Lyons Global™
Digital Health Transformation
Solutions | Platforms | Robots

ACIBADEM
A CLASS HEALTHCARE SERVICES
ALIFE

LEO360: First AI-Embedded Digital Health Robotic Platform in Turkey

Pilot Study at ACIBADEM ALIFE Healthcare Center

2023

Introduction

ACIBADEM Healthcare Group is an international leader in the delivery of healthcare headquartered in Turkey. ACIBADEM provides care to five million patients annually and has a presence in four countries including 24 hospitals, a dedicated team of 25,000 staff and 7,500 licensed health professionals.

The ACIBADEM ALIFE Healthcare Center is a long-term care facility that can accommodate up to 27 patients. The facility provides a comprehensive level of care, including nursing, primary inpatient care, and specialty services.

LEO360 Proposition

The LEO360 robotic platform enables physicians at remote locations to have real-time visual access of patients and their nurses. The LEO360 robotic platform enables nurses to perform diagnostic testing at the patient's bedside and transmit the information in real-time to remote physicians. These capabilities, eliminate any delay in care. This resulted in far fewer transports to the main hospital to receive care.

The Pilot Study

The pilot study took place from October 17 to November 28, 2023. The Lyons Global USA team trained the attending primary care physician at ACIBADM ALIFE and ten staff members including nurses and medical assistants. During the study, 663 physician robotic consultations were performed with both the attending physician, covering physicians, and specialty physicians who were not on site. A total of 18 specialist and subspecialist physicians from several countries, including Turkey, Switzerland, the United Arab Emirates, and the United States, participated in patient care.

The attending physician remotely rounded on the patients once or twice a day, with a nurse at the bedside, while the robot enabled two-way video and audio communication between the physician and the patient. Medical information such as blood pressure, heart rate, pulse oximetry, ECG, and ultrasound could be utilized and the results seen immediately by the remote physicians.

• Physicians Time Saving

Using LEO360 medical AI robot, drastically reduced the time needed for the physicians to arrive at the patients' bedsides. In this pilot study, the average time for a physician to connect to a patient at the bedside depended only on the time needed to move the robot into the patient's room, saving minutes or hours. Rapid access to a patient's status with high-definition video, audio, and a virtual platform simulating bedside presence not only streamlined rounding but also minimized delays in patient care resulting in far fewer transports to the hospital and far fewer complications.

Average Time for a Specialist to Commute to Visit a Patient at ALIFE

45 Minutes

Average Time for a Specialist to Visit a Patient Utilizing LEO360

2 Minutes

• Saving Documentation Time

One of LEO360's main goals is to minimize physician documentation time while maximizing patient care. Physicians used their laptops to control the robot, perform clinical visits, obtain patient vital signs and gather other relevant medical information. Physicians seamlessly documented the patient encounter through the software platform. This all took place by the physician remotely: in the hospital, at their home, or at another site via LEO360. The integrated system streamlines documentation and data access, combining medical record-keeping and device functionality in one virtual suite at the doctor's fingertips.

• Robotic Real-Time Diagnostic Tools

One of LEO360's main goals is to minimize physician documentation time while maximizing patient care. Physicians can use their laptop to enter the robot, start clinical visits, document, and access patient records and real-time examination results—all from their home base via LEO360. This integrated system streamlines documentation and data access, combining medical record-keeping and device functionality in one virtual unit at the doctor's fingertips.

