



Qualcomm Life: Connect Life 2016

August 30-31, 2016; San Diego, CA; Full Report - Draft

Executive Highlights

Qualcomm Life held its fifth annual Connect Life, a connected health ecosystem conference, this year in sunny San Diego. This year's theme was "the Internet of Medical Things," exploring the smart technologies, analytical insights, and collaborations necessary to catalyze and scale connected care models globally. The conference brought together industry leaders for discussions on cutting edge topics pertaining to three themes: (i) security in a connected world; (ii) unlocking data and insights to deliver connected care; and (iii) creating a seamless care continuum. We heard excellent presentations from Ms. Laura Stoltenberg on Medtronic's strategy to empower patients and providers in diabetes care, Qualcomm CMO Dr. James Mault on the company's goal to spread "intelligent care," Ms. Kelly Close on the diabetes patient perspective, and more!

Read on for our five top highlights from the two days, plus detailed discussion and commentary below. In addition, you can view videos from Connect Life 2016, which Qualcomm Life generously provided [here](#). We're already looking forward to next year's conference and continue to be inspired by the best practices in connected health care!

Top 5 Highlights

1. Medtronic GM of Non-Intensive Diabetes Therapies Ms. Laura Stoltenberg outlined Medtronic's four-pillar strategy to empower patients and providers in diabetes care: (i) Drive continuous product innovation; (ii) Lead in analytics and insights; (iii) Provide and enable integrated care; and (iv) Expand and accelerate global access. With regards to innovation, Ms. Stoltenberg specifically referenced the [Qualcomm partnership](#) (officially announced in May), which aims to yield a single use (fully disposable), professional (intermittent), lower cost CGM for type 2 diabetes in two to three years.
2. Qualcomm CMO Dr. James Mault detailed his company's efforts to spread what he called "intelligent care," characterized by connected, continuous, and near real-time data that will drive precision medicine and predictive analytics.
3. Qualcomm Life President Mr. Rick Valencia explained the power behind Qualcomm Life's partnerships, specifically discussing those with Philips and Boehringer Ingelheim. "We create what we know is possible but it takes teamwork. Let's find a way to continue partnering."
4. Our very own Ms. Kelly Close gave a moving talk on her experience living with diabetes for nearly 30 years, how much the diabetes field has progressed, and where work still needs to be done. In her talk, she urged for further collaboration in areas such as prevention, public attitudes, and especially mental health, and stressed the importance of the individual patient perspective.
5. Given that only 20% of what drives health is clinical treatment (80% is determined by socioeconomic, behavioral, and environmental factors), Philips CEO of Connected Care and Health Informatics Mr. Jeroen Tas (Connected Care and Health Informatics, Philips, The Netherlands) advocated for technology to promote self-care and 24/7 connectedness with those who can offer advice and support.

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Detailed Discussion and Commentary

Tuesday, August 30

POWERING INTELLIGENT CARE EVERYWHERE

James Mault, MD (Chief Medical Officer, Qualcomm Life, San Diego, CA)

Qualcomm CMO Dr. James Mault detailed his company's efforts to spread what he called "intelligent care," characterized by connected, continuous, and near real-time data that will drive precision medicine and predictive analytics. To illustrate the need for this kind of medicine, Dr. Mault pointed to a Johns Hopkins [study](#) published in *BMJ* last May suggesting that medical errors are now the third leading cause of death in the US (251,454 in 2013, or 9.5% of all US deaths). The paper's authors are careful to point out that these errors are typically not due to negligence, but shortcomings of the system - poorly coordinated care, fragmented insurance networks, the absence or underuse of safety nets, and unwarranted variation in physician practice patterns. Whatever the cause, Dr. Mault deemed the statistic unacceptable and commented that "trial and error is the practice of the day in healthcare." Indeed, the general practice of medicine is not yet "smart" due to a lack of sensors, data, and tools. Qualcomm has been working to address this gap, developing tools such as biometric sensors and wearables so that data can be captured and plugged into systems that can help deliver better care. The most obvious example in diabetes is the [partnership with Medtronic](#) to develop next-gen CGM for type 2. Given the natural progression toward value-based care, there has been more interest in population health and patient monitoring - expanding sources of data from monthly clinic visits to near real-time data allows for different questions to be asked. Instead of asking patients descriptive questions ("What happened?") to gather data, clinicians can ask questions with more foresight ("What should I do?") because the data has already been collected and analyzed.

