Market Insights: Predictive Clinical Analytics in the Marketplace

Hillrom acquires BardyDx - Another piece of their multi-parameter clinical predictive surveillance System Puzzle

Hillrom is a growing giant of a healthcare system in the US that interestingly started out as a casket company that found its mark - first in hospital beds, then connectivity. Hillrom divested its casket company, Hillenbrand in 2008, creating Hillrom Holdings, (HRC), today a very forward-thinking healthcare IT company that is slowly performing some strategic moves that will greatly change its marketing vector in the next decade – from beds to data. Given their success so far, they make an interesting case-study.

 Hillrom has recently acquired:

- Welch-Allyn in 2015 for $2B USD – a physician's office brand leaning into technology
- Mortara Instrument in 2017 for $330M USD – innovating cardiology company that invented DICOM 12-lead ECG, FDA ECG Warehouse for TQT data (now Hillrom has divested that FDA relationship), annotated ECG format
- BardyDx in 2021 for $380M – a forward-thinking invasive cardiology company in Seattle

It is even more obvious from my perspective, as I worked for two of these acquired companies and consulted for another, that there is a master plan for cloud-based clinical predictive analytics, or "surveillance" as Hillrom calls it. But from a sheer expression of voice-of-the-marketplace, it shows that Hillrom is betting squarely on predictive analytics. Their acquisitions cover almost all of the right spots: predictive analytics, WAVE platform (Excel Medical), cardiology (Mortara/Welch-Allyn, BardyDx), and medical-device interfaces (Excel Medical).

Not just any analytics, but multi-parameter, near real-time, waveform-based analytics. Excel Medical's "Bedmaster" product is a black box that extrapolates data from UDP-based patient monitoring networks, parses, and drops into a SQL/NoSQL environment for processing. One can use this to power, for instance, the HeRO neonatal sepsis prediction software, or Dr. Andrew Seely's WAVE protocol based upon capnography waveform variability for ventilator weaning.

This platform gives Hillrom everything they need to be able to consume high-speed XML (HSDI) real-time waveform data from GE or Philips patient monitoring systems, as well as an Epic-approved FHIR/ Haiku interface.   As an example, OBS Medical's Visensia Safety Index is one of Hillrom's supported algorithms that consumes multiple parameters including heart rate, oxygen perfusion