1.Auscultation with stethoscope

2.Electrocardiography (ECG)

3.Digital Dermatoscope, with high level skin magnification

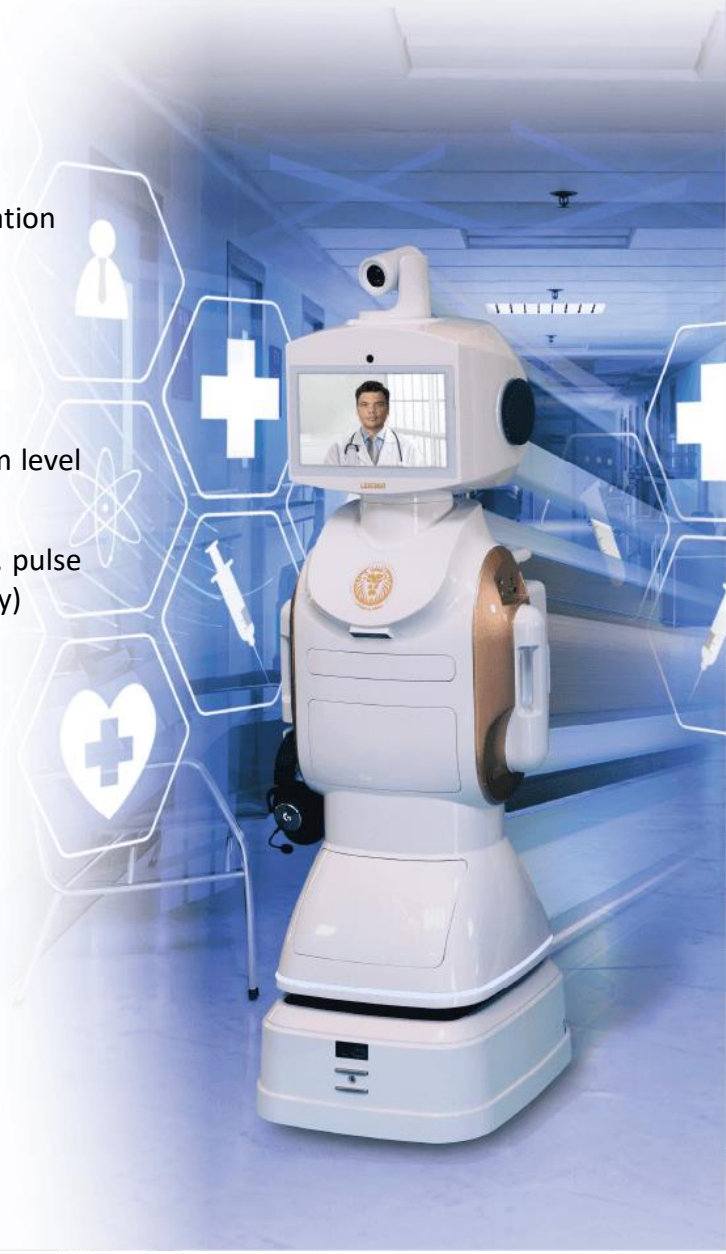
4.Digital Otoscope

5.Glucometer

6.Ultrasound with Doppler color flow

7.Visual camera feedback, 360 degree with high zoom level functionality

8.Vital signs measurement (including blood pressure, pulse rate, respiratory rate, temperature and pulse oximetry)



Case Presentations

1 Immediate Intervention

An 80-year-old male, chronically admitted for care due to dementia, presented with a displaced Percutaneous Endoscopic Gastrostomy (PEG) tube, requiring prompt intervention.

Diagnostic Decision: Utilizing LEO360's digital health capabilities, the medical staff, guided by the in-charge doctor remotely, conducted a seamless examination and successfully reinserted the PEG tube.

Intervention and Outcome: Integration of a stethoscope into LEO360 allowed for real-time auscultation of the stomach and lungs, confirming the correct placement of the PEG tube.

2 Immediate Specialist Consultation

A newly admitted patient developed symptoms of difficulty in breathing, prompting the primary physician to seek a pulmonology consultation. The pulmonologist was unable to travel to ALIFE at that moment, resulting in a 2-day wait time for an in-person consultation.

Diagnostic Decision: The primary physician arranged for a remote pulmonology consultation via LEO360. The pulmonologist accessed the platform instantly and conducted all necessary evaluations remotely, diagnosing pneumonia using a stethoscope for auscultation.

Outcome: Prompt treatment was initiated based on the diagnosis, resulting in the stabilization of the patient with a positive outcome.