- **Dr. Mault has previously implied that healthcare wouldn't change overnight if clinicians all of a sudden had every tracker they could imagine at their disposal;** at the [diaTribe Foundation's 2016 Musings Under the Moon](#) event, he cautioned that "what keeps us awake is the fact that healthcare professionals are not prepared for this new world of digital

health...in the future, we're going to be taking care of hundreds and thousands of patients without physically examining them. You've got to retrain providers to practice medicine in ways they haven't practiced medicine before. That's ... what's holding up our transition to a more digital healthcare world."

- **After presenting the impressive qualities and implications of intelligent care, Dr. Mault presented a case study on what intelligent care could mean for pharmaceuticals, especially since the US spends nearly a trillion dollars per year on medications.** He described "Pharma 1.0" as the prescription of medication for a patient with no way of the clinician knowing what happened until the next time the patient returned to the clinic. The next level, "Pharma 2.0," incorporated adherence monitoring - with connectedness and wireless communication, data can give information about medication management for patients and payers. Finally, "Pharma 3.0" involved precision medication management - after taking a medication, connected drug monitoring can allow for dose adjustment on an individualized basis. Diabetes is just crossing the threshold to Pharma 3.0, possibly more so than any other disease state; at least two remote insulin dose titration products are available in Europe already ([Sanofi's MyStar Dose Coach BGM](#) and a basal-bolus version of [Voluntis' Insulia](#), Diabeo), and there are a number in development or pilots: Glooko's mobile insulin dosing system (FDA submission was expected [by end of 2016](#)), DreaMed's MD Logic Pump Advisor with Glooko ([beginning a study soon](#)), TypeZero's inControl Advice ([shown at DTM](#)), Glytec (Glucommander Outpatient, [compelling late-breaking poster at ADA 2016](#)), Hygieia's d-Nav service (reimbursement study with BCBS [ongoing in Michigan](#)), [Novo Nordisk/Glooko partnership](#), and others.

Wednesday, August 31

UNDERPINNING THE INTERNET OF MEDICAL THINGS

Rick Valencia (President, Qualcomm Life, San Diego, CA)

Qualcomm Life President Mr. Rick Valencia explained the power behind Qualcomm Life's partnerships, specifically discussing those with Philips and Boehringer Ingelheim. "We create what we know is possible but it takes teamwork. Let's find a way to continue partnering." With Philips, Qualcomm has undertaken the design of medical-grade infrastructure, involving flexible secure gateways, interoperability across an expansive system, and connected devices. Philips Connected Care and Health Information CEO Mr. Jeroen Tas has referred to Qualcomm as the "clear leader" in connectivity. In the latter arrangement, Qualcomm has been developing integrated sensor design and technology licensing to create secure transmission of information from drug devices. According to Mr. Valencia, the reason for both of these collaborations is simple: "No one is going to look at the data - the whole point is to get it in digital form in systems that can analyze the data and help us make informed decisions." We see this as spot on: People frequently talk about engaging the patient as an end game in diabetes treatment, but in reality, therapies should aim to decrease the amount of time that patients are forced to spend on and think about their condition. Most patients don't want to know their blood glucose values; they want the insights that can be derived from analyzing this data. Mr. Valencia then shared his vision of a connected brain-like "internet of everything." Of course, this can't happen without bringing in the rest of the ecosystem - different industries and people - to all work together. To ultimately make direct connections to and provide contextual data around the patient to provide informed care, Qualcomm Life has been taking on the underpinning of the internet of medical things: designing cost-effective speed solutions to the market; enabling connectivity and adherence; expanding scalable global networks; securing data and patient privacy; and attracting progressive healthcare companies. In these collective opportunities that allow for collaboration and co-creation, Mr. Valencia envisions powerful emerging models.

