Health System and Data

Israel's Life Science Industry
IATI Report 2019
Rising Sectors

➤ *Connecting Israel's Tech Ecosystem*

Health System and Data[1]

Introduction

Israel's health system is uniquely structured, with approximately 8.2 million citizens covered by one of the four not for profit HMO's, which act both as the insurer and the medical provider. The two largest HMOs are Clalit, insuring approximately 50% of the population and Maccabi, insuring approximately 25% of the population. This means that the HMO's in Israel have their members' full medical data - from cradle to grave.

Israel's health system is known to be one of the leading in the world, as well as one of the most innovative and digital ones, and medical data in Israel is unusually complete and traceable. The HMOs have begun digitalizing their Health records in the 1990's,

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Institute Innovation and Research Maccabi-Sagol-Kahn the ,Director Managing ,MPA ,MD ,Shalev Varda .Prof   1

with Maccabi pioneering the move and becoming fully digital in 1993, documenting all types of medical data and making its database the third largest healthcare data base worldwide. These databases provide comprehensive, systematic, quality data of a stable population of patients across their lifetime.

The types of data documented by the HMOs include both structured and unstructured data, such as demographic data, clinical interactions, visits, activities and diagnosis, lab data and results, pharmacy purchase data (prescribed and purchased medications), imaging (CT, MRI etc.) and others.

Genetic data collection - Bio Bank

While the digital data in Israel is extremely comprehensive, there was one missing piece of the puzzle - biologic and genetic data, which, in addition to the medical records, is critical to enable personalized medicine research. This is the reason in recent years; initiatives have begun in different countries called Bio-Banks. The Kahn-Sagol-Maccabi research and innovation institute decided to establish the TIPA biobank in 2017 with a goal to create the first population based bank of biological samples that would enable researchers to conduct groundbreaking studies based on biological and genetic biomarkers. As of today, some 75,000 Maccabi members have joined the Tipa Bio Bank and over 100,000 tubes have been collected and stored for research purposes.

Data on the population that has already been added can be seen in Figure 28 below. This population includes, among others, 10% smokers, 60% women, 3% COPD patients, 23% high blood pressure, 11% cancer patients.

Figure 28 - Tipa Biobank samples
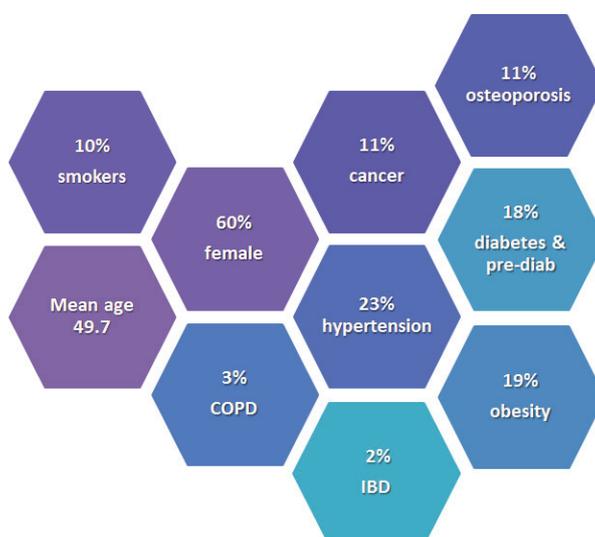
Source: MaccabiTech
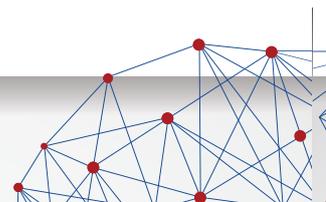
Research and Partnerships

The Large HMO's in Israel have been conducting epidemiological research based on digital data for the last decade and more, publishing dozens of articles in leading medical journals yearly. These include observational studies conducted with global pharmaceutical companies such as prevalence studies, treatment related research and observational studies on selected populations, the cost burden of disease to society and treatment compliance.

In recent years, as a result of rising computer powers and the flourishing biomed industry in Israel and worldwide, the types and amount of research being performed has significantly developed. For example, The Kahn-Sagol-Maccabi Research and Innovation Institute partnered with global pharma companies, medical device companies and tech giants such as IBM and Medtronic, as well as with local and international startup companies, to develop state of the art tools, often later implemented in the HMO. These tools are based on structured data from the medical file, as well as unstructured data such as medical images, voice recordings, pathology slides and free text.

In an article by Peter Sondergaard from Gartner[1], it was claimed that while Big Data is the oil of the 21st century, "the data itself is stupid. It does nothing until you learn how to use it. Crude oil is also worthless until refined and turned into fuel. The Big Data version of refined oil - unique algorithms designed to solve certain problems and can be translated into decisions and actions. This is the secret recipe for successful organizations in the future. The gold rush of the digital age will be focused on how you can do valuable things with data."

In Israel, not only do we have the data (=oil), we also partner with the world's leading researchers and companies to refine it into meaningful and actionable insights and tools, making Israel the world leader in big data research in healthcare.

[1] *https://blogs.gartner.com/peter-sondergaard/the-internet-of-things-will-give-rise-to-the-algorithm-economy/*

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Israel Advanced Technology Industries