3 Immediate Physician Procedure Supervision

A combative patient pulled out the gastric tube. The nurse successfully replaced the tube and was able to ensure it was correctly positioned inside the stomach.

Diagnostic Decision: The physician was able to listen remotely using the LEO360 stethoscope.

Outcome: With remote confirmation of correct tube placement, the patient's feeding tube was secured, ensuring continued essential nutrition.

4 Immediate Intervention, Avoiding Hospital Transfer

A patient with multiple chronic conditions, experienced urinary retention. He already had a urinary catheter.

Diagnostic Decision: Using the LEO360 platform, the specialist was able to virtually assess the patient and decided to remove the occluded catheter and reinsert a new urinary catheter, which resolved the symptoms. This was done twice more during the pilot. Without LEO360, the patient would have required three trips to the hospital.

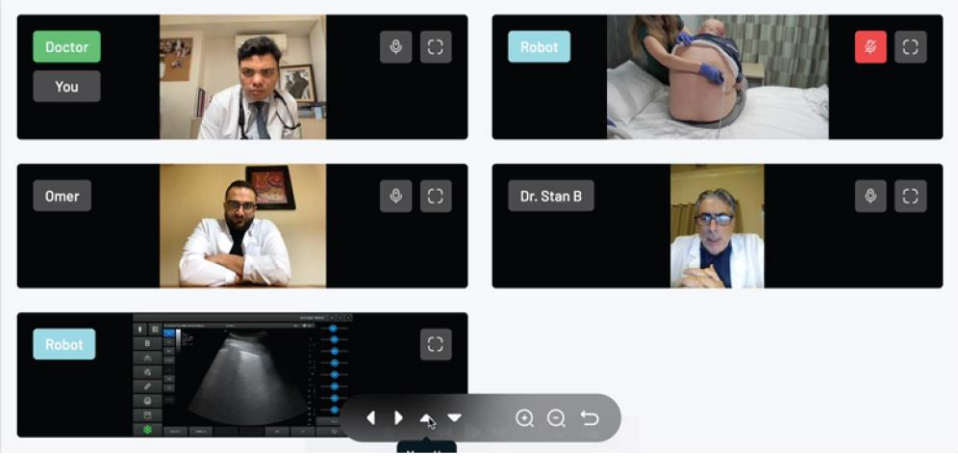
Outcome: The patient's care was successfully managed entirely at the ACIBADEM ALIFE Healthcare Center by a specialist, with no need for an outside transfer.

Multi User Platform

The LEO360 robotic platform features proprietary integrated software technology that enables multiple users to coordinate patient care concurrently in real-time.

5 Urology, Immediate Bedside Ultrasound

A patient with multiple comorbidities and paraplegia due to spinal cord injury was admitted for wound care and found to have urinary retention via the integrated ultrasound device on the LEO360.
Intervention: A remote Urology consultation and examination were obtained, including a bedside bladder ultrasound using LEO360.
Outcome: The urologist planned to keep the suprapubic catheter for a longer time.



6 Psychiatry, Group Family Meeting

A patient with a mental health disorder experienced a crisis. An out-of-area healthcare trained family member questioned the proposed treatment plan.
Intervention: To address the family members' concerns, the primary physician utilized LEO360 digital health platform to allow the family members to be at the patient's bedside virtually. Both the physician and family members were able to interact with the patient.
Outcome: Through this real-time interaction with both the patient and the physician, the family members understood the assessment of the patient and agreed with the physician's treatment plan.

7 Pulmonary, Immediate Bedside Management

A patient with COPD developed an exacerbation and presented with breathing symptoms.
Diagnostic decision: The primary physician, using a shared link, virtually brought a pulmonologist into the LEO360 robot and to the patient's bedside. The patient was evaluated using various diagnostic tools including real-time lung auscultation using a digital stethoscope, and review of vital signs and patient status through the exam camera.
Outcome: As a result of the coordinated evaluation, the patient received bedside care and intervention within minutes of developing breathing problems through LEO360. Primary doctor and the pulmonologist, both were present and communicated in real-time with each other and with the nurse, while directing the patient's care.