- **At CES 2017, Philips Connected Care and Health Information CEO Mr. Jeroen Tas (whose daughter has diabetes) spoke about the goals of the Qualcomm partnership:** "Healthcare is brick and mortar and confined to hospitals. You need to have reliable connections, a sensor network that senses, understands, and adapts to you. And gives information to you. My daughter has a Dexcom CGM. I want it to be connected - I want to merge that information and a

Lilly Bluetooth insulin pen with my Philips health watch. Clearly pharma is in on it - can we bring them together?

PATIENT SPOTLIGHT: KELLY CLOSE

Kelly Close (Founder, The diaTribe Foundation, San Francisco, CA)

Our very own Ms. Kelly Close gave a moving talk on her experience living with diabetes for nearly 30 years, how much the diabetes field has progressed, and where work still needs to be done. So much has changed in the past 30 years: the number of people with diabetes has skyrocketed from 1 in 180 people globally to 1 in 11 (!), research and technology have brought us insulin analogs and pumps, and information has become much more widespread so that people don't feel as confused and frustrated about diabetes. Nonetheless, Ms. Close remarked that many people still constantly feel stressed about diabetes, describing it as a "blinded tightrope walk." She urged for further collaboration in areas such as prevention, public attitudes, and especially mental health. She also stressed the importance of the individual patient perspective - professionals in diabetes tend to focus heavily on either the microscopic physiological research or the macroscopic global population, but the patient is inadvertently caught in the middle. The patient experience is not so easily measureable and is often neglected, though it is arguably the most critical facet of diabetes, for all stakeholders (patients, industry, payers, providers, etc.). In a data-driven world, Ms. Close called for making connections around the patient, especially for challenges like treatment adherence and easing the burden of diabetes management on peoples' lives. She ended on a call to action: "In this room with some of the most talented people in business and tech, how can you co-collaborate? Think about the spectrum of different lives, preferences, and talents. Learn about patient experiences and use them to drive your work."

DIGITAL TRANSFORMATION IN HEALTH

Jeroen Tas (CEO, Connected Care and Health Informatics, Philips, The Netherlands)

Given that only 20% of what drives health is clinical treatment (80% is determined by socioeconomic, behavioral, and environmental factors), Mr. Jeroen Tas (Connected Care and Health Informatics, Philips, The Netherlands) advocated for technology to promote self-care and 24/7 connectedness with those who can offer advice and support. Mr. Tas underscored the importance of connected care, explaining how new technologies can close the gap in the time patients spend outside a clinical setting - not only can technology facilitate smooth, secure information exchange between patients and healthcare professionals, but social media can create an online support community to answer questions around the clock. As we heard at [EASD 2016](#), the notion of 24/7 advice - whether it's specific to an instance of nocturnal hypoglycemia or a general call for encouragement - is highly appealing to patients with chronic disease (including diabetes) and is very possible with modern social media channels. In the diabetes world, we've learned that patients spend [only 0.007% of their time](#) with any member of the healthcare team, again reinforcing the critical role for technology to play in establishing complete, connected care - at [WCDP 2016](#), Dr. Deborah Greenwood (Sutter Health, Sacramento, CA) used this startling statistic to advocate for social media as a source of support. Needless to say, we see many applications for the digital transformation of health in diabetes (Mr. Tas also touched upon possibilities in precision medicine, continuous data monitoring, and Big Data), and we loved hearing Mr. Tas' perspective on how we can accelerate technological advances to improve quality of healthcare while reducing cost.

