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STARTUPS, UNICORNS AND THE 'SPAC' PHENOMENON









Digital Health In Israel – The Upsurge Of Big Data & Preemptive Medicine: The **Role Of The Public Sector**

In this era of global fascination with the potential of AI and digital health, digital health investments exceeded \$20B in less than a sixmonth period this year (2021) alone¹, and the future of this sector is seen, by many, in utilizing and mastering Big Data and AI capabilities for algorithmic predictive care.

 ${f I}$ n this light, the Israeli healthcare ecosystem provides some of the most unique opportunities to apply and envision the future of digital health. This is due, among others, to the remarkable availability of health data within the Israeli public health sector, as the State subsidizes, on the basis of a per-capita capitation formula that includes age, gender, area of residence and compensation for a small number of severe diseases, universal health coverage to all Israeli citizens through four closely regulated Health Maintenance Organizations (HMOs). Although frequently criticized as being inadequate, a tremendous benefit of this system is that it results in a public health sector that can offer 25 years of accumulated, identified and digitalized personal health data across all healthcare service providers.2

An instance of this is the largest HMO in Israel, "Clalit Health Services", with electronic data on integrative health care (primary care, specialty care and secondary/tertiary care in hospitals owned by Clalit) of 4.7 million people (which represents circa 53% of Israel's population).

Moreover, this unique structure ensures that these organizations have an incentive to keep their customers healthy, one facet of which is an increasingly steady growth in emphasis on preventative care. This is to be compared to the US system which rewards all the factors in the chain - hospitals, physicians and pharmaceutical - for consuming services; thus, the sicker the individual, the more revenue he/she generates, according to Tori, partner at Triventures.3

Data in Israel is thus historical, abundant and in institutions such as Clalit, also integrated. Additional notable advantages of Big Data in Israel are a combination of significant Governmental incentives; together with the fact that institutions are very much interested in embracing innovation4, what with the continuous effort to innovate and improve being a very strong part of the Israeli culture.

REGULATING USE OF HEALTH DATA

In brief, personal data can be seen as protected under Israeli Law by a myriad of different legal rights: First, the Right to Privacy, as framed under the Israeli Basic Law: Human Dignity and Freedom, the Israeli Protection of Privacy Law - 1981 (PPL), and the Privacy Protection Regulations, where individual health data is defined as "sensitive information", thereby meriting a higher level of privacy protection.5

Health data is also subject to the protection of the Patient Rights Law - 1996 and of the Genetic Information Act - 2000. These legislations regulate collection, storage, transmission and usage of health information by practitioners or institutions.

Finally, secondary use of health data is governed directly by the Israeli Ministry of Health, most importantly of which - by its Circulars No. 1/2018 and 2/2018, aiming to align with EU standards. A key principle in these Circulars is the restriction of secondary uses of health information to deidentified or anonimyzed data only.

The need to strike the right balance between the unarguably tremendous benefits of big-data utilization, on the one hand, and the need to have sufficient safeguards in place to protect patients' privacy, on the other, has been extensively deliberated worldwide. Focusing on the specific aspect of digital healthcare and preemptive or preventative medicine, this paper will not attempt to navigate this minefield; suffice to say that the disparity between the two opposing views is here to stay.

OPPORTUNITIES FOR ALIN ISRAELI **HEALTHCARE**

The digital health sector is one of the most promising areas in terms of global growth. Numbers have demonstrated a worldwide increase in digital health investments, as global sector funding exceeded \$20B only in the first half of this year (2021), Start-Up Nation Central study says. In Israel, high-tech companies enjoyed the wave of capital investments, crossing the \$1B threshold for the first time ever in the first half of 2021.6 Notably, the Diagnostics and Decision Support subsectors were the most funded subsectors of 2021, raising \$564M.