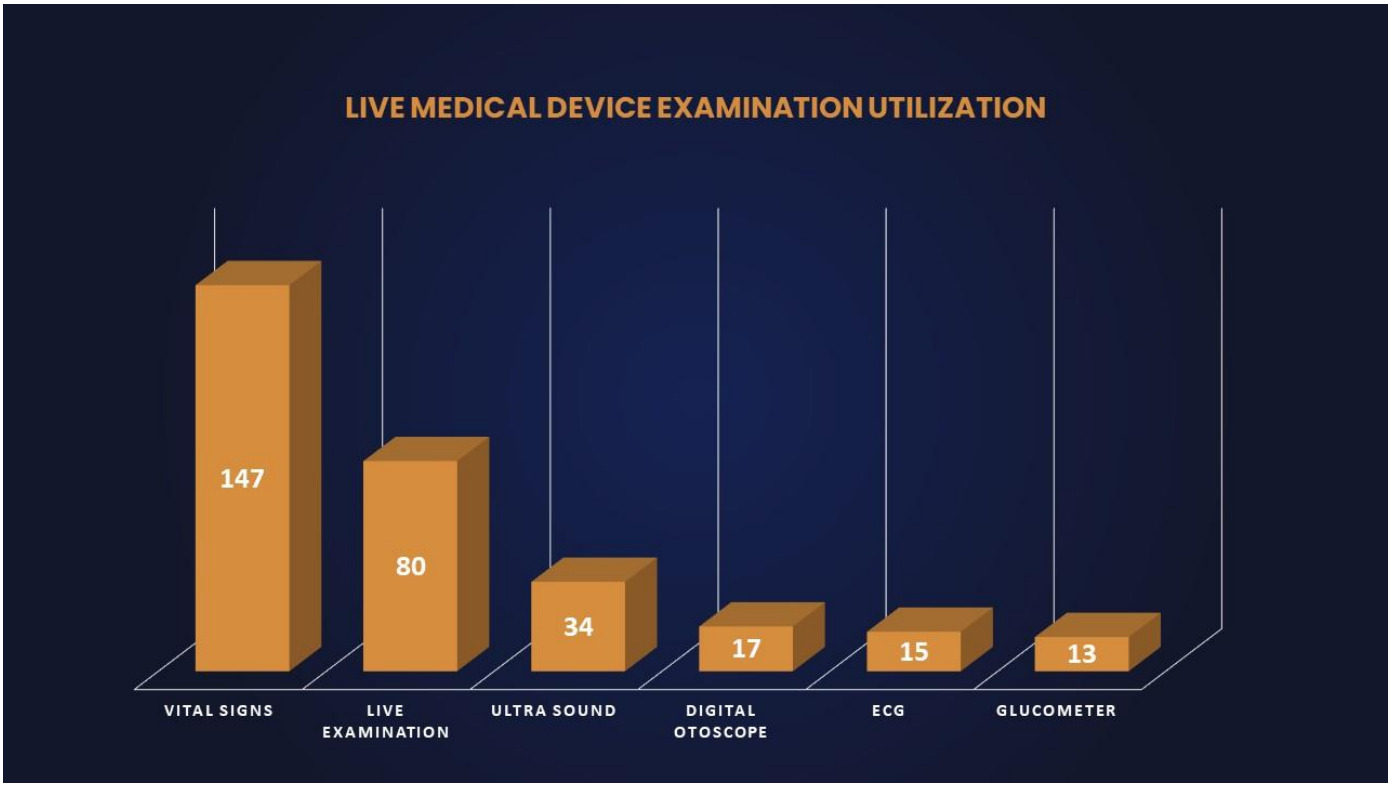
Performance Tracking

We were able to achieve 100% physician engagement and adoption of LEO360.

