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Cover Story:

Reimagined Hospitals
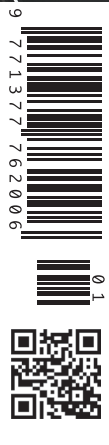
How Will FAMGA Shakeup Healthcare?

Summary: The big tech players are all making inroads into healthcare, bringing their industry know-how into a sector that is traditionally slow to adapt to change. Whether their impact will ultimately result in better resource management and cost savings remains to be seen, but they are definitely a force to be reckoned with.

There is no doubt that technology has and will continue to disrupt healthcare. In the midst of this disruption lie five big players - Facebook, Apple, Microsoft, Google, and Amazon. Referred to as FAMGA, these five companies are implementing new technologies and introducing new products/services that are designed to shake up the traditional model of healthcare.

Combined together, FAMGA has a market cap of $2.7 trillion (Investopedia). The key point of entry in healthcare for FAMGA is through the route of Artificial Intelligence. All five are leading acquirers of AI start-ups (CB Insights Report). Combined together, FAMGA has contributed to 124 AI start-ups, with Google being the top equity investor so far. The end goal for FAMGA appears to be health data, as they aim to fix the lack of open standards around it.

Facebook, Apple, Microsoft, Google, and Amazon want to build healthcare tools that will allow easy access and exchange of healthcare information electronically. Patient data has been a challenge for the healthcare industry. Signif-

Apple Watch has all the usual "flavours" for Apple lovers, this version also has several advanced healthcare options, including medical diagnostics and screening. With three new healthcare diagnostics and screening apps in the Apple Watch, Apple is moving forward with its goal to change the future of health screening and diagnostics. These three apps include:

1. Fall Detection through a built-in accelerometre and gyroscope that analyses a person's wrist trajectory to determine if they've taken a fall based on impact acceleration. If the person is unable to move for a minute, the watch can call emergency services and even send a text message with the location. This could be an excellent tool for elderly patients.
2. Heart Data which detects irregular heart rhythms and sends an alert if any disruption is detected. A normal person's heart beats at 60 beats/minute, but in case of atrial fibrillation, it can go up to 300 beats/minute. Apple Watch can detect that.

Five big players – Facebook, Apple, Microsoft, Google, and Amazon are together referred to as FAMGA

icant investment has already been made into this but without much progress. However, with these big players jumping into the mix, it will be interesting to see how things change.

One of the key breakthrough areas that could potentially help healthcare is voice technology. Voice assistant devices could be an important tool for patients to manage their medications, communicate with family, and alert for help in case of an emergency situation. Amazon's Alexa is HIPAA (Health Insurance Portability and Accountability Act) compliant, which means it can work with health developers that manage patient health information. Already, Amazon has been working on improving Alexa's health skills in terms of helping patients make appointments and check their health status (HIPAA Journal 2019).

Apple Watch is another example of a breakthrough waiting to happen in healthcare. While the latest version of the

3. The Electrocardiogram App takes an ECG if you put your finger on the crown for 30 seconds. There are two electrodes in Apple Watch, one on the back and one on the crown. Your ECG is recorded and saved on your profile. You can send this information to a doctor, and they proceed to take action if required.

These may seem like just some new apps, but offer serious benefits for patients. However, some experts feel that these screening tools may result in unnecessary doctor visits as results/alerts from Apple Watch could concern users without any basis. Only time will tell if this turns out to be the case, but for now, all three Apple Watch healthcare apps seem to be beneficial for patients. It is important to remember that Apple got clearance from the FDA for both its electrocardiogram app and the heart rhythms app. There is also a clinical trial already underway. The Apple Heart Study

is designed to evaluate how well the Apple Watch could pick up an event that looked like atrial fibrillation when compared to a wearable heart monitor. Preliminary results with over 40,000 participants show that wearable technology can identify heart rate irregularities that were later confirmed to be atrial fibrillation (Stanford Medicine News Center). Apple is also working on new healthcare apps for glucose monitoring, blood pressure, respiration, and UV detection.

Google is also making big changes in the health-care industry. There are several Google initiatives that are designed to shake up healthcare, including Google Brain that focuses on deep learning, Google Fit in the wearables sector, Calico the anti-ageing company, Verily involved in life-sciences research, and Google Cloud aiming to disrupt the way patient data is managed. Google Cloud has recently partnered with NIH on the STRIDES initiative that is designed to help improve data storage, data interoperability, and data accessibility (datascience.nih.gov/strides). Google acquired Apigee in 2016 that helped companies design application interfaces to manage data. Major companies already use Apigee, including Cleveland Clinic, Kaiser Permanente, Rush University Medical Center, McKesson, and Walgreens. But Google is not just interested in storing data. It wants to use machine learning to analyse this data and gain insight from it. The Apigee Health APIx solution enables organisations to securely handle personal health information(apigee.com/about/cp/fhir-api). While healthcare has been slow to adopt API stnadards, the Fast Healthcare Interoperability Resources (FHIR) standards for data exchange are expected to facilitate adoption. Google's Apigee is an early mover in adopting and building FHIR-based APIs, putting another feather in Google's cap when it comes to innovation in healthcare (Padmanabhan 2016).

Microsoft's Healthcare NExT initiative is designed to accelerate healthcare innovation through AI and cloud computing. Microsoft is working on several interesting healthcare solutions including Microsoft Genomics providing cloud-powered genomic processing services, Microsoft Azure Security and Compliance Blueprint providing end-to-end application development to healthcare organisations; AI Network for Healthcare for creating an AI-focused network in cardiology; Microsoft 365 Huddle Solution Templates designing tools to drive quality and care outcomes; Project Empower MD creating a system that listens and learns from what doctors say and do, and Project InnerEye focused on medical imaging (Lee 2018).

Facebook is not staying behind either. The company has been working with the American Cancer Society, the American College of Cardiology, the American Heart Association, and the Centers for Disease Control and Prevention to develop digital prompts that would encourage Facebook users to get tests that might help detect medical conditions at an early stage. These efforts are primarily designed for heart disease. The goal is to incorporate prevention reminders into commonly accessed social media platforms so that people can find check-ups that might be recommended for them based on their age and gender.

All these five players are big and successful. Over the years, we've seen them achieve major things, and there is no doubt that with the right approach, these companies can make a difference in healthcare. ◼

✓ Key Points

- Combined together, FAMGA has contributed to 124 AI start-ups, with Google being the top equity investor so far.

- Amazon's Alexa is HIPAA compliant, which means it can work with health developers that manage patient health information.

- Apple is working toward a goal to change the future of health screening and diagnostics.

- Google Cloud has partnered with NIH on the STRIDES initiative designed to help improve data storage, data interoperability, and data accessibility.

- Microsoft's Healthcare NExT initiative is designed to accelerate healthcare innovation through AI and cloud computing.

- Facebook is incorporating prevention reminders into commonly accessed social media platforms so that people can find check-ups that might be recommended for them.

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