FROST & SULLIVAN

Healthcare Market Updates

Weekly Newsletter

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Wearables

GE Healthcare and Preventice Solutions Collaborate to Connect the Heart, the Hospital and the Home Seamlessly – February 12, 2019 (1/2)

Applicable Product Categories: Mobile Phones

Technologies	Wearables (Device + App)	**Therapeutic Areas**	Atrial Fibrillation
Applications	Remote Patient Monitoring	**Geographic Focus**	US
Segment Focus	Clinical Grade	**Topics (News type)**	Care Delivery Innovation
Companies	GE Healthcare and Preventice Solutions	**Others**	-

ANALYST TAKE:

- **Synopsis:** GE Healthcare is working with Preventice Solutions (a developer of mobile health solutions and wearable RPM services) to give clinicians the tools to follow patients with known or suspected atrial fibrillation virtually from hospital to home.

- **Industry Need**: Cardiovascular diseases (CVDs) claim more lives than all forms of cancer combined. Among these, atrial fibrillation (AFib) is the most common heart rhythm abnormality with 1 in 4 people over 40 years of age being at risk of developing the condition. As per a Mayo Clinic study (2015), digital health intervention among early-stage CVD population can reduce 40% relative risk and 7.5% absolute risk reduction in CVD events, hospitalizations, and deaths. Wearable enabled RPM solutions for continuous cardiac health monitoring and accurate predicting tools are proving to empower patients and their caregivers to seamless integration manage their health conditions and early diagnosis.

GE Healthcare and Preventice Solutions Collaborate to Connect the Heart, the Hospital and the Home Seamlessly – February 12, 2019 (2/2)

Value Proposition:

- The collaboration offers a single vendor solution that is integrated with GE Healthcare's MUSE CVIS for seamless order-to-reporting workflow. According to U.S. News & World Reports, 24 out of 25 top U.S. cardiac hospitals use MUSE. The integration of Preventice RPM data from home-based patients with GE's MUSE will provide longitudinal view of the patient experience to clinicians on the same clinical workspace they use every day. As per GE Healthcare Diagnostic Cardiology General Manager, Ashutosh Banerjee, "We're enabling the ECG record to grow with a richness that will allow the clinician to see how heart treatment is working for the patient at home."
- Frost & Sullivan views this as a strategic alliance to help standardize operations and workflow for healthcare providers resulting in improved quality. Frost & Sullivan notes, cardiac conditions such as AFib require extensive and continuous monitoring. Conventionally, Holter monitoring is exploited for the same. But since the technology is expensive and has associated risks of missing arrhythmias, a number of new and effective technologies for wireless monitoring have been devised which has facilitated this market's growth.
- The objective for GE healthcare is to increase consolidation of data in one location to improve efficiency and enable data analytics, as well as smooth integration with enterprise CVIS and HIT systems (e.g. EHR/EMR) for its hospital clients. With increasing competition both from traditional and non-traditional players, this collaboration offers Preventice a unique opportunity to further penetrate into vast GE hospital accounts and beat competition for future scalability and revenue streams.

- **Target End-User:** Hospitals; Primary Care Centers; Cardiac Rehabs

WEBLINK: https://bit.ly/2X56VL1; https://bit.ly/2EbsfqK

VitalConnect Unveils Vista Solution 2.0 to Improve Real-time Patient Monitoring for Earlier Intervention – February 12, 2019 (1/2)

Applicable Product Categories: Mobile Phones

Technologies	Wearable (Chest Patch + App)	**Therapeutic Areas**	Patient Monitoring, Chronic Disease Management
Applications	Multiple Vital Sign Monitoring, Remote Patient Monitroing	**Geographic Focus**	US
Segment Focus	Clinical Grade	**Topics (News type)**	Product Innovation
Companies	VitalConnect, Inc	**Others**	-

ANALYST TAKE:

- **Synopsis:** VitalConnect, Inc., a pioneer in clinical-grade wearable space, has introduced at HIMSS19 its Vista Solution 2.0, ushering in the next generation of healthcare where specific health outcomes can be detected through National Early Warning Scores (NEWS).

