DECONSTRUCTING THE TELEHEALTH INDUSTRY

2016 INDUSTRY WHITE PAPER

Ziegler

CAPITAL :: INVESTMENTS :: ADVICE

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INTRODUCTION

Telehealth has become the fastest-growing segment of the healthcare industry as patients, providers, payors, employers and legislators have started to recognize the segment's far-reaching ability to provide the solutions necessary to significantly bend the cost curve while materially improving quality of life for patients and their caregivers. Successful Telehealth offerings strive to achieve five interdependent goals:

- Improving Outcomes;
- Enhancing Care Coordination;
- Maximizing Clinical Efficiency;
- Driving Consumer Engagement; and
- Reducing Costs.

The Telehealth industry is well-positioned to solve some of the most persistent challenges of 21st century healthcare. We believe Telehealth solutions are poised to become a "standard of care" for accessing healthcare in the future. Encouraged by early adopters' success stories and the advancement of technology — to a point where delivering care through non-traditional means is practical and widely accepted — healthcare providers as well as insurers, employers and governmental agencies, are shifting their views toward providing and paying for Telehealth solutions. The sector has numerous favorable tailwinds:

- Telehealth solutions are the "elixir" for the looming crisis of system-wide provider shortages;
- According to the National Business Group on Health, nine in 10 large U.S. employers will make Telehealth services available to employees in states where it is allowed next year (2017), a sharp increase from 70% this year *(Source: "Large Employers' 2017 Health Plan Design Survey." National Business Group on Health®. June 2016.)*;
- The legislative and reimbursement policies that have traditionally been a barrier to Telehealth's progress are beginning to favor the evolving landscape (e.g., 31 states have Parity Laws that limit private health insurers from discriminating against certain Telehealth services when making reimbursement decisions and more than 100 state bills aimed at facilitating increased Telehealth payments for expanded services are introduced annually *(Source: "DC, HI and RI Prove No State Is Too Small for Telemedicine." American Telemedicine Association. July 14, 2016.)*);
- Telehealth solutions are an ideal fit for shared-risk payment models like ACOs and MACRAS's APM models, which are on the cusp of dramatically changing the healthcare landscape;
- With the advent of user-friendly Telehealth devices, consumers are more willing than ever to accept non-traditional healthcare delivery for the sake of convenience, cost control and accessibility;
- According to RNCOS's recent report, "Global Telemedicine Market Outlook 2022," the market for telemedicine was valued at $21 billion in 2015, and is anticipated to grow at a CAGR of approximately 19% during 2015–2022 *(Source: "Global Telemedicine Market Outlook 2022." RNCOS. June 2016.)*;
- The confluence of these forces not only makes Telehealth the fastest-growing subsector within healthcare, but also a market ripe for increasing interest from the investment community.

At Ziegler, we believe that the shift toward Telehealth is inevitable. We also believe that the Telehealth ecosystem can be too complex for many stakeholders to digest. Oftentimes, the Telehealth community is painted with too broad of a brush. The value propositions, business models and maturity levels of the various sub-segments vary dramatically — for instance, the drivers of Hospital-Based Solutions (e.g., tele-ICU, Rad, Neuro/Stroke, and Psych) are completely different from those faced by Primary Care Virtual Visit players; which are different from those seen in the Chronic Care Management sector; which are different from drivers impacting Behavioral Health companies; which are very different from those in the Senior Living/Aging at Home space; which differ from the drivers impacting the myriad of enabling tools — you get the point.

*We believe that an important step in the evolution of the Telehealth sector is to begin to deconstruct the ecosystem into digestible subsegments that will help drive awareness and adoption of these critical tools. At the end of this white paper, you will find **Ziegler's Telehealth Sector Map**, which provides our view of the entire Telehealth ecosystem on a high-level organizational grid.*

The structure of this white paper is broken down into four distinct placemats. The goal is to present our view of the Telehealth industry in a concise, graphical format that will assist various stakeholders in envisioning the potential of the Telehealth industry in their business sectors.

The four placemats are summarized below:

1. DRIVING FORCES FOR TELEHEALTH:

What drives Telehealth? This placemat highlights the key characteristics of successful Telehealth programs. It also provides a discussion of the historical barriers to Telehealth adoption, recent favorable tailwinds and the rapidly evolving future of the Telehealth sector.

2. TELEHEALTH PROGRAMS GAINING TRACTION ACROSS A BROAD UNIVERSE OF STAKEHOLDERS:

How are Telehealth programs gaining traction? Several developments have promoted the demand for, and supply of, Telehealth solutions. These trends are primarily influenced by the changing preferences, needs and choices of eight key healthcare stakeholder groups: (i) consumers/patients; (ii) physicians; (iii) hospitals/health systems; (iv) employers; (v) senior living organizations/post-acute/hospice; (vi) pharmacies/health retailers; (vii) payors; and (viii) pharmaceutical providers/CROs. This section also lists the key goals of Telehealth and discusses how achievement of these goals addresses the challenges of the modern healthcare system as a whole.