CLOUD-BASED CARE: THE SILVER LINING OF MOVING CARE TO THE CLOUD

Mark Johnston (Director, Global Business Development, Amazon Web Services)

Mr. Mark Johnston explained how Amazon Web Services (AWS), the largest cloud provider on the planet, can greatly impact healthcare by providing a scalable and flexible means of storing and transferring data. The cloud is not just a storage network or a database, he conveyed, but also an innovative way to remove the burden of infrastructure management and speed up community development. Mr. Johnston noted that AWS is continually expanding its services to support virtually any cloud workload. As for how that applies to healthcare, Mr. Johnston remarked, "When delivering value to a customer base, speed is the differentiating factor," allowing partnering companies to focus on what they're good at, whether it's DNA

sequencing or taking care of patients. Mr. Johnston assured that data security would not be a problem; AWS is managed by over 1,800 security controls and is regularly audited, giving customers the satisfaction of data ownership and control over where data is stored. The Cloud will bring better efficiencies to the overall healthcare industry - as Mr. Johnston noted, "data is the new currency in healthcare". Further, using AWS for precision medicine can bring about innovations in medication adherence and chronic care management since it enables remote monitoring and feedback. After Mr. Johnston's compelling presentation, we have to wonder at what point paper charts and non-cloud-based medical records will go the way of the dinosaurs.

POWER OF INTEGRATED CARE: UNLOCKING INSIGHTS TO BETTER DIABETES MANAGEMENT

Laura Stoltenberg (General Manager, Non-Intensive Diabetes Therapies, Medtronic, San Francisco, CA)

Ms. Laura Stoltenberg outlined Medtronic's four-pillar strategy to empower patients and providers in diabetes care: (i) Drive continuous product innovation; (ii) Lead in analytics and insights; (iii) Provide and enable integrated care; and (iv) Expand and accelerate global access. With regards to innovation, Ms. Stoltenberg specifically referenced the [Qualcomm partnership](#) (officially announced in May), which aims to yield a single use (fully disposable), professional (intermittent), lower cost CGM for type 2 diabetes in two to three years. While the next-gen CGM will drive better therapeutic actions from both provider and patient, simply having glucose data (which Medtronic is aptly calling a vital sign) is not sufficient. For this reason, the company is also advancing analytics at the level of the patient, clinician, and population, drawing insights from glucose data. Ms. Stoltenberg emphasized that the beauty of analytics is that it is not a one-way street from data to insight - one can also identify the problem he/she is trying to solve first, and then use analytics to figure out which data is important. Although not mentioned, Medtronic's alliance with IBM Watson makes it well-situated to be a field leader in this department. The final two pillars involve optimizing interactions with patients to ensure that they receive the best outcomes from their use of device/apps and tailoring the integrated care approach to unique global communities. Through this approach, Medtronic hopes to eradicate the unacceptable treat-to-fail paradigm all but guaranteed by the current standards of care.

BIG DATA, BIG INSIGHTS, BIG PAYOFFS: HOW DATA IS FUELING NEW CARE MODELS AND EXPANDING REVENUE STREAMS

Reed Tuckson, MD (Tuckson Health Connections), Amy Hester, PhD (University of Arkansas for Medical Science, Little Rock, AR), Chris Wasden (University of Utah, Salt Lake City, UT), Jim Hollingshead (President, Americas, ResMed, San Diego, CA), and Rick Strobridge (CEO, Entra Health, El Cajon, CA)

Tuckson Health Connection's Managing Partner Dr. Reed Tuckson moderated a panel that was nominally about the revenue-enhancing effects of big data, but turned into a discussion about why big data is not very widely used in healthcare. Dr. Amy Hester (University of Arkansas for Medical Science, Little Rock, AR) spearheaded this facet of the panel, commenting that big data focuses efforts on the wrong group of people: "Big data focuses efforts on physician providers when, really, the largest healthcare provider workforce in America are nurses." Physicians can only handle so much cognitive load, and are greatly outnumbered by the nursing staff. Dr. Hester's comments, thus, raise the question of how to feed data to a physician without overwhelming them, yet acknowledging the importance of having all the data on a patient on hand. We've long pointed out that providers, including nurses, are all tremendously over-burdened in their practices. Instead of passing the duty of keeping track of patient data on to nurses, we believe a future in which clinical decision support systems guide providers would be much more appropriate - much like patients, providers don't necessarily want or need heaps of data, they want the resulting insights. AI can analyze data and derive diagnoses and treatments, allowing the provider to spend more time on the human elements of care (psychology, quality of life, relationships, etc.). That, to us, is the real promise of big data in the clinic.