- **Industry Need:** Based on industry estimates, a vast majority of hospitals do not have the option to continuously monitor a patient's vital signs except in a high-acuity unit such as ICU, HDU, or CCU. For example, On an average, 95% of the patients do not have access to continuous monitoring in a hospital environment and in 43% of the cases, nursing staff are unaware of the abnormal vital signs of patients.
- Patients with chronic conditions need to monitor their vitals to assist in early detection of dangerous situations - by administrating early warnings, wearables enabled continuous vital sign monitors can reduce the error likelihood by 82% and the time required by 80%.

VitalConnect Unveils Vista Solution 2.0 to Improve Real-time Patient Monitoring for Earlier Intervention – February 12, 2019 (2/2)

Value Proposition:

- Vista Solution 2.0 will include the addition of weight scale, BP and pulse oximetry via 3rd party devices, and core temperature to the existing 8 FDA-grade vital signs measurements monitored by the VitalPatch bionsensor (single-lead EKG, heart rate, heart rate variability, respiratory rate, skin temperature, body posture, fall detection, and activity [steps]). The company claims that, VitalPatch is the smallest and lightest Class II medical device cleared for use in both hospital and post-discharge home settings.
- Vista Solution 2.0 will bring intelligent risk reduction for patients, regardless of the intensity of care, into the foreground. With the integrated NEWS standard, Vista Solution 2.0 will advance a physician's access to information about a patient's condition around the clock with clinically proven predictive analytics built in. NEWS is an internationally recognized standard used for initial assessments of acute illness and for continuous monitoring of a patient's well-being throughout treatment.
- VitalConnect worked with various customers such as Mercy Health system, throughout the development of 2.0 to help ensure clinicians will be provided with actionable insight from Vista Solution 2.0. The solution will be implemented at customer sites later this month.

- Frost & Sullivan believes that VitalConnect's Vista Solution 2.0 and the Early Warning Score system will further enhance monitoring of patients, enabling earlier clinician intervention and better-informed care. Considering the competition driven commoditization of wearables, Vista Solution 2.0's data-driven intelligent risk reduction provides the company with an additional monetization opportunity and a differential value proposition.

- **Target End-User:** Hospitals; Primary Care Centers; Home care

WEBLINK: https://prn.to/2EbsDpc

Catholic Senior Housing and Health Care Services, Inc. (CSHHCS) and Somatix Announce Strategic Relationship to Implement an Innovative Elderly RPM Solution – February 12, 2019

Applicable Product Categories: Mobile Phones

Technologies	Wearable (Device + Data Platform)	**Therapeutic Areas**	Elderly Care, Lifestyle Management
Applications	Remote Patient Monitoring	**Geographic Focus**	US
Segment Focus	Clinical/Consumer Grade	**Topics (News type)**	Strategic Alliance/Care Delivery Innovation
Companies	Somatix	**Others**	NA

ANALYST TAKE:

- **Synopsis:** SafeBeing™ is the first offering of its kind that allows caregivers to passively and remotely monitor, track and analyze elderly people's daily routines on a real time basis through its unique wearables-assisted gesture detection technology. Somatix showcased SafeBeing during HIMSS 2019.
- **Value Proposition:** SafeBeing's platform will be deployed in CSHHCS's 20-acre campus and will be clinically validated at all four distinct levels of senior living, including independent living, personal care, short term rehabilitation and long-term care. The Somatix software platform utilizes existing sensors already built into smartwatches and smartbands, to track, filter, and examine massive volumes of gesture data in real time. SafeBeing™, its RPM solution, is offering completely passive detection and monitoring of physical indicators without manual data logging and, through machine learning, correlates these indicators with at-risk events, including falling, wandering, inactivity, dehydration, poor medication compliance and more.
- Frost & Sullivan notes the increasing appetite among progressive hospitals and health systems for new patient-centric digital solutions such as wearable RPM to promote care delivery innovation and improve standards of care. The SafeBeing system will provide a platform to alert caregivers of negative trending in activities of daily living, and to mitigate possible future adverse events, to improve elder care and the safety of the residents.