3. TELEHEALTH ECOSYSTEM:

What subsegments constitute Telehealth? What are the tools and channels that make up the Telehealth ecosystem? Here we present a unique view of the Telehealth ecosystem broken down by solution offerings, enabling tools, delivery channels and payors. We also specifically highlight the importance of data integration in connecting the various channels of Telehealth solution offerings.

4. ZIEGLER'S TELEHEALTH SECTOR MAP:

How do you deconstruct the Telehealth sector? The sector map reflects Ziegler's unique vision of the entire industry as a number of discrete subsegments. At the highest level, Telehealth is broken down into three categories: remote patient monitoring; wearable clinical sensors and wireless peripherals; and mobile clinical communications. The sector map includes examples of companies in each subsegment, a visualization of key Telehealth participants, and a listing of active strategic investors. We hope that **Ziegler's Telehealth Sector Map** will provide company executives, investors, employers, policy makers, payors and consumers with a better understanding of the continuously evolving Telehealth field.

DRIVING FORCES FOR TELEHEALTH

STAKEHOLDERS

Patient, Family Member/Caregiver, Neighbor, Case Worker, Home Security, Telecom/Cable, EMS Transport, Pharmacist, Physician, Hospital, VA, Outpatient Service, Home Health, Behavioral Health, Prison, CCRC, Assisted Living, Skilled Nursing, Hospice, ACO, Commercial Payor, Medicare & Medicaid, HCIT, HIE, Broker, Union, OEM, Device Manufacturer, Pharma

CHARACTERISTICS OF SUCCESSFUL TELEHEALTH PROGRAMS – BEING DISRUPTIVE WITHOUT BEING DISRUPTING

Stakeholder-specific Telehealth programs optimize supply & demand needs to utilize scarce resources most efficiently

KEY ELEMENTS

1. Easy to use and implement
2. Embedded within existing workflow
3. Analytically-driven engagement
4. Filters out the noise
5. Provides timely, relevant feedback

PROGRAM REQUIREMENTS

Program champions	Enrollment management	Education and training	Care transition tools	Care coordination tools	Logistics management	Reporting tools	Accountability	Measurability

CREATES

Enhanced patient self-management	Evidence-based care pathways	Value-based care solutions

HISTORICAL BARRIERS TO TELEHEALTH ADOPTION – SIGNIFICANT PROGRESS MADE IN THE LAST SEVERAL YEARS

- Adoption rates
- Apathy
- Competing IT department priorities
- Cost
- Ease of use
- Establishing common terminology
- Hard to define ROI
- Inconsistent ongoing compliance
- Interoperability
- Lack of awareness
- Lack of reimbursement opportunity
- Medical establishment resistance
- Medical malpractice concerns
- Misaligned incentives
- Poor training and implementation
- Regulatory hurdles
- Slow adoption of smartphones/technology by senior population
- Telecom infrastructure/bandwidth
- Uncoordinated engagement efforts

RECENT FAVORABLE TAILWINDS

1 *Need for more efficient delivery models*

- Increasing demand driven by:
  - ACA adding 40 million newly insured lives
  - Boomer generation moving into high healthcare-consumption years
- Looming provider shortages

2 *Payment models are better aligned to Telehealth solutions*

- Shift from FFS to FFV
- Increasing number of ACOs
- Readmission penalties
- Self-insured employers/payors offering incentives
- Shift of economic burden to the consumers

3 *Proven use cases (Tele Rad, Tele Stroke, Tele ICU) have become standards of care*

- Demonstrated favorable outcomes and measurable ROIs
- Significantly increasing MDs, nurses and patients' comfort with Telehealth technologies

4 *Favorable reimbursement trends*

- Parity laws
- CCM
- Medicaid support

5 *Acceptance and commoditization of Telehealth-enabling technologies from smartphones to peripherals to wearable sensors*

- Proliferation of low-cost devices that are secure and easy to use and integrate
- Smartphone usage has grown from 19% to 30% in the last three years (2013-2015) for the senior population[1]

6 *Improving analytical tools driving intelligently targeted engagement*

- Passive monitoring
- Geo-targeting alerts
- Unobtrusive vital sign monitoring
- Seamlessly embedded education and content

RAPIDLY EVOLVING FUTURE STATE

- Aligned financial incentives
- Artificial intelligence
- Avatars
- Big data analytics
- Digestible sensors
- Evidence-based medicine
- Gamification
- Genomic coordination
- Geo-targeting
- Implantable devices
- Measurable order sets and guidance
- MedApp formularies
- Predictive analytics
- Smart homes
- Smart tattoos