- **Mr. Chris Wasden (University of Utah, Salt Lake City, UT) made a very interesting point about the evaluation of healthcare value in the United States:** The entire healthcare system is based on average cost measures, not the real costs a patient faces navigating the system. Reliance on average versus real cost results in sub-optimal data, especially since healthcare reform is not evenly distributed across the country. More granular data collection would greatly behoove policymakers, industry, and providers as they try to understand the degree of financial stress different groups of patients experience. A new database, announced by former CMS leader Andy Slavitt at [JPM 2017](#) may hold part of the answer: For the first time in the 50-year history of Medicaid, there will be a comprehensive data platform containing claims and pharmacy data. This represents a major de-siloing of masses of data, and while only encompassing the Medicaid population, will provide a birds-eye view of cost disparity in the US.

BREATHING NEW LIFE INTO CLINICAL TRIALS

Jeremy Sohn (Novartis, Basel, Switzerland)

Novartis' Mr. Jeremy Sohn, the company's Vice President of Digital Business Development and Licensing, discussed the potential for technology to revolutionize clinical trial design and improve outcomes. "It's not about pills - our incentives shouldn't be whether another person takes a drug, but on the outcomes." Mr. Sohn described digital health tools and services as simple as phoning patients to enhance their engagement with the therapy at hand. The teaming-up of drug and device could lead to better medication adherence, accelerated behavior change, real-time monitoring of health effects, intelligent drug delivery, personalized medicine... the list could go on. We enjoyed hearing Novartis' approach to clinical trial design, and we're glad to see a real focus on outcomes from the pharma giant. That said, a common criticism of clinical trials is enrollment of "perfect patients" - real-world outcomes data often doesn't measure up to what the phase 3 results showed, due to a wider patient population and fewer supports outside the context of a clinical trial. The solution, in our eyes, is to make digital tools a reality not only for clinical trials, but for patients in real-world clinical settings.

THE WEARABLE REVOLUTION: TRANSFORMING CARE FROM HOSPITAL TO HOME

Mark Ott, MD (Chief Medical Officer, InterMountain Healthcare, Salt Lake City, UT)

InterMountain Healthcare CMO and Qualcomm Life Advisory Council member Dr. Mark Ott spoke about his experiences running trials that use wearables to increase patient ambulation. He shared that patients in hospitals primarily care about four things: (i) being kept safe from harm; (ii) getting their illness healed; (iii) being treated with dignity and respect; and, most importantly, (iv) getting home as soon as possible. Post-operative walking, he continued, is one way to achieve the last goal - statistics show that, all things equal, the more a patient walks in the hospital, the sooner they go home. Yet there are challenges to implementing widespread ambulation programs throughout health systems: It can be difficult to motivate patients to get out of hospital beds due to possible pain and/or fatigue, and providers lack the time and resources to monitor and encourage patient activity. Dr. Ott detailed a sophisticated wearable sensor that could address these hurdles by measuring both steps and shuffling (which traditional trackers cannot easily measure) and automatically uploading data for clinicians to review. The sensor uses algorithms to create personalized goals based on patient data, interpret gait patterns, and fine tune its sensors for individualized patient accuracy. At almost every digital health meeting we attend, a speaker inevitably makes a joke about how they used their Fitbit for a week and it's been in their bedside drawer ever since. We would assume that many patients in the hospital are more motivated to reach their recommended step goals because it would help them get healthy sooner, but we wonder if the data that Dr. Ott et al. have collected would support this conclusion.

--by Jennifer Zhao, Brian Levine, Payal Marathe, and Kelly Close