Indeed, recent extensive research⁷ by Viola Ventures concluded that the number of Israeli 'techunicorns' has grown at an unprecedented rate of 24 new 'unicorns' announced in the first half of 2021



GARY COPELOVITZ PARTNER

alone.8

With Israel being a major force in global hi-tech, and specifically, with over 500 active digital health ventures, opportunity calls.9

PREVENTIVE CARE

Over the past decade, enabled by data-driven innovative tools, organizations such as Clalit have made a strategic decision to move from a reactive paradigm, to what is termed predictive, proactive or preventive care. Thus, to an increasing extent, innovative services are put into practice on its patient population to identify early subtle signs, symptoms and signals within the patient's electronic data, and attempt to identify what future illnesses, or deterioration of existing conditions, can be predicted.

The next step is to proactively approach the patient to address his/her issues early on (often at a stage as early as a patient being completely asymptomatic) in order to prevent future illness. In certain arears, for instance kidney disease, through this approach Clalit is demonstrating a significant reduction in the progression of the disease and the inevitable ensuing dialysis.

Notably, aiming to delay or even prevent the onset of diseases by using prediction analysis as the basis for preventive actions, pre-emptive medicine sits well with the HMOs' aforementioned incentives for preventative interventions.

SUMMARY

It is inevitable that slowly but steadily, the age of relying solely on human clinical knowledge and experience will be replaced by algorithmic predictive care.

Indeed, the availability and ability of strong computing power and advanced analytics, including machine learning and artificial intelligence tools, to scan and analyze vast quantities of health data in huge repositories, is changing the world of healthcare for the better.

This incredible tool cannot, however, be applied without human touch and empathy, thus the future holds promise for physicians most apt in combining

Israel is among the leaders of the pack in this field due to decades of electronic medical records being embedded in our institutions and in integrated datasets, strong economic incentives to keep patients healthy over the long-term, and because Israel has prioritized digital innovation in healthcare.

It is hoped that the interests of care providers and patients can be aligned. We, as customers, simply want better medicine = better quality of life; whereas care providers are looking for better patient value. Accordingly and simply put, if one is to believe that getting better outcomes translates to better patient value, we can expect a rather exciting and bright future for healthcare.

ABOUT THE AUTHOR

Gary Copelovitz is a Partner in Lipa Meir and Head of the International Department. Gary is instructed by a variety of clients in corporate and commercial matters, with a focus on cross-border M&A and providing strategic legal advice in the fields of Healthcare and Life Sciences, to Israeli and international clients alike.

Email: gary@lipameir.co.il

NOTES

1 https://www.timesofisrael.com/israel-digital-health-startups-raise-700min-q1-nearly-equal-to-all-2020/

2 Invest in Israel Ministry of Economy and Industry "Digital Health: The Israeli Promise", March 2020.

3 https://www.calcalistech.com/ctech/articles/0,7340,L-3887233,00.html.

4 "Israel has been an early adopter of digital health technologies in clinical practice for decades, with big data analytics, telemedicine, and online patient engagement widely incorporated into daily clinical care. At the core of Israel's 20-year-long digital health transformation are four key enablers described as Israel's 4 I's: Information technology infrastructure and expertise, Integration of data 'by design', Innovation-supporting ecosystem, and Incentives aligned with prevention and care improvement. (Health systems under a global stress test: Digital health as a pandemic mitigation enabler; by Professor Ran Balicer, Head of Clalit's Research Institute April 7, 2021). https://www. governinghealthfutures2030.org/category/blog/

5 Protection of Privacy Law - 1981.

6 https://www.startupnationcentral.org/wp-content/uploads/2021/08/SNC-DH_Sector-H12021_Digital_Final.pdf.

7 Viola's State-Of-The-Unicorn Report: Israel's Unique Example, published September 1, 2021. Available online at: https://www.viola-group.com/ violanotes/violas-state-of-the-unicorn-report-israels-unique-example-2/.

8 https://www.calcalistech.com/ctech/articles/0,7340,L-3916983,00.html.

9 Digital Health: The Israeli Promise, supra note 2.



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