[1] *Source: "U.S. Smartphone Use in 2015." Pew Research Center. April 1, 2015.*

TELEHEALTH PROGRAMS GAINING TRACTION ACROSS A BROAD UNIVERSE OF STAKEHOLDERS

TELEHEALTH SITS AT THE INTERSECTION OF EIGHT SIGNIFICANT STAKEHOLDER GROUPS IN TODAY'S HEALTHCARE SYSTEM:

CONSUMERS/PATIENTS

- Avoid the "unhealthy" setting of physician offices/ERs/ retail clinics
- Experience an unprecedented convenience factor – especially for low acuity/repeat illnesses
- High-deductible/high-copay plans making economics of even self-pay Telehealth solutions very attractive
- Enhances ability to self-manage, track and store health content
- Receive relevant, timely and unobtrusive reminders and alerts to prompt behavior changes
- Strengthen communications with family members and caregivers
- Employer, payor and pharmacy rewards programs drive utilization

PHYSICIANS

- Triage patients more efficiently – reduce in-office wait times
- Manage/track chronically ill patients more effectively
- Diversify/supplement income streams
- Provide physicians with a more complete view of patient health status
- Address growing digital appetite/demands
- Align quickly with rapidly evolving shared risk models
- Increase complexity levels of in-office visits
- Improve productivity of nurses and mid-levels
- Engage patients and drive healthy behavior change at teachable moments

HOSPITALS/HEALTH SYSTEMS/VA

- Reduce avoidable readmissions
- Keep patients within a health system's network
- Triage ER demand more efficiently
- Manage/track chronically ill patients more effectively
- Improve care transition handoffs
- Differentiate brands in a competitive marketplace
- Improve management of psych patients
- Align with rapidly evolving shared risk models more effectively
- ACOs and PCMHs promote care delivery in the most appropriate setting

EMPLOYERS/BROKERS

- Improve wellness – drive specific programs/rewards:
  - Smoking cessation, weight management, etc.
- Enhance productivity by reducing travel and wait time
- Counterbalance the trend of increasing employee financial responsibility in high-deductible plans
- Reduce overall healthcare spend with more timely, consistent delivery of care
- Encourage adoption of impactful chronic care management and behavioral change solutions with creative benefits designs
- Improve employee satisfaction and reduce absenteeism

TELEHEALTH GOALS

Drive Consumer Engagement:
- Modify behavior
- Promote healthier lifestyles

Improve Clinical Efficiency:
- Ease impact of clinical shortages – nurses and doctors
- Improve care coordination
- Increase staff efficiencies
- Speed time to intervention

Reduce Cost:
- Deliver care in an optimal cost environment
- Deliver tangible ROI

Improve Outcomes:
- Avoid unnecessary hospitalization
- Enhance patient safety
- Reduce errors
- Speed time to recovery
- Reduce readmissions

Enhance Care Coordination:
- Improve caregiver communication
- Improve data capture, monitoring and sharing
- Improve healthcare access

SENIOR LIVING/POST-ACUTE/HOSPICE

- Utilize scarce clinical resources more efficiently
- Avoid unnecessary hospitalizations/ER visits
- Manage/track chronically ill patients more effectively
- Increase medication and therapy adherence and compliance
- Creates brand differentiation in a competitive marketplace
- Enhance caregiver/family member communication
- Gain the ability to measure changes in ADLs and vitals 24/7
- See early warning signs of health issues – engage in "proactive" vs. "reactive" care
- Safety monitoring solutions to increase patient security and family member/caregiver comfort
- Slow transition into more acute settings – reduce vacancy rates

PHARMACIES/HEALTH RETAILERS

- Support adherence and compliance
- Position as the retail destination of choice for the Telehealth wireless peripheral boom
- Pharmacists viewed as trusted advocates for Telehealth apps
- Drive loyalty with rewards programs
- Kiosks as a hub for Telehealth solutions
- Utilize retail pharmacy websites as trusted channels for driving adoption of Telehealth solutions
- Access to wireless peripherals will drive new traffic into retail pharmacies
- Competitive differentiator

PAYORS

- Provide appropriate care in the most effective cost settings
- Enhance adherence and compliance to evidence-based pathways
- Modify patient behavior – promote healthier living
- Share risk with employees more effectively by increasing alternatives for benefit plan designs
- Reduce unnecessary ER visits
- Solutions effectively align with rapidly evolving shared risk payment models
- Significantly reduce readmissions
- Drive better compliance for annual screenings
- Reduce overall healthcare costs with more timely, consistent delivery of care

