FROST & SULLIVAN

Healthcare Market Updates

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Wearables

AT&T Rolls Out New LTE-M Smartwatch – February 21, 2019 (1/2)

Applicable Product Categories: Wearables

Technologies	Wearables (Device + wireless connectivity)	**Therapeutic Areas**	Aged Care, Life Style and Chronic Condition Management
Applications	Remote Patient Monitoring	**Geographic Focus**	US
Segment Focus	Clinical Grade	**Topics (News type)**	Care Delivery Innovation
Companies	AT&T and OneLife Technologies	**Others**	Apple

ANALYST TAKE:

- **Synopsis:** AT&T announced its LTE-M certified medical wearable with OneLife Technologies to offer clinicians, patients and their caregivers a smartwatch that monitors chronically ill and elderly patients who want to “age in place.”

- **Industry Need**: When it comes to wearables technologies and healthcare, strong customer demand and surging sales are only part of the story. The other part is the highly volatile marketplace, where due to intense competition there is a revolving door of company entries and exits. Industry convergence and technological innovations are giving rise to a new breed of wearable technologies that are capable of meeting the unique needs and requirements of clinical care settings. Unlike more prevalent general health and fitness devices, newer breed of clinical wearables technologies are emerging that are capable of capturing medical-grade information in a manner that is reliable, secure, and actionable by care providers.

AT&T Rolls Out New LTE-M Smartwatch – February 21, 2019 (2/2)

Value Proposition:

- As part of this partneship, OneLife Technologies Corp. (a mobile medical software/data collection company), will offer the first AT&T LTE-M certified medical wearable. As per the company, the OnePulse smartwatch goes beyond tracking steps. It provides activity trackers, reminders, and alert technologies. Powered by AT&T wireless connectivity, the advanced wearable securely and independently transmits certain critical medical and health data to the cloud. The AT&T LTE-M connection allows clinicians near real-time access to patient data in a highly secure environment - providing caregivers the ability to intervene when necessary. The LTE-M Low-Power Wide-Area network is designed for IoT devices that are compact. This makes possible OnePulse's five-day battery life, always on feature and light weight design. OnePulse monitors users 24/7, gives medication reminders and auto prescription refills and has a fall detector. The smartwatch also provides data for heart rate, location, movement and sleep. OneLife's proprietary Bluetooth protocol provides the ability to easily connect to other health and medical devices, e.g., blood pressure cuff, glucometer, SPo2 monitor and weight scale can connect for collection and transmission of additional health data tracking. This provides the clinician and patient a wide-ranging view of overall health. As per the company, the OnePulse will be on display and demonstrated next week at Mobile World Congress Barcelona.
- Frost & Sullivan views this collaboration as a logical forward integration of telecom / connectivity vendors such as AT&T into the healthcare IoT space. This also indicates a growing trend of enabling cellular capability into smartwatches. Based on industry estimates, The number of people connecting cellular-capable smartwatches has grown from almost none a few years ago to millions last year (2018). This trend creates new opportunities for wireless carriers such as Verizon, AT&T, Sprint, Vodafone, and T-Mobile among others to expand their customer engagement beyond the smartphone device to promote the BYOD concept that promises wide application in the healthcare space. For example, giving the watch its own mobile connection addresses a big pain point especially for runners, bikers, and other fitness enthusiast who are more interested in going phone-free (Running/working out in gym with a phone, especially an expensive and fragile one, is always a pain point).
- AT&T LTE-M is not the first smartwatch with in-built cellular connectivity, leading players such as Apple has been providing connected Apple Watch models science 2017. However, Frost & Sullivan views this AT&T LTE-M connected smartwatch as more of a focused initiative by communication vendors, (i.e. AT&T), which is anticipated to feature superior connectivity feature even at the device layer. For example, as per the company, the LTE-M Low-Power Wide-Area network — which operates at a lower cost with greater power efficiency than traditional mobile networks — makes it possible for OnePulse to have a five-day battery life.
- **Target End-User:** Healthcare Consumers, Remote Monitoring Solution Vendors, Home and Aged Care Providers

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

Shimmer unveils wearable sensor platform for clinical trials – February 19, 2019 (1/2)

