

Hybrid Healthcare

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Hybrid Healthcare is a term coined by digital health entrepreneur Sophie Smith, Founder and CEO of Nabta Health whereby healthcare must continue to be delivered by both traditional and digital means. Even though the future of quality healthcare is firmly set in the coalescence of the digital world with not just the physical world, but the biological one as well (what is known as the singularity) the healthcare industry and its entrepreneurs must still be open to embracing a hybrid approach if they are to truly scale their business.

Since the days of Hammurabi, healthcare has always been affiliated with the physical world. Doctors would visit with patients the same way they do today, the only difference would be that these ancient Babylonian doctors were paid based on how many of their patients remained healthy, not the current fee for service model of 'sickcare.'

Today, some 4,000 years after Hammurabi's famous coded tablet, digital health entrepreneurs must consider both hybrid models of healthcare finance and healthcare delivery. Coding the digital realm is not enough. To grow, healthcare entrepreneurs must dare to cross the digital divide and plunge headfirst into the archaic world of traditional healthcare delivery. Below are three excellence examples of companies succeeding in bridging the digital divide:

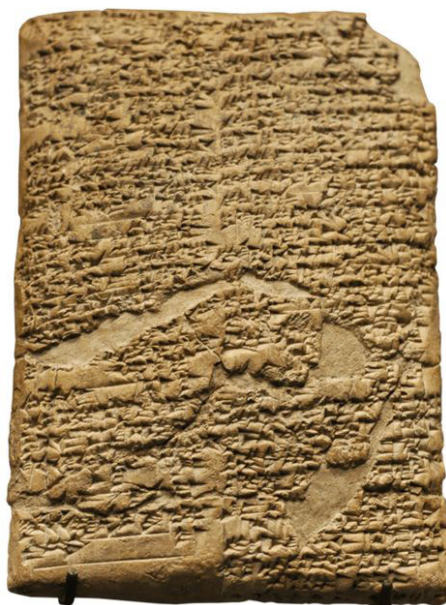


Figure 1: Ancient Table: Code of Hammurabi

Cera Care

Cera Care (www.ceracare.co.uk) is a London-based technology-enabled home care company that was established by digital health entrepreneur Dr. Mahiben (Ben) Maruthappu, a physician, researcher, and health policy specialist, and Marek Sacha, an engineer and entrepreneur to allow families to arrange, schedule and manage home care for elderly relatives, it uses an on-demand digital platform to match people seeking in-home assistance with professional carers.

During their early days, Cera raised seed money from notable angel investors including David Buttress, the former CEO of JustEat, and Peter Sands, the former CEO of Standard Chartered. With £1.3 million raised, at the time it was the largest seed-round funding in European healthcare history. Cera Care raised an additional £1.4 million in funding in April 2017.

Cera transitioned into a more integrated healthcare model in March 2017, when the largest of the NHS Trusts, the Barts Health NHS Trust, partnered with Cera to provide carers for elderly patients in their own homes. The Trust sought to prevent the bane of bed blocking by accelerating the patient's discharge from their five Barts Health hospitals. The partnership also allowed NHS staff to refer patients to carers through the Cera platform, potentially matching up to 6 million patients with caretakers. As the agreement with the NHS was finalized, Cera contracted hybrid technology behemoth (and world's most valuable startup) Uber, to transport both patients and carers. Following the launch of its partnership with Uber, Cera commenced another digital partnership with taxi service Gett to deliver items from London chemists to patients at home.

Not giving up on its digital roots, Cera introduced its Chabot, Martha, in May 2017. Created in partnership with Bloomsbury AI, Martha was designed to use artificial intelligence to review patients' digital records and provide health alerts based on data points gathered by Cera's care workers. A great example of the digital starting to coalesce with both the physical and the biological. Cera soon developed a patient care dashboard to provide patients with on-demand access to care, medications, transportation, food, and doctor's services via a tablet computer (take that Hammurabi). It also developed a platform that predicts patient deteriorations by computing the risk of events such as hospitalizations and pesky readmissions based on care worker input.