PHARMACEUTICAL PROVIDERS/CROS

- Drive medication adherence
- Promote formulary compliance
- Deliver content and educational material efficiently
- Broaden clinical trial catchment areas to improve access and compliance
- Identify and intervene in the case of adverse events with more speed, precision and consistency
- Shorten time-to-market for new drugs
- Lower trial duration and cost
- Enhance recruitment while improving retainage

TELEHEALTH ECOSYSTEM

SOLUTION OFFERINGS

AMBULATORY/OUTPATIENT

VIRTUAL VISIT/PRIMARY CARE TRIAGE

WELLNESS/COMPLIANCE
- Adherence/Compliance:
  - Medication
  - Rehab
  - Discharge Instructions
- Cognitive Fitness
- Education/Content
- Health Risk Assessment
- Nutrition
- Wellness

BEHAVIORAL HEALTH
- ADHD/ADD
- Anxiety/Panic Attack
- Depression/Bipolar
- Drug/Alcohol Abuse
- Eating Disorders
- Maternal Health/PPD
- PTSD
- Smoking Cessation
- Speech Therapy
- STDs
- Weight Management

CHRONIC CARE MANAGEMENT
- Cardiac:
  - CHF, COPD
- Diabetes:
  - Type 1, Type 2
  - Prediabetes
- End-Stage Renal Disease
- Eye Disease
- High-Risk Pregnancy
- Hypertension
- Neurological Disorders
- Oncology
- Respiratory:
  - Asthma, Cystic Fibrosis

FACILITY BASED

HOSPITALS/CLINICS

Build, Buy, Partner
- Tele Cardiology
- Tele Dermatology
- Tele ER/Trauma
- Tele ICU/NICU
- Tele Infectious Disease
- Tele Pathology
- Tele Psych
- Tele Radiology
- Tele Stroke
- Tele Wound Care

CARING AT HOME SOLUTIONS/POST-ACUTE

HOME HEALTH/ STEP-DOWN
- Caregiver
- Communication
- Education and Content
- PERS
- Post-Discharge Monitoring
- Rehab Compliance
- Vital Sign Monitoring

SENIOR LIVING
- ADL Passive Monitors
- Cognitive Fitness
- Education/Content
- Fitness Tracking
- Medication Management
- PERS
- Pull Cord
- Social Engagement
- Telehealth

ENABLING TOOLS, DELIVERY MECHANISMS

ENABLING TOOLS

Communication
- Asynchronous Communication
- Chat
- Gamification
- GPS
- IVR Reminders
- Social Networks
- Store and Forward
- Telephonic
- Texting
- Video

Wireless
- Wireless Peripherals:
  - Blood Pressure Monitors
  - Cardiac Monitors
  - Fitbits
  - Glucometers
  - Inhalers
  - Pedometers
  - Scales
  - Spirometers
  - SpO_2 Monitors
  - Wearable Sensors

Other
- Caregiver Tools
- Digestible Sensors
- Implantable Devices
- Passive Monitoring Sensors
- Rewards:
  - Employer
  - Payor
  - Pharmacy
- RFID
- Robotics
- Smart Medication Dispensers

DATA INTEGRATION
- **Alarm Management**
- **Analytics**
- **Case Management Software**
- **Claims Data**
- **Clinical Trial Management Systems**
- **EMRs**
- **Lab Information Systems**
- **Middleware**
- **Nurse Call**
- **Pharmacy Management Systems**
- **Practice Management Software**
- **Radiology Information Systems**

CHANNELS/CLIENTS

DELIVERY CHANNELS
- Big Box Retailers
- Caregivers
- Consulting Firms
- CROs
- DTCs
- Employers
- Home Health
- Home Security Cos.
- Hospital/Health Systems
- Long-Term Care Providers
- Payors:
  - Commercial
  - Federal
  - State
- Pharma
- Physician Offices
- Telecom/Cable
- Trade Unions
- VA

PAYORS

PAYORS
- Self-Pay & Family
- Commercial
- Medicare
- Medicaid
- Employers
- Unions
- Hospitals
- ACOs
- Philanthropic Associations
- CROs
- Pharmaceuticals

ZIEGLER'S TELEHEALTH SECTOR MAP

REMOTE PATIENT MONITORING

CLINICAL SOLUTIONS

Triage (Primary & Specialty)
Hospital-Based Solutions
Clinical Trial Solutions
Kiosks

CARING AT HOME SOLUTIONS/POST-ACUTE

In-Home Monitoring
PERS/mPERS/Safety/Fall/Wander Detection
Adherence & Compliance Tools
Post-Acute Settings

WEARABLE CLINICAL SENSORS/ WIRELESS PERIPHERALS

CHRONIC CARE MANAGEMENT

Disease Focused – Cardiac, Diabetes, Respiratory, etc.
Vital Signs Monitoring
Consumer Wellness & Fitness
Data Integration