Applicable Product Categories: Wearables

Technologies	Wearables (Device + App)	**Therapeutic Areas**	Chronic Health Condition, Activity and Sleep Monitoring
Applications	Remote Patient Monitoring, Virtual Clinical Trials	**Geographic Focus**	Europe
Segment Focus	Consumer/Clinical Grade	**Topics (News type)**	Market Positioning
Companies	Shimmer	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Shimmer, a Dublin-based wearable sensor company, has launched a new sensor platform for clinical trials called VeriSense. The technology is designed to address problems created by consumer devices in the clinical research world.
- **Industry Need**: Pharma clinical trials are slow and an expensive process. Based on industry estimates, due to lack of patient-centric trial designs, up to 35% of patients drop out of clinical trials. Another 35% are non-adherent to study protocols, which costs about $1 million per trial in lost productivity alone. Early application of wearables show compelling potential to increase drug development productivity and ensure patient-centric trial designs.
- **Value Proposition:** The platform will work with Shimmer's IMU, or inertial measurement unit sensor, which can measure activity and sleep from the wrist, as well as network with sensors elsewhere on the body to monitor musculoskeletal and neurological conditions. VeriSense is Shimmer's first data platform targeted towards clinical trials application, but the company has been in the wearable space since 2006. But. the system also uses algorithms to turn that raw data into validated metrics. The data is stored securely and sponsors can access it in the form of a dashboard, which can also be configured to give alerts when data moves out of a certain range.
- Frost & Sullivan views this as a rational application expansion strategy by Shimmer from already crowded consumer wearables to more niche and growing clinical trial applications. However, Frost & Sullivan also notes that, the clinical trial wearable market is dominated by leading players such as ActiGraph, MC10 and even Google Study watch. Entailing this, the future success for VeriSense will heavily depend on Shimmer's capability in building winning partnerships with leading pharmas and CROs.

WEBLINK: https://bit.ly/2V6svwQ

Empatica Partners With DRIVe to Develop Smart Watch That Predicts Lung Infections Before Symptoms Appear – February 19, 2019 (1/2)

Applicable Product Categories: Wearables

Technologies	Wearables (Device + AI/ML)	**Therapeutic Areas**	Lifestyle and Health Epidemic management
Applications	Remote Patient Monitoring	**Geographic Focus**	US
Segment Focus	Clinical Grade	**Topics (News type)**	Care Delivery Innovation; Product Innovation
Companies	Empatica and DRIVe	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Empatica, a clinical-grade wearable provider has partnered with the U.S. Government's BARDA Division of Research, Innovation and Ventures (DRIVe), to develop a new smartwatch which will alert wearers about a serious respiratory infection, before any symptoms appear.

- **Industry Need**: Historically, some of the world's biggest epidemics have been respiratory-related. Each year, approximately 1.25 million people in the United States are hospitalized as a result of community-acquired respiratory tract infections, and their care costs amount to more than $4 billion. More recent estimates by the World Health Organization put the cost of influenza epidemics to the U.S. economy at $71-167 billion per year, while in 2017-18 the country had a record number of flu deaths.

Empatica Partners With DRIVe to Develop Smart Watch That Predicts Lung Infections Before Symptoms Appear – February 19, 2019 (2/2)

Value Proposition:

- The new smartwatch uses the same technology as Empatica's FDA-cleared smartwatch Embrace2, which is aimed at people living with epilepsy. Embrace2 uses advanced machine learning to monitor physiological signals, detect any unusual patterns and immediately notify caregivers in the case of possible convulsive seizures. As per the press release, the partnership with DRIVe will utilize this technology to evaluate health signatures that can predict pathogen exposures prior to the manifestation of any symptoms, and alert the user and any caregivers.
- This project is part of DRIVe's Early Notification to Act Control and Treat (ENACT) portfolio. Products developed under ENACT aim to empower people by letting them know they are sick before the first symptom appears, encouraging early treatment and potentially reducing the spread of bacteria and viruses.
- As per Empatica co-founder, chief scientist, and MIT professor Rosalind Picard, "Imagine if your future smart watch could tell you your body is fighting sickness before you have any obvious symptoms— and that if you go to sleep two hours early tonight and drink a special beverage you would have 70% less chance of coming down with the flu tomorrow — how would your life be improved? Multiply that by 49M people in the U.S. who had influenza in 2018 — how would our world be improved?"
- Frost & Sullivan views this partnership as a good branding mileage for an innovative company such as Empatica, especially among the research and academic community. The company's focused approach in demonstrating clinically meaningful application of wearables for niche condition like epilepsy, offering the capability to ensure prompt attention to serious health issues, which can even save lives have created a niche name for Empatica in the wearable space. With commitment to innovation, Empatica hopes that through the partnership with DRIVe, this capability will be expanded to other fields. Products developed under ENACT aim to empower people by letting them know they are sick before the first symptom appears, encouraging early treatment and potentially reducing the spread of bacteria and viruses. Given the increasing burden of respiratory diseases, the predictive capabilities as part of DRIVe's initiative will provide unique opportunity for individuals, caregivers and health care professionals to be able to identify people at high-risk, in real time, enabling faster treatment and prevention, which can in turn further reduce transmission.
- **Target End-User:** Healthcare Consumers, Federal funded preventive health programs