WEBLINK: https://prn.to/2DFn3Kq

Mobile Phones/ mHealth

As big tech gets into healthcare, Uber Health wants to do it right – February 12, 2019

Applicable Product Categories: Mobile Phones

Technologies	mHealth App; Mobility	**Therapeutic Areas**	All
Applications	On demand healthcare transportation	**Geographic Focus**	US
Segment Focus	Clinical Grade	**Topics (News type)**	Care Delivery Innovation
Companies	Uber Health	**Others**	-

ANALYST TAKE:

- **Synopsis:** Uber Health, which launched last year at HIMSS 2018, has reported around 1,000 clients in a year's lifetime and already reports improvements in doctor fill rates by 5-10%, reduced no-shows and a better efficiency in using up transportation budgets by care delivery systems.
- The company boasts of demonstrating a model of "responsible entry" into the healthcare space through sustainable infrastructure investments, PHI and other data security through encrypted systems, HIPAA compliant and trained staff and expert consultants to protect client interest amidst a highly regulated healthcare landscape.
- Frost & Sullivan research shows a multi-million dollar opportunity for on-demand transportation for non-traditional players in the healthcare domain. This, coupled with the enhanced rate of adoption as evident from Uber Health's good results in a year, has led to a number of other mobility players such as Lyft, Didi, etc. to join the on-demand healthcare transportation space, with the smartphone being the key enabler interface for the solution.

WEBLINK: https://bit.ly/2E6mURu

Apple's deal with the VA is a big step toward giving patients control over their own health information – February 11, 2019 (1/2)

Applicable Product Categories: Mobile Phones

Technologies	mHealth App; Health Records	**Therapeutic Areas**	All
Applications	Apple Health Records	**Geographic Focus**	Global
Segment Focus	Clinical Grade	**Topics (News type)**	M&A/ Partnerships/ Investments
Companies	Apple	**Others**	Dept. of Veterans Affairs

ANALYST TAKE:

Synopsis: Apple, officially announced its Health Records feature to be available to Department of Veterans Affairs to enable around 9 million veterans enrolled in the VA, to transfer their medical records to their iPhones.

Industry Need:

- Amidst increasing calls across quarters to enable greater interoperability and sharing of EHR data as well as data generated through connected medical devices, and mHealth apps, the move is a welcome one which offers patients easy access and ownership of their own health data.
- Additionally, it offers opportunities to enhance patient experience through better adherence as well as improved healthcare efficiency by reducing chances of missed appointments, easy accessibility and enhanced patient-provider engagement.
- The development is part of an earlier announcement by Apple of its intended testing of Health Records feature with around 39 participating healthcare systems, and the availability of the new capability to all iPhone users with the latest iOS 11.3 update.

Apple's deal with the VA is a big step toward giving patients control over their own health information – February 11, 2019 (2/2)

Value Proposition:

- As per the announcement, the veterans receiving their care through the government organization will have access to a portable aggregated record of their allergies, immunizations, lab results, procedures and other health measures that they can view from the Health app of their iPhone. These data will be secured and compatible with the dozens of other health systems and institutions already participating in Apple's personal health record program.
- The development comes after a November report of discussions between Apple and Department of Veterans Affairs to develop a new software that would let VA patients enrolled in the system transfer their records to their iPhone.
- The VA, which has historically used its own self developed system called VistA, moved to Cerner's EHR system, called MHS GENESIS in 2017. Amidst this background, the announcement assumes significance, considering the fact that Cerner has been working with Apple to make personal health information accessible on a consumer platform. Both the companies are working with a range of partners and clients to achieve interoperability among various systems.
- Frost & Sullivan believes that interoperability among various EHR systems is a long standing issue in the US as well as globally. Amidst an emerging need for data standardization and consolidation for use by advanced technologies such as machine learning and AI, coupled with increasing emphasis on putting the patient at the center of care coordination pathways, Apple has created a niche for itself through its Apple Health Records feature, enabling standardized interoperability and putting more control in the hands of the patient. With enhanced interoperability of patient data, the company is very well positioned to work as an intermediary between medical researchers, developers as well as pharma and med-tech companies which require health data for specific actionable development of their respective solutions. Additionally, while it is good for the patient to know all the aspects of his own health, it also means more data to be sifted through by the clinician. The next challenge for Apple is going to be its ability to make that data more intuitive and meaningful for the clinician.