MOBILE CLINICAL COMMUNICATIONS

CARE DELIVERY PRODUCTIVITY

Clinical Communication (Inside & Outside of Hospital)
Text/Voice/Video
Telepresence/Robotics/Avatar
Telemedicine Platforms

REPRESENTATIVE SUBSECTOR COMPANIES

TRIAGE (PRIMARY & SPECIALTY)
- American Well
- AskTheDoctor.com
- Babyscripts
- BrightMD
- CareClix
- Carena
- Chiron Health
- CirrusMD
- Consejo Sano
- Direct Derm
- Doctor on Demand
- FONEMED
- Fusionetics
- HealthJoy
- HealthTap
- Intellivisit
- Maven
- MDLive
- OTN
- Pager
- SnapMD
- Spruce
- SwiftMD
- Teladoc
- TouchCare Health
- Wildflower Health
- Zipnosis

CLINICAL TRIALS
- AiCure
- AMC Health
- Clinical Link
- Exco InTouch

KIOSKS
- American Well
- Higi/Stayhealthy
- MedAvail
- Pursuant Health

HOSPITAL-BASED SOLUTIONS
- AcuteCare Telemedicine
- Advanced ICU Care
- AirStrip
- EA Health
- InvisionHeart
- Mercy Virtual
- NeuroCall
- PatientSafe Solutions
- ProgenyHealth
- REACH Health
- Specialists on Call

BEHAVIORAL HEALTH
- 1DocWay
- AbilTo
- Aligned Telehealth
- FasPsych
- HealthLinkNow
- InSight Telepsychiatry
- Innovatel
- JSA Health
- M3
- Palo AltoHealth Sciences
- Presence Learning
- Regroup Therapy
- Talkspace
- Triggr Health
- WeCounsel

2ND OPINION
- 2nd.MD
- Best Doctors
- Grand Rounds
- RubiconMD
- Second Opinion

IN-HOME MONITORING
- AFrame Digital
- AMC Health
- Care Tech Systems
- Critical Signal Technology
- GrandCare
- Health Recovery Solutions
- Ideal Life
- Medisafe
- Medocity
- TouchPointCare
- Vivify Health
- VRI

ADHERENCE & COMPLIANCE
- AiCure
- Ayogo Health
- HealthPrize
- Mango Health
- Proteus Digital Health
- Reflexion Health
- RespondWell

LAB
- Analyte Health
- IGGBO
- PWNHealth

SLEEP
- NewNRG

EYE CARE – RETINAL SCREENING
- 20/20 Now
- IRIS
- Opternative

PERS
- Connect America
- GreatCall/Lively
- Life Alert
- Mobile Help
- Tunstall/AMAC

SAFETY/WANDER/ADL
- Healthsense
- OnKol
- Owlet

MOBILE CAREGIVER ORDERING
- Care.com
- CareLinx
- ClearCare
- HomeHero
- HomeTeam
- Honor

SENIOR LIVING SOLUTIONS
- Breezie
- CareMerge
- Healthsense
- Independa
- Satchel Health
- TripleCare

ON-DEMAND URGENT CARE
- DispatchHealth
- Dose Healthcare
- One Medical

CARDIAC
- AliveCor
- BioTelemetry
- Cardiac Designs
- Cardiio
- InfoBionic
- Intelesens
- iRhythm
- Isansys
- LifeWatch
- MedStreaming
- MedTel24
- Preventice/eCardio
- SHL Telemedicine
- Toumaz
- Vital Connect

VITAL SIGNS
- PhysIQ
- Proteus Digital Health
- Qardio
- Scanadu
- Sotera

SERVICE PROVIDERS
- FitnessHealth
- Premise Health
- Viverae
- Wellness Corp Solutions

DIABETES
- Entra Health
- Glooko
- Kurbo
- Livongo
- Omada
- Senseonics
- Telcare

RESPIRATORY
- Alvio
- Cohero Health
- LifeMap Solutions
- Propeller Health

WELLNESS
- Canary Health
- CellScope
- Fitbit
- Kurbo
- Misfit
- Noom
- Omada

DATA INTEGRATION
- Ginger.io
- Sentrian
- Validic

CLINICAL COMMUNICATION
1. Nursing Communications
2. Provider Communications
3. Alarm Management
4. Middleware

- Audacious Inquiry
- Bernoulli
- CaptureProof
- Connexall
- Cureatr
- DocBookMD
- Extension Healthcare
- First Opinion
- GenerationOne
- HipaaChat
- Medigram
- Mobile Heartbeat
- PatientSafe Solutions
- PeraHealth
- PerfectServe
- Spok
- TigerText
- Vidyo
- Voalte
- Vocera
- WoundMatrix

