Real-life considerations for Health Systems integrating Patient Generated Data
Health System Data

Payer Data: Paid Claims, Eligibility

Administrative data: Charges, Cost, Payments

Quality measurement, Benchmarking

EMR: Structured (vitals, labs, orders)

EMR: Unstructured clinical notes

Genomics, proteomics

Patient generated data

Pharmacy data

Patient Satisfaction

Low Complexity

Moderate Complexity

Highest Complexity
Key considerations

- Emory Pilot
- Patient consent
- App ecosystem and your EMR
- The Build and integration considerations
- Analytics
- Workflows supported
Device Connectivity

Prescribed Devices
For:
- Serious disease monitoring
- Readmission prevention

Needs:
- Works out-of-box for patient
- High reliability
- Near real-time oversight

Answer:

Bring Your Own Device
For:
- Non-critical surveillance
- Replacing paper log books
- Wellness participation

Needs:
- Low/no cost to organization
- Easy connectivity for consumers
- Wide consumer choice in devices and apps

Answer:
Consent and enrollment

EMORY HEALTHCARE WILL NOT MONITOR THE HEALTH INFORMATION YOU SUBMIT ON A REAL-TIME BASIS AND, UNLESS OTHERWISE DETERMINED BY YOUR PROVIDER, YOUR PROVIDER WILL ONLY VIEW AND USE THE INFORMATION IN CONJUNCTION WITH IN-PERSON APPOINTMENTS OR OTHER CONSULTATIONS.

on your iPhone or iPod. EMORY HEALTHCARE IS NOT RESPONSIBLE FOR THE SECURITY AND PRIVACY OF THE EQUIPMENT AND MOBILE APPLICATIONS USED BY YOU TO MEASURE AND COLLECT THE RESULTS OF HEALTH TESTS OR MONITORING, THE MOBILE DEVICE YOU USE, OR THE APPLE HEALTH KIT.
Where to partner?
How does Livongo for Diabetes™ Work?

The program has three components:

**The Connected Device**
The industry’s first interactive, cellular-enabled blood glucose monitoring system automatically transmits blood glucose readings, activity information, and information on how a person is feeling to provide a real-time picture of their health.

**The Smart Cloud**
A smart cloud develops the insight: analyzes the data, determines what should be done, and gives instant feedback that leads to effective self-management.

**The Virtual Care Team**
A team of Certified Diabetes Educators are available for support and education for patients 24/7/365.

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**About Cerner**
At Cerner, we’re continuously building upon our foundation of intelligent solutions for the health care industry. Our technologies connect people and systems, putting information where it’s needed most. By providing financial, IT management and consulting services, we support organizations and communities of every size.

**About Livongo Health™**
Livongo Health™ is reinventing the way they manage chronic conditions by blending the power of technology, real-time information and human support to make life easier for people with chronic conditions, starting with diabetes.
The Build

• Where do you view the data? (what interfaces are needed)
  – In patient portal? Web portal into application? Integration into EMR?

• Who and how are results viewed?
  – Do you require verification? Are devices prescribed? What is the sampling frequency (how much data)?
  – Related: who is looking at the data?

• Latency
  – Real time flow of data vs upload during the visit?

• Training and documentation for patient and provider
  – Device use, data transfer, troubleshooting, user support
Data ≠ Knowledge

Number of people who drowned by falling into a pool correlates with Films Nicolas Cage appeared in

Correlation: 65.6% (r=0.666004, p>0.05)

![Graph showing the correlation between the number of pool drownings and the number of films Nicolas Cage appeared in, with a correlation of 65.6% and p>0.05.](image-url)

Data sources: Centers for Disease Control & Prevention and Internet Movie Database
Key consideration 1: Analytics

• What type of analytics are required?
  – Summary data
  – Flagging “abnormal values”?

• Is the granular data needed?
  – (including device data-accelerometer, gyroscope and acceleration, frequency, duration, intensity and step interpretation)
  – Where do you store it, analyze it?
    • Can you export to another application?
Key Consideration #2: What workflow does this support?

- Providers do not want “more data”
  - They need more information and better insights
  - Extra data to review, without context and meaning, means less time spent on meaningful activities
Questions?
Device Connectivity: Active Monitoring

- FDA listed as a Class I Medical Device Data System (MDDS) in the U.S., Class I MDD and CE registered in Europe, and Class I in Canada
- Cloud-based with a local connectivity hub
- Universally-interoperable with different medical devices and applications
- End-to-end wireless connectivity
- Two-way connection capabilities
- Broad spectrum of connectivity options, including 3G wireless
- Clients: Agnesian and Emory
Device Connectivity: Augmented Self Management

- Cloud-to-cloud connectivity with many popular apps and devices
- Patient-directed/managed
- Leverages Validic as the connectivity engine
- Only patients who are ‘whitelisted’ to share data will be presented this option

...and many more

HealtheLife

Cloud-Deployed CareAware iBus

Cerner Millennium

Cerner HealtheIntent
Device Connectivity: iOS App – HealtheLife

- Leverages the Apple HealthKit platform to capture metrics from any HealthKit-enabled iOS apps
- Data follows the same path to Cerner Millennium as the other options
- Provides a simple, free option for connectivity for those using the Apple iOS ecosystem
- Only patients who are ‘whitelisted’ to share data will be presented this option
Data ≠ Knowledge

Source: Vali Chandrasekaran, Bloomberg Business