- **Target End-User:** Hospitals; Primary Care Centers; Patients

WEBLINK: https://cnb.cx/2Dz31Rx

mHealth Researchers Downplay the Reliability of Smartphone Cameras – February 8, 2019

Applicable Product Categories: Mobile Phones

Technologies	mHealth App; Smartphone Camera	**Therapeutic Areas**	All
Applications	Smartphone Camera Based Diagnostic Techniques	**Geographic Focus**	Global
Segment Focus	Clinical Grade	**Topics (News type)**	Research Study
Companies	Anglia Ruskin University	**Others**	-

ANALYST TAKE:

- **Synopsis:** A recent study conducted at UK's Anglia Ruskin University found that clinical decision and diagnostic systems based on photos taken from a smartphone camera, put themselves at an elevated risk of misdiagnosis, owing to differences in how smartphone cameras are calibrated, particularly to defining colors, the lighting condition, and the optical magnification.
- Frost & Sullivan believes that its imperative to conduct such studies at a time when a number of clinical diagnostic and decision support systems rely on a smartphone camera image to diagnose a condition. While, a universal code of color calibration, magnification and other aspects is highly unlikely to be adopted by the various smartphone manufacturers, this could be viewed as an opportunity for them to come up with innovative co-development models where a certain test works best with a certain brand of smartphone and its camera system. The greater the epidemiology of the disease, the higher the value of such a partnership and ultimate ROI for the manufacturer.

WEBLINK: https://bit.ly/2UQVkNT

Smart Home Devices & Appliances

Toilet Seat Automatically Measures Host of Cardiac Parameters to Monitor Heart Health – February 07, 2019

Applicable Product Categories: Smart Home Devices

Technologies	IoT, AI / Smart Toilets	**Therapeutic Areas**	Remote Patient Monitoring
Applications	Regular vitals monitoring	**Geographic Focus**	US / Global
Segment Focus	Clinical / Consumer Grade	**Topics (News type)**	Technology Innovation
Companies	Rochester Institute of Technology	**Others**	-

ANALYST TAKE:

- "A team from Rochester Institute of Technology has developed a toilet seat that can measure a host of important cardiovascular parameters while the patient is using it. Certainly no one fails to respond to nature's calls, and so it is virtually guaranteed that patients having one of these at home will be sure to be monitored quite regularly (if everything is regular)."

- Frost & Sullivan notes that a primary advantage of smart homes is the regular monitoring of resident's vitals that allows for early detection of anything that's amiss, and therefore early interventions for any medical conditions. Smart toilets have long been considered (conceptually) to serve such purposes, but sanitary ware majors (TOTO, Kohler) have focused on convenience aspects rather than health. This particular invention is great for regular monitoring of basic vitals, and without requiring any body-worn devices. Another technology (not mentioned in article), is being developed by the startup S-There, which allows for regular toilets to be outfitted with a device that can analyze for pre-diabetes, urinary infections, proteinuria, hydration and more. A combination of both these approaches, along with potential luxury / convenience features would be a true smart toilet (though it may not justify the costs).

WEBLINK: https://bit.ly/2UX0pnH

Microsoft launches bot service for healthcare sector – February 11, 2019

Applicable Product Categories: Smart Home Virtual Assistants

Technologies	IoT, AI	**Therapeutic Areas**	NA
Applications	Symptom check, healthcare information and services	**Geographic Focus**	US
Segment Focus	Consumer Grade	**Topics (News type)**	Technology Innovation
Companies	Microsoft	**Others**	-

ANALYST TAKE:

- "Microsoft has unleashed a new healthcare bot that provides cloud-based conversational AI to help patients take healthcare into their own hands. The Microsoft Healthcare Bot was released in Azure Marketplace last week. It is specifically built do empower healthcare organisations to build and deploy virtual health assistants."

- Frost & Sullivan acknowledges that this technology tool is being offered to "providers, payers, pharma, HMOs, Telehealth" and not for smart homes, to build their own virtual assistants. The use cases can be varied –from allowing patients to learn more about their health condition and ways to manage disease, to answering simpler questions like "when is my lunch arriving?" in hospitals. However, when thinking of telehealth, or in the future and along the lines of WebMD's symptom checker being available on Amazon Alexa, such tools will be necessary for the home environment as well. The future will see most people using such tools from their voice devices or smartphones, for use cases as – schedule an appointment for me at the hospital / telehealth service, or remind me of what my care instructions are (to ensure proper treatment compliance).