PATIENT ENGAGEMENT/ NAVIGATION
- Accolade
- Eliza
- Evive Health
- GetWellNetwork
- Limeade
- Redbrick Health
- Sharecare
- Wellbe
- Welltok

SCHEDULING
- Amion
- EZCall/Kronos
- Lightning Bolt Solutions
- Qgenda
- SpinFusion
- ZocDoc

TELEMEDICINE PLATFORMS
- AMD Global Telemedicine
- Avizia
- Enovate Medical
- GlobalMed
- InTouch Health
- Iron Bow
- Lund
- SwyMe
- ViTel Net

TELEPRESENCE/ROBOTICS
- Fluential
- Geppetto Avatars
- Giraff
- vGo
- VSee

CARE/CASE MANAGEMENT
- Altruista
- Casenet
- MedHOK
- ZeOmega

TELEHEALTH CONSULTING
- Healthbox
- Iron Bow

KEY TELEHEALTH PARTICIPANTS – PARTNERS, INVESTORS, ACQUIRORS

CONGLOMERATES
- BD Carefusion
- GE
- Philips
- Siemens
- Virgin
- Xerox

CONSUMER DEVICES
- Apple
- Google
- LG
- Motorola
- Nokia/Withings
- Samsung

CONSUMER WEARABLES
- Fitbit
- Jawbone
- UnderArmour

DATA ANALYTICS/CONTENT
- 3M
- Advisory Board
- Elsevier
- Experian
- IBM/Truven
- IMS Health
- Inovalon
- Medidata Solutions
- NantHealth
- Nuance
- Premier
- Press Ganey
- Verisk Health
- WebMD
- Wolters Kluwer

DEVICE & DIAGNOSTICS
- Alere
- Boston Scientific
- Hill – Rom/Welch Allyn
- Medtronic/Cardiocom
- ResMed/Brightree
- St. Jude

ENTERPRISE HEALTHCARE IT HOSPITAL/PHYSICIAN
- Allscripts
- Athenahealth
- Cerner
- eClinicalWorks
- Epic

ENTERPRISE HEALTHCARE IT SENIOR LIVING
- HealthMEDX
- Matrixcare/AOD
- PointClickCare

HEALTHCARE DISTRIBUTOR
- Amerisource Bergen
- Cardinal
- Henry Schein
- McKesson

HEALTHCARE SERVICES
- Almost Family
- Amedisys
- AmSurg/Envision
- DaVita
- Fresenius
- MEDNAX/vRad
- TeamHealth

INFRASTRUCTURE/ CONNECTIVITY
- CSC
- Intel
- Qualcomm

LAB
- LabCorp
- Quest

PAYOR
- Aetna~Humana
- Anthem~Cigna
- BCBS
- Centene/Healthnet
- Kaiser
- Molina
- United/Optum
- WellCare

PHARMACEUTICALS
- Abbott
- Bayer
- Baxter
- J&J
- Merck
- Novartis
- Pfizer
- TEVA

REMOTE MONITORING
- Bosch
- Honeywell
- Tunstall/AMAC

RETAIL PHARMACY
- CVS Health
- Walgreens/Rite Aid
- Walmart

SECURITY
- ADT/Protection 1
- Alarm.com
- Ascent/Monitronics
- Harris
- Leidos
- Stanley

TELECOM
- AT&T
- Sprint
- Verizon

STRATEGIC INVESTORS
- Adventist
- Ascension Ventures
- Baxter Ventures
- Cambia Health
- CVS Ventures
- Dignity
- dRx Capital
- GE Ventures
- Google
- Heritage
- Humana
- Kaiser
- LabCorp
- McKesson Ventures
- Mosaic
- Providence
- Qualcomm
- Sandbox
- Siemens Ventures
- Summation
- Sutter

GROWTH OF THE TELEHEALTH INDUSTRY

MARCH 2013

The market for technologies and applications for **remote patient monitoring reached $10.6 billion in 2012, up from $8.9 billion in 2011**, according to The Advisory Board research. *(Source: "Advanced Remote Patient Monitoring Systems, 6th Edition." Kalorama Information. March 28, 2013.)*

According to Research2guidance's Global Mobile Health Marketing Report 2013-2017, the **mHealth market will grow to be worth $26 billion by 2017.** *(Source: "Mobile Health Market Report." Research2Guidance. March 4, 2013.)*

OCTOBER 2013

BCC Research indicates that the global Telehome and **Telemedicine market was valued at almost $13.8 billion** in 2012 and is expected to **grow $35.1 billion by 2018**, representing a five-year **CAGR of 16.9%** from 2013 to 2018. *(Source: "Global Markets and Telemedicine Technologies." BCC Research. October 2013.)*