Physician Experience	Patient Experience	Patient Experience
98.4%	91.6%	91.6%

Use of Diagnostic Tools

There was a 100% rate of successful use of LEO360 diagnostic tools in the physician patient interface on the virtual platform.



Data Protection

Patient's data, medical records, ultrasound, X-ray images, and documentation are all accessible for the physician, and that data is secured, and patient information protected. Ease of access to these records allows for more efficient care.

Discussion

In the one-month pilot study of the LEO360 robotic platform, the ACIBADEM ALIFE Healthcare Center has demonstrated remarkable advantages in care. LEO360 has not only improved technical capabilities but also markedly enhanced access to physicians and specialist services. This singular platform effectively addresses issues that typically contribute to delays in patient care.

LEO360's impact at the ACIBADEM ALIFE Healthcare Center is was profound. Achievements include:

1.Reduced patient treatment time to minutes with a 100% connection rate with physicians.

2.Reduced consultation wait times from hours or days to minutes.

3.Decreased transfer rates to hospitals as physicians were able to evaluate patients virtually.

4.Accelerated treatment plans through multi-user connections, enabling real-time observation and planning with consulting physician specialists and family members.

5.100% accurate data transfer into the medical record software within LEO360, accessible to all medical staff.

6.Seamless integration of multiple medical devices with 100% accuracy.

Conclusion:

LEO360 is a competitive yet comprehensive telehealth platform that can be utilized and customized in any area of medicine, both nationally and internationally.

With unmatched access to specialty physicians, rapid diagnostic testing, and cutting-edge AI embedded platform and technology, it saves critical time in delivering lifesaving care. Beyond saving lives, it enhances quality, service levels, and physician accessibility, offering a comprehensive virtual care center with real-time data evaluation.

Future Direction:

LEO360 Robot, a sophisticated tool acting as a liaison between physicians and patients, delivers revolutionary efficiency outcomes in the era of telehealth. Through the utilization of such a tool, the coverage of satellite and remote healthcare sites can be multiplied, heralding a new era of integration between AI and healthcare delivery.

Expanding health tourism through the implementation of the most efficient and comprehensive multi-specialty mobile care is another advanced aspect that can be achieved with LEO360 robotic digital health.

Acknowledgement:

We extend our sincere appreciation to all executives, physicians, nurses, and staff for their support in the success of the first digital health transformation pilot study in Turkey.

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Testimonials

Physician:

Dr. Berrin Karadağ

"I love the quality of Physical examination with the robot specially the live ultrasound."

Physician:

Dr. Ahmet Kaya

"I was skeptical at first; I didn't see the need for a robot in medicine. But after I saw how effortlessly I could interact with my patients remotely, how I could listen to their heartbeats as if I were right there with them, my view changed. I'm an emotional doctor; I need to connect with my patients. This device lets me do just that, even when I'm not physically present. It's like being there without being there.“

Physician:

Dr. Ecem Kolcu Kuğu

''Our patient and healthcare professionals were very cooperative with LEO 360. I would definitely recommend LEO360 to other healthcare professionals, hospitals and even patients. leo360 not only saves us time, but also helps us intervene in emergency and semi-emergency situations before life-threatening situations develop. LEO360 is like our ears, eyes and even hands.''

Nurse:

Süleyman Cengiz, RN

''LEO solved the problem we had with Doctor's scheduling. Before, we didn't know exactly what time the doctor would be available at the hospital, but now with LEO we have full access to the doctors. LEO helped us to perform high quality medical examination with our remote doctors. For instance, if the doctor says an ultrasound is needed, we can use it immediately without having to transfer the patient to another hospital.''

Nurse:

Esra Aloğlu, RN

"LEO is Dr. Ahmet walking here. With LEO, Dr. Ahmet is always present at the bed side. When I saw LEO for the first time, I was worried to work with robot, but with 1 hour training, I learned how easy is to work with LEO."

Patient:

"With LEO I can reach a Doctor right away"