing drugs (i.e. lithium, lamotrigine)



"MDClone is a huge game-changer in regard to time to insight. MDClone's synthetic data allows you to ask a question and get an answer within the same day. It's a game-changer for medicine, because the amount of new insights and research and papers and studies can double or triple just because you have a tool like MDClone that allows you to do that in no time."

Eyal Zimlichman, MD
Chief Transformation Officer and Chief Innovation Officer at Sheba Medical Center
Director and Founder of ARC Innovation

Additionally, when clinicians can use data-driven insights to learn from other physicians in other health networks, they can compare results and outcomes of various kinds of patients and improve their treatments accordingly.

“The biggest potential happens when we work as a network, as a learning system, where we can learn from each other by bringing the data together and then see what works and what doesn’t work. And once you have large enough variability because you have different systems that your data resides in, you’re really able to see what kind of processes would bring improved outcomes. This is a huge value,” said Dr. Zimlichman.

Forward Thinking

Sheba has been able to learn from their data in real time with MDClone’s ADAMS Platform. In the future, Sheba aims to employ rapid analysis of their data to instantaneously gain insights into patients’ diseases and make clinical decisions on the spot, transforming the way healthcare is delivered to patients.

“Imagine your clinical team is caring for a patient and you remember back to a similar patient they treated last year, and he responded well to a certain therapy. Imagine if I could – with the click of a finger – see that I’ve already treated, in the past five years, 60 such patients, and 40 got better, 10 got worse, and 10 stayed the same. That kind of information goes a very long way toward making a better decision.” –Eyal Zimlichman, MD, Chief Transformation Officer and Chief Innovation Officer at Sheba Medical Center, Director and Founder of ARC Innovation



TAKE THE FIRST STEP

Get Started Today

**Unlock healthcare data.
Transform care.**

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