WEBLINK: https://bit.ly/2X5XVWe

How a voice assistant can be a constant companion for hospital-bound patients – February 11, 2019

Applicable Product Categories: Smart Home Voice Assistants

Technologies	IoT, AI	**Therapeutic Areas**	All Hospital Patients
Applications	Patient Experience	**Geographic Focus**	US
Segment Focus	Clinical Grade (HIPAA compliant)	**Topics (News type)**	Technology Innovation
Companies	Thomas Jefferson University Hospital	**Others**	-

ANALYST TAKE:

- "When is my lunch coming?" and "When are visiting hours?" - At the Patient Engagement and Experience Summit at HIMSS19 in Orlando today, Patwardhan and Chief Digital Officer Neil Gomes presented their hospital's attempt to help take questions like this off of nurses' plates with the introduction of a smart speaker at the bedside that will act like a bespoke healthcare version of Apple's Siri or Amazon's Alexa. The team originally looked into simply implementing existing voice assistants, but found that restrictions related to HIPAA made building their own a safer plan.
- Frost & Sullivan notes that Google Home and Amazon Alexa are both working on HIPAA compliance, and might release versions / services exclusively for hospital environments. The home care aspect will be tricky when using telehealth services –will a HIPAA compliant service be used for telehealth too? Nevertheless, after this first step, hospitals will need to extend patient experience beyond the hospital's four walls, as post-discharge patients (in their homes) will also need to be taken care of. That would be the 2.0 version of such a service – whether that will be enabled using existing speakers like Google / Amazon or hospitals will continue enhancing their own versions will be interesting to watch. With Microsoft's tools (covered in previous slide) available, hospitals may prefer to keep 'data' in-house and safe, building their own versions.

WEBLINK: https://bit.ly/2GOrhmh

Your Smart Light Can Tell Amazon and Google When You Go to Bed – February 12, 2019

Applicable Product Categories: Smart Home Devices

Technologies	IoT, AI	**Therapeutic Areas**	-
Applications	Data Collection	**Geographic Focus**	US / Global
Segment Focus	Consumer Grade	**Topics (News type)**	Trends
Companies	Amazon, Google, Logitech	**Others**	Parks Associates

ANALYST TAKE:

- "The tech giants are demanding a continuous stream of customer information from smart-home manufacturers, prompting privacy concerns."... "Some device makers are pushing back, saying automatic device updates don't give users enough control over what data they share, or how it can be used. Public guidelines published by Amazon and Google don't appear to set limits on what the companies can do with the information they glean about how people use appliances."
- Frost & Sullivan views this move as the first step towards designing an AI platform that will take us to the age of true 'intelligent homes', one that learns from our routines and does not require us to train what to do and how. Of course, AI would need plenty of data to train it. But the gathering of the data will always raise privacy concerns – especially in the American (and European) context, where privacy is considered to be of utmost importance. Beyond privacy, there's also the responsibility of protecting the data from being hacked and misused. So the onus lies on these tech giants to proclaim – (a) what they intend to do with data, and seek user permission (EU GDPR becomes relevant here), and (b) how they will anonymize data, and protect from hacks, to prevent the data being used against the customers, by anti-social elements, government (spying) entities, others (insurance) or themselves for their own direct benefit (at the cost of consumers).

WEBLINK: https://bloom.bg/2DAIeNt

Other Interesting Articles

When available, other interesting articles will be covered here in short.

News Title	Link	Remarks
'Why are you looking at me? I see you watching me.' Smart devices like Nest getting hacked in digital home invasions.	https://bit.ly/2DlhS20	Another chilling account of smart home devices being hacked. “No single organization appears to be monitoring or regulating smart device hackings, but growing use of the technology raises questions about whether that may become necessary.”
What Happens to Your Smart home When the Power Goes Out?	https://bit.ly/2SHZCcR	An interesting question raised in this newsletter earlier too – is it prudent to think of edge computing to reduce reliance on the cloud, and provide basic access to customers to these devices. And what about power outages? Should it be mandatory for these devices to carry small battery (~30 min runtime) to disable them (think smart locks) and allow them to be used as regular devices, until normalcy is restored?
Amazon acquires router maker eero in new push for its smart home efforts	https://bit.ly/2GHcCJg	“eero makes Wi-Fi routers that work in a mesh configuration to cover entire homes with Wi-Fi, which is a big part of keeping smart devices fully functional.” .. “it's clear that the company is trying to promote its smart home ecosystem with this purchase.”
RIGHT AT HOME: What will kitchens of the future look like?	https://bit.ly/2X7fepw	No healthcare perspective here, but just interesting to read about nuances on what ‘digital kitchens’ need.
The Jetsons: A Workplace Reality Coming To An Office Near You	https://bit.ly/2S4jvq0	Futuristic, but a relatively untapped space. The future smart home might also hold a space for the home office, integrated with the work place!