NOVEMBER 2013

Focusing more of their market assessment on emerging economies, Allied Analytics estimated the global mHealth market to reach **$58.8 billion by 2020**, at a 32.3% CAGR. *(Source: "mHealth Market – Global Mobile Healthcare Industry Size, Analysis, Share, Growth Trends, and Forecast, 2012-2020." Allied Market Research. November 2013.)*

FEBRUARY 2014

Worldwide revenue for **Telehealth devices and services is expected to swell to $4.5 billion in 2018**, up from $440.6 million in 2013, based on data from an IHS. The number of patients using Telehealth services will rise to **7 million in 2018, up from less than 350,000 in 2013**. *(Source: "Global Telehealth Market Set to Expand." IHS Markit. February 2014.)*

JUNE 2014

CRM devices accounted for two-thirds of all connected monitoring devices. After CRM devices, **sleep therapy and Telehealth were the next largest device groups**, according to Berg Insight. *(Source: "mHealth and Home Monitoring." Berg Insight. June 2014.)*

Three million patients around the world were using connected home medical monitoring devices in 2013, but this number will jump to **19.1 million by 2018**, according to a report from research firm Berg Insight. **Remote patient monitoring revenues reached $5.8 billion in 2013** and are expected to grow to **$26.4 billion by 2018**. Around 76% of these revenues came from connected medical devices. *(Source: "mHealth and Home Monitoring." Berg Insight. June 2014.)*

In just the first quarter of 2014, **digital health funding reached $700 million**, an 87% year-over-year growth from the same quarter in 2013. *(Source: "Global Remote Patient Monitoring." Mobi Health News. June 2014.)*

SEPTEMBER 2014

Global professional firm Towers Watson says **Telemedicine could potentially save U.S. employers $6 billion a year**. In a survey of employers at companies with 1,000 employees or more, Towers Watson found that currently, **22% offer Telemedicine consultation as a cost-saving alternative** to emergency room or primary care visits. And by 2017, **another 34% of employers said they were considering adopting Telemedicine services**. Towers Watson analysis further showed **1 in 7 primary care visits could be addressed through Telemedicine**, including video visits, phone calls and Telemedicine kiosks. *(Source: "2014 Health Care Changes Ahead Survey." Towers Watson. September 2014.)*

SEPTEMBER 2015

According to a Markets Research Report, the global mHealth market is estimated to account for approximately **$18 billion in 2016**. This market is expected to exhibit a **remarkable 40% CAGR between 2015 and 2020**. *(Source: "The mHealth Ecosystem: 2015 – 2030." Signals and Systems Telecom. September 2015.)*

NOVEMBER 2015

The global **mHealth apps market was estimated to be valued at $14.1 billion** in 2015 and is **expected to reach $59.5 billion by 2020** at a healthy CAGR of 33.4%. *(Source: "mHealth Solutions Market." Markets and Markets. November 2015.)*

DECEMBER 2015

Bring your own device (BYOD) connectivity will be preferred by patient groups and will be used for **remote monitoring of 15.2 million patients in 2020.** *(Source: "mHealth and Home Monitoring." M2M Research Series. December 2015.)*

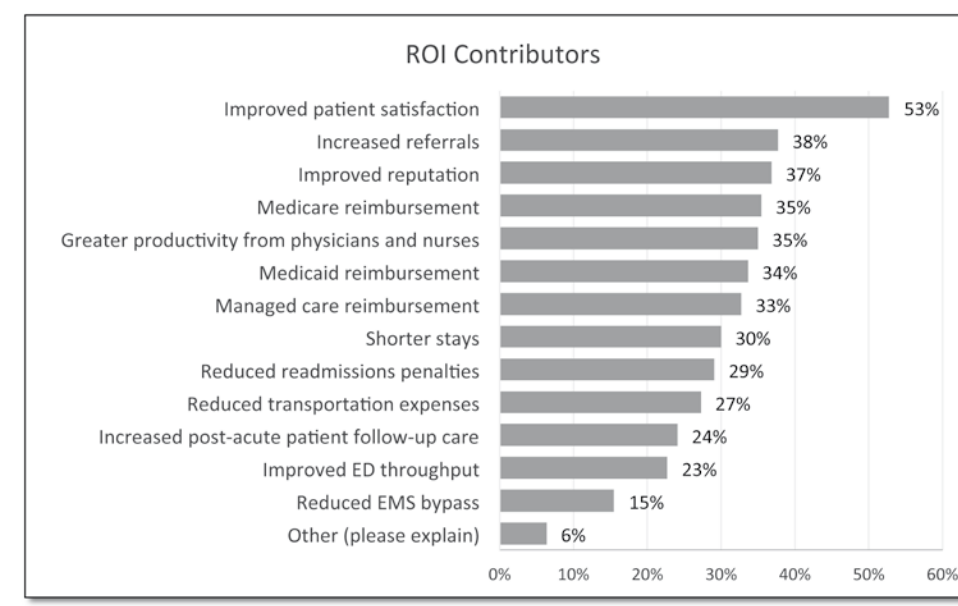
Cellular connectivity will account for 19.2 million connections by 2020 and will replace PSTN and LAN as the **de-facto standard for communications**, according to Berg Insights. *(Source: "mHealth and Home Monitoring." Berg Insight. 7th Edition. December 2015.)*

