Rise of the Geeks:
How Healthcare is being disrupted by Silicon Valley startups

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SUMMARY

- Buoyed by as much as $4.3 billion in venture capital in 2014, which stood at 2.1 billion in the middle of 2015, well-funded silicon valley innovators are moving quickly to seize opportunities arising from the gaps left by traditional healthcare companies.
- This has been described as a gold rush by consulting firm PwC, with $1.5 trillion in reform-driven potential demand for healthcare products and services, amounting to an estimated $150 billion in profits.
- Among those seeking to profit by shaking up the healthcare industry are non-medical companies such as Google, Uber, and Yelp.
- Startups everywhere are vying to build the next “Uber for Healthcare”[11]. They are experimenting with new business models to address the rapid consumerization of healthcare and a confluence of other forces in the sharing economy.
- A whole new class of “unicorns” – business with valuations of a billion dollars or more, is emerging.
- Healthcare enterprises are adjusting to these emerging trends, and most importantly, transform into consumer-oriented businesses.
- Consulting firm Accenture predicts that half of the VC-funded digital health “zombie start-ups” who are enabling this transition will die or be acquired by healthcare companies.

As the physician-driven healthcare system shifts to a digital, consumer-driven future state, healthcare startup companies are vying for a role in transforming the delivery, cost, and protocols of healthcare.

Buoyed by as much as $4.3 billion in venture capital in 2014[1], which stood at 2.1 billion in the middle of 2015, these well-funded innovators are moving quickly to seize opportunities arising from the gaps left by traditional healthcare companies.

By addressing the symptoms of the current U.S. health system, including data "silos" among providers, high costs, and lack of access to care, Silicon Valley's startups are reshaping the landscape of healthcare, both at home and overseas.

Consulting firm PwC has referred to the stampede of companies heading for the healthcare sector as a gold rush with $1.5 trillion[2] in reform-driven potential demand for healthcare products and services, amounting to an estimated $150 billion in profits. Dividing healthcare's gold rush prospectors into gold miners and bartenders, PwC describes how these players have complementary roles.

Gold miners include the vertically-integrated organizations that leverage technology to manage patient populations with chronic diseases. The larger hospital systems and insurers who have expanded their reach along the continuum of care, consolidating and buying upstream and downstream providers such as physician practices and home health agencies are among this group. They collect and mine data to refine clinical protocols, target interventions for the costliest portion of their patient population, reduce hospitalizations, and often participate in shared savings arrangements.

The bartenders include non-traditional providers, typically seeing a high volume of patients while generating comparatively low margins. These include retail clinics like the Minute Clinics found in many Walgreens stores. By posting affordable, clear pricing for vaccinations, school physicals, and visits with a nurse practitioner for common conditions such as ear aches and sinus infections, retail clinics have succeeded in accessing 10 percent of consumers. According to PwC, younger patients in the 18 to 24 age range express a preference for independent companies and retail clinics as opposed to traditional doctors' offices.

Theranos is one of the new healthcare startups in the bartender category tearing down barriers to care and preventive medicine while ushering in a new era of convenience, price transparency, and personal empowerment. Citing a statistic that roughly half of lab orders go unfilled, Theranos hopes to make lab services accessible to all, and in the process, create more data points which can be used to detect disease. Theranos investors are betting that less invasive, convenient testing will result in more frequent testing and therefore better monitoring of more subtle indicators of disease than those detected by once a year blood work. Tests rely on a less invasive finger stick with a fraction of the amount of blood drawn in traditional blood tests.

Similarly, genetics company 23andMe, the recipient of over $190 million in VC funding, empowers individuals by offering a non-invasive, affordable spit test kit and DNA analysis directly to consumers. In addition to identifying disease risk factors, 23andMe is capitalizing on the trend towards personalized medicine by harnessing its large database of genetic information[4] to develop new drugs (though there is some concern about the ethical limits of the business model[5]). Both companies plan to tap into the $97 billion dollar global health IT market by expanding overseas.

MAKING WAVES AND CHANGING THE RULES

The waves these new healthcare companies are making in the industry are evidenced by a flurry of lawsuits as companies entrenched in the old model brace themselves for disruptive technology and new competition. Just as Uber faces legal challenges from taxi drivers, Parker Conrad, the expletive-dropping maverick CEO of Zenefits told Fortune[6] magazine that when dealing with bullying by a rival "you've got to punch them in the face." Billion dollar 23andMe has experienced some bumps in the road with the FDA while Theranos fends off criticism that the company's analyzers are not FDA approved.

If they can deliver on promises of increased access and lower per beneficiary spending, these pioneers of new healthcare technology will reshape the legal and regulatory environment as well. Telemedicine providers faced barriers in the form of state licensing requirements, which precluded doctors from using the new technology to treat patients in another state where the physician was not licensed. In response to the demand for telehealth services, the Federation of State Medical Boards formed an interstate compact to allow doctors to treat patients across state lines.

BIG MONEY FLOWS INTO BIG DATA

The Rock Health mid-year digital funding report indicates that big data analytics is currently receiving the largest piece of the funding pie. The task of integrating and finding meaning in heterogeneous data sets, which encompass everything from unstructured physician notes and insurance claims to x-ray images and FitBit data, is a formidable one. Healthcare has lagged behind retail and politics in this arena, however technology to enable predictive analytics is making progress. Gold miners are interested in identifying patients for early interventions, predicting length of stay and revenue, and minimizing costly readmissions.

The natural language processing (NLP) technologies used by casinos and other industries are now being employed by healthcare organizations. The technology is used to identify and control epidemics, combining over-the-counter drug sales records, emergency room visit data, and unstructured data from social media posts to discern geographic clusters of symptoms. It is also useful for extracting information from free text medical notes and can be used to identify potential drug interactions.

NONTRADITIONAL PLAYERS LIKE GOOGLE AND UBER ARE ON THE YUKON TRAIL

Among those seeking to profit by shaking up the healthcare industry are non-medical companies such as Google[7], Uber[8], and Yelp[9].

Last year, 36 percent of Google Ventures investments dollars[10] were devoted to healthcare and life sciences. Google's diverse healthcare investments include oncology analytics, medical devices, telehealth services, fitness applications, and lab diagnostics.

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THE IMPLICATIONS FOR HEALTHCARE ENTERPRISES AND TECHNOLOGY PROVIDERS

While it's too early to know who the winners and losers of the new gold rush will be, the stakes are high. Consumers, driven to manage their healthcare spend due to high deductible plans, are being selective about opening their wallets for products and services. Most investors are betting that the new world of health care will be more personalized and consumer driven with an ever-expanding pool of data to shape into new insights. This is giving rise to a new class of "unicorns" such as ZocDoc[12] – companies valued at billion dollars or more - which, along with the likes and 23andME and Theranos, are focused on the big gaps left by traditional healthcare companies.

The forces of digitization and consumerization that have been unleashed will require healthcare enterprises to embrace these trends and transform their business models. Walgreens has announced a partnership[13] with Providence Health to set up 25 retail clinics inside their stores in Oregon and Washington, to be owned and operated by Providence Health and its affiliates. This will greatly enable patient access and care.

However, many healthcare enterprises do not have the capabilities internally to make this transition on their own. It will be up to technology firms to enable this transition for their clients. A recent study[12] by consulting firm Accenture predicts that half of all digital health startups will fail within 2 years of launch. The ones that can effectively and profitably enable the transition to the new healthcare business model will be the ones that will survive these dire predictions.

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