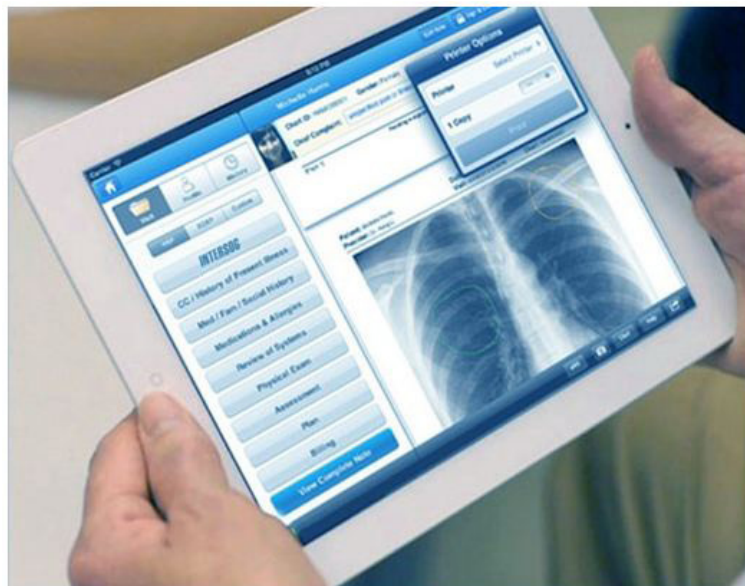


Figure 2: Modern Tablet: Cera's Clinical Dashboard

By the end of 2017, Cera had over 10 partnerships with NHS organizations, councils, and public organizations, including Age UK and the Dementia Action Alliance. It won a bunch of awards including the Health Startup of the Year award at the British Startup Awards, Dementia Care Provider of the Year at the LaingBuisson Awards, and the Digital Health Innovation of the Year award at the Global Awards. Cera Care was also included at the European Innovation Summit as one of the EU's Top 50 Startups.

For their dedication to patient care and corporate growth, Cera went on to raise an additional \$17 million in Series A funding in May 2018 from renowned institutional investors such as Guinness Asset Management (via its EIS fund) and Yabeo (which is the lead investor in Germany's biggest traditional care supply company Pflegebox), and Kairos. In addition, a number of Cera's original seed backers have contributed with follow on investments.

Continuing its a hybrid healthcare strategy, Cera is using its Series A funding to expand its digital services further across the U.K., launching in an additional three cities beyond London, namely Manchester, Leeds and Birmingham, via what it is calling a "buy and build" strategy. This will see Cera buy struggling homecare agencies across the UK - many of which it says lack the technology to scale and grow independently-as a more rapid means of expanding [1].

According to Cera, "a fragmented market of over 8,000 homecare providers, Cera has built the technology to quickly aggregate U.K. homecare businesses in a scalable manner, in what will be a U.K. first from a startup in this space. This model will also be used to drive Cera's expansion to Germany"[1].

The injection of capital will also support Cera's continued investment in AI, especially since its data lake or digital data set has grown to "over 1 million data points"-via 90 percent quarter-on-quarter increase-which it intends to feed into its machine learning-powered predictive analytics tool to help improve health outcomes and reduce preventable hospital admissions. This time, Cera is

taking careful steps forward with respect to regulatory changes on data privacy in Europe known as the General Data Protection Regulation (GDPR). Cera is also doubling down on its hybrid healthcare strategy by working on collaboration with the NHS 111 call center that would permit integration of data records between Cera and the NHS 111 helpline service. The hybrid healthcare startup is also working on Amazon Alexa integration and has formed an exclusive partnership with traditional media provider the Daily Mail Group, to offer home care to Daily Mail readers and users.

Nabta Health

Nabta Health (www.nabtahealth.com) is founded by digital health serial entrepreneur Sophie Smith with a very unconventional background for a techy - Sophie studied history at Cambridge. Nabta provides a comprehensive set of digital health services to women, which mirror the health-related challenges and concerns that accompany every major event in their lives; from birth, through puberty, marriage and pregnancy, to parenting, perimenopause and beyond. Nabta is one of the first next generation healthcare providers in the MEASA (Middle East, Africa, South Asia) region; a pioneer for Health 3.0, reimaging care pathways and plans to include Hybrid Healthcare as standard. For example, Nabta is currently creating a blueprint for Hybrid Antenatal Care, which will see half of all antenatal appointments substituted with virtual consultations, supported by a digital starter pack. The objective of Hybrid Healthcare here is to ensure that 100% of women in the MEASA region attend at least one antenatal appointment, thereby reducing the risk of early onset gestational diabetes, which currently affects one in four women in Saudi Arabia [2].

Another way Nabta is pushing towards the hybrid healthcare horizon is by integrating with various physical hardware devices that have been built to disrupt traditional healthcare services, such as the OvuSense by Fertility Focus.

Nabta partnered with Fertility Focus with a twofold objective: (1) to make OvuSense available to women in the MEASA region by integrating it seamlessly with Nabta Cycle - a period and ovulation tracker, that incorporates region-specific functionality and (2) to further improve the outcomes associated with the use of OvuSense through the application of Big Data Analytics and AI.

By developing a hardware and software hybrid service, Nabta Cycle with OvuSense provides real-time, 24-hour advance predictions of ovulation with up to 99% accuracy. In addition to this, at the start of each cycle, Nabta Cycle provides a full eight-day fertile window-these features help women to take back control of their planning for pregnancy.



Figure 3: Nabta Cycle with the OvuSense

Nabta uses its proprietary technology to create a “Health 3.0” experience for women. What this means is that the Nabta team is innovating simultaneously in two fields: in the medical field, with our R&D and smart medical devices, and in the technology field,

with their hybrid healthcare provision (in-person consultations + telehealth), blockchain-based PHRs and our MI/AL healthcare assistant.

In addition to this, Nabta intends to be at the forefront of personalized (genetic) medicine and disrupt even traditional healthcare service providers using gene editing techniques such as CRISPRs/Cas 9 that will, as an example, prevent or cure diseases such as cystic fibrosis by eliminating faulty genes in children and adults.

Vytalize Health

Vytalize Health (www.vytalizehealth.com) was founded by four friends, two doctors and two self-proclaimed techies, Dr. Hasan Bayat, Dr. Amer Alnajar, Omar Elrabie and CEO Faris Ghawi in Hoboken, New Jersey as a hybrid healthcare provider of primary care for seniors that uses a combination of telemedicine and traditional in-home visits to services to Medicare recipients. Each patient receives their own Vytalize Health tablet (take that times two Hammurabi) that allows for 24/7 access to their care team via telemedicine, thereby reducing their need to have a cumbersome traditional healthcare visit. Upon signing up to Vytalizes service, a patient will automatically receive a Medicare approved Annual Wellness Visit, behavioral health assessment, and the option to enroll in Medicare's Chronic Care Management (CCM) program. Only if a patient enrolls into the CCM program, will they receive their Vytalize Health tablet. This program will assign a Vytalize Health care team to the patient which includes Medical Assistants, a Nurse Practitioner, and a Primary Care Physician.

Vytalize's goal is to decrease hospitalizations by keeping patients healthy through access, monthly check ins, and general high quality care of the hybrid variety. Even though this service is covered by Medicare, Vytalize Health was initially struggling to sign patients up even after spending over a year building the brand by hosting presentations at senior centers and communities, targeted digital marketing campaigns (to the caregivers), sponsoring events, etc. It was not until Vytalize Health acquired a small physician practice in Rockland County, New York for a mere \$70,000 that it began to see traction. This practice had 177 patients, and each one of them opted in for all of Vytalize Health's services. With a lifetime value of \$2,600 per patient, the deal eventually paid back in spades. At this point, the 'one-to-many-deal' tipping point that every startup strives for, became a reality. Vytalize Health immediately acquired three more practices and partnered up with two over the next 12 months.

For Vytalize Health, the key trust factor here in building out their hybrid healthcare model is that ardent cornerstone of traditional healthcare delivery: the physician. Without this trust factor, without the physician buy in, Vytalize's patients would have been very wary to sign up for its service.

Conclusion

If the internet was the catalyst for Health 2.0 - the interfacing of digital technologies with traditional healthcare - blockchain, as the enabler of patient-owned health data and truly patient-centric care, is the catalyst for Health 3.0.

Health 3.0 is the next generation of care, whereby the digital enablement of every stage in the care pathway - from healthy living, to prevention, diagnosis, treatment and rehabilitation - is assumed. In other words, what we term "telehealth" today will, in future, be referred to simply as "health". Virtual consultations, blockchain-based Personal Health Records (PHRs) and digital prescriptions will become the norm; to provide a patient with a paper-based prescription will seem farcical, outdated. This normalizing and standardizing of technology-use in a clinical setting is what we refer to as Hybrid Healthcare - healthcare that streamlines and future-proofs traditional clinical practices by integrating them seamlessly with technology enablers such as smartphones, wearables and other smart devices.

It is generally accepted that moving the majority of healthcare spend from "diagnosis" and "treatment" to "healthy living" and "prevention" will not reduce costs in the long term. [2] If anything, preventing the onset of chronic illness will result in people living longer and costing the healthcare industry more in later life. Aaron Carroll refers to the "Iron Triangle" of healthcare - access, cost and quality - whereby increasing access to and quality of care will inevitably result in a corresponding increase in costs, and vice versa. [3] Therefore, the primary objective of Hybrid Healthcare is not to reduce healthcare expenditure in absolute terms, but to facilitate equal access to healthcare services in line with the United Nation's Global Goals.

There will always be a temptation to adopt a "all is grist for the mill" mentality when seeking ways to grow your digital health company. Remember, the single most important strategic decision a founder of a fast growing company needs to make; is learning when to say no.

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