WEBLINK: https://bit.ly/2XhM47u

Abbott, Novo Nordisk partner to share insulin pen data with CGM system – February 20, 2019

Applicable Product Categories: Mobile Phones

Technologies	Wearables (Device + App + Insulin pen)	**Therapeutic Areas**	Diabetes
Applications	Remote Patient Monitoring and Drug Delivery solution	**Geographic Focus**	US
Segment Focus	Clinical Grade	**Topics (News type)**	Care Delivery Innovation; Strategic Collaboration
Companies	Abbott and Novo Nordisk	**Others**	NA

ANALYST TAKE:

- **Synopsis:** Abbott and Novo Nordisk announced a non-exclusive partnership that will integrate insulin dose data from Novo Nordisk's pre-filled, connected pens with digital health tools compatible with Abbott's FreeStyle Libre system, according to a press release from the two companies.
- **Value Proposition:** The Freestyle Libre system, which just recently came to the United States after years of being only available in Europe, is a fully disposable CGM system consisting of a tiny insertable sensor and a patch about the size of a quarter, which can be scanned using a special reader or a smartphone app. Specifically, the integration will bring insulin dosing data from the connected pens into the FreeStyle LibreLink mobile app and the LibreView cloud-based system.
- Frost & Sullivan views this as a winning collaboration for bringing best-of-breed digital health solutions to combat growing threat of chronic health conditions such as diabetes. Freestyle Libre's success in the market has been largely due to its positioning as a middle ground between traditional glucometers and more onerous CGMs, providing the depth of data of the latter but with a level of convenience closer to the former. Integration with insulin pens, which are much more widely used than insulin pumps, will further increase that convenience factor and help Abbott to serve that in-between market.

WEBLINK: https://bit.ly/2E2BQit

Mobile Phones/ mHealth

New Ascom Myco™ 3 Smartphone Launched to Address Healthcare Efficiency and Collaboration Communication Challenges – February 19, 2019 (1/2)

Applicable Product Categories: Mobile Phones

Technologies	Healthcare focused smartphone	**Therapeutic Areas**	All
Applications	Specialized wireless devices for healthcare	**Geographic Focus**	Global
Segment Focus	Clinical Grade	**Topics (News type)**	Care Delivery Innovation
Companies	Ascom	**Others**	-

ANALYST TAKE:

Synopsis: Ascom, a specialist in mobile workflow optimization and communications solutions, announced launch of Myco™ 3 Smartphone to address the efficiency, collaboration and communication challenges in a healthcare setting.

Industry Need:

- Frost & Sullivan research shows that while advanced mobile clinical communication technologies used in patient care settings hold tremendous promise to optimize care coordination and patient outcomes, hospitals often rely on conventional and archaic nurse call button systems to communicate with patients. Currently, nurses spend 60% of their time communicating about patient care, with 90% of this communication conducted face-to-face. Consequently, nurses spend only about 16% of their time on actual patient care. These statistics identify tremendously inefficient use of the nurse workforce that negatively impacts patient care as well as the hospital's bottom line considering that nurses are the single largest expense category in most hospitals.
- Inefficient communication practices have been found to be the number one cause of medication errors. As a result of this lack of integration between communications solutions such as pagers and phones, nurses carry multiple devices that generate almost constant alarms, resulting in alarm fatigue and sub-optimal patient care quality.

New Ascom Myco™ 3 Smartphone Launched to Address Healthcare Efficiency and Collaboration Communication Challenges – February 19, 2019 (2/2)

Value Proposition:

- As per the announcement, Ascom Myco 3 is the latest addition to its range of “My Companion” smart devices aimed at offering an indispensable tool for timely delivery of critical patient information, and facilitating caregiver communication in an effective and streamlined manner.
- The device comes with a range of features such as easy to use Android™ smartphone coupled with robust enterprise level security and durability, hot swappable battery for easy switch without disrupting ongoing processes, easy transfer across shifts as well as an efficiently functioning EHR mobile app for up-to-date and continuous care coordination and delivery.
- Together with the Ascom Healthcare Platform and the latest Digistat Medical Device Integration Software, the solution offers complete integration of clinical data, alarms, and events emanating from a host of disparate medical devices such as ventilators, patient monitors, and infusion pumps, and create a uniform and integrated stream of data that feeds a single source of clinical patient data to the EHR and hospital information systems.
- Frost & Sullivan research shows that interoperable and user-friendly mobile clinical communication platforms that fit seamlessly into existing workflows and eliminate the need to replace costly legacy systems will enjoy rapid adoption. Enabling technology scalability through flexible information technology and vendor-agnostic solutions that can rapidly assess and report service-level enterprise performance are crucial to succeeding in a value based reimbursement market and ensuring return on investment (ROI) for end-users. Ascom’s innovative solutions supplement and optimize existing workflows, information systems, and care management devices to help customers generate higher value from legacy solutions while creating significantly more efficient workflows. With the ability to triage alert priority, coordinate care, and minimize the amount of time accessing patient information from multiple patient monitoring devices, Ascom helps reduce the administrative burden on nurses while maximizing care quality, patient safety, and positive treatment outcomes
- **Target End-User:** Hospitals; Primary Care Centers; Clinical care nurses, physicians

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

Patients' Google search histories could help link them to appropriate care – February 21, 2019

Applicable Product Categories: Mobile Phones

Technologies	mHealth App; Health data monetization	**Therapeutic Areas**	All
Applications	Patient mHealth interaction leading to better care	**Geographic Focus**	Global
Segment Focus	Clinical Grade	**Topics (News type)**	Research Study
Companies	Google	**Others**	-

ANALYST TAKE:

- **Synopsis:** As per a recent study published in BMJ Open, patients often turn to Google search algorithms to find answers to their health questions. The same behavior significantly increases prior to an ED visit (which means the health is taking a turn towards the worse), with key parameters such as symptoms, hospital information and disease treatment or management being the chief ingredients of their search queries.
- As per the study, the online behavior, which a significant majority of patients were willing to share, could be an opportunity to anticipate and improve care, as well as an interest among patients for more information about their conditions and care.
- Frost & Sullivan believes that while this study is among the very first to link internet search data and that of actual EHR data of patients, there has always been a general consensus among the healthcare community on the patient's inclination towards researching their symptoms online before actually hitting on the care path. However, there hasn't been a credible operational and monetization strategy towards effectively channelizing this data, probably owing to the lack of proper studies quantifying the extent and impact of such behavior. While, it seems like a far fetched idea at the moment, this could be a promising future strategy.

WEBLINK: https://bit.ly/2E1y1dd

Smart Home Devices & Appliances

How to design home healthcare devices that people will use – February 21, 2019

Applicable Product Categories: NA

Technologies	IoT, Voice	**Therapeutic Areas**	Remote Patient Monitoring, Chronic Disease Management
Applications	Several health applications	**Geographic Focus**	US / Global
Segment Focus	Clinical / Consumer Grade	**Topics (News type)**	Technology Innovation
Companies	Athelas, Abbott, ResMed, Clarify Medical, Livongo Health	**Others**	-

ANALYST TAKE:

- "Meeting consumer demands for home healthcare technology requires a keen knowledge of user behavior. Here are four ways companies are approaching the market."
- 4 key recommendations: make technology invisible and automatic, remove barriers to use, make user feedback part of business model, focus on user behavior. [please see article for examples of company's solutions under each of these, and how they achieve this.]

- Frost & Sullivan notes that these recommendations apply to any health-centric product or solution designed for home use (independent of a skilled healthcare professional). Most smart home technology for health applications will benefit from these recommendations (and even some non-health applications too).

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

Other Interesting Articles

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

News Title	Link	Remarks
Your Smart TV and Alexa can detect when you're having an affair, scientists claim	https://bit.ly/2Em0JqB	Privacy is the highlight of this article, and smart device manufacturers need to be more transparent about data sharing policies.
It's time for Apple to get back into the smart home in a big way	https://bit.ly/2Njxnfw	An observer's view of what Apple should do in the smart home space next. "I'm not saying that Apple should want to play in this game. I'm saying that, given what's going on in the field right now, Apple can't afford not to play."
Making smart homes less expensive with new technology	https://bit.ly/2Egv8Xm	University of Waterloo has developed battery-free WiFi sensors, which can help reduce the cost of smart home tech. The tech called WiTAG has been tested wth temperature sensors, light sensors and wearable fitness devices.
Apple buys Hello Barbie voice tech firm PullString for $30m	https://bit.ly/2E56Lul	While all speculation, it seems Apple may have bought the firm for its resources and tech, to improve Siri's potential, considering it isn't at par with Alexa or Google Home.