Five million patients around the world were using connected home medical monitoring devices in late 2015. This number **grew by 51%** as the market entered a growth phase fueled by **rising market acceptance** in several key verticals. Berg Insights estimates that the number of **remotely monitored patients will grow at a CAGR of 48.9% to reach 36.1 million by 2020.** *(Source: "mHealth and Home Monitoring." Berg Insight. 7th Edition. December 2015.)*

Remote patient monitoring (RPM) revenues reached **$6.8 billion** in 2015 and are expected to grow at **a CAGR of 32.1% to reach $27.5 billion** by 2020. **Connected medical devices** accounted for **71% of total RPM revenues** in 2015; however, revenues from mHealth connectivity solutions, care delivery platforms and mHealth care programs are growing at a faster rate and will account for **46.3% of total revenues in 2020**. *(Source: "mHealth and Home Monitoring." M2M Research Series. December 2015.)*

FEBRUARY 2016

With more than **7 billion mobile subscribers**, mHealth sectors are rapidly gaining traction from diverse range of vertical sectors. *(Source: "mHealth Ecosystem Market Size, Share and Growth Report." Radiant Insights, Inc. February 2016.)*



(Source: "2016 U.S. Telemedicine Industry Benchmark Survey." REACH Health. March 2016.)

CONCLUSION

The Telehealth industry is at the cusp of economic, structural, cultural and financial changes that will revolutionize the way in which we access and provide healthcare. Healthcare providers and payors are becoming increasingly cognizant of the need to deliver healthcare at a greater scale and lower cost than ever before, all while improving quality and outcomes. We believe that Telehealth solutions will be a critical catalyst and enabler to facilitate these necessary changes and will be the foundation of the next generation of healthcare.

The healthcare system as we know it is riddled with incomplete solutions, outdated communication technologies and a myriad of limitations on scaling.

Telehealth provides an innovative, user-friendly solution that can make healthcare less expensive, more accessible to historically underserved populations and higher-quality for treating everything from mundane sprains to acute cardiac conditions. Lawmakers at the federal and state levels have an opportunity to expand coverage, remove restrictions and standardize regulatory requirements so that providers, patients and other key stakeholders are incentivized to make the shift toward Telehealth.

Those inside the Telehealth industry also need to help facilitate this change by educating providers and patients about the benefits of Telehealth and the number, scope and scalability of available solutions.

The time is right for a Telehealth boom. Data management solutions and intelligence-based, predictive engagement tools, when married with evidence-based medicine, are Telehealth's Holy Grail. As industry veteran Lee Shapiro recently stated, "Consumer engagement will be the blockbuster drug of the 21st century." When you combine targeted, predictive analytics with fully engaged consumers, you truly have the ability to change healthcare at every level.

Telehealth solutions can be the catalyzing force to make this a near-term reality.

We are still in the early innings of the Telehealth sector's evolution, and building **awareness** and driving sustainable **engagement** are the primary goals of the current players in the space… but **trust** and **safety** will be the cornerstones of maintaining long-term adoption… and **proven use cases** and defensible **ROIs** are rapidly making Telehealth solutions an irreplaceable part of the underlying fabric of today's healthcare delivery system.

GRANT CHAMBERLAIN
MANAGING DIRECTOR

ABOUT THE AUTHOR

Grant Chamberlain joined Ziegler in 2015 as a Managing Director in the Corporate Finance Healthcare Practice. With over 20 years of investment banking experience, Grant has advised some of the leading healthcare systems, including Sharp Healthcare, Cedars-Sinai and Baylor Health, along with several of the most innovative mHealth companies, including AirStrip, MDLive and Voalte. At Ziegler, Grant leads the Telehealth sector coverage — which includes remote monitoring and wireless healthcare solutions — after spending 15 years advising HCIT and tech-enabled outsourcing services companies on a broad variety of M&A, joint ventures/partnerships and private financings. In addition, Grant is an elected member of the Board of Directors of the American Telemedicine Association (ATA), the leading international resource and advocate promoting the use of advanced remote medical technologies.

ABOUT ZIEGLER CORPORATE FINANCE HEALTHCARE

Ziegler has long-standing relationships with healthcare providers, information technology firms, financial sponsors and other thought leaders across the nation, giving us unique insight into emerging trends and the future direction of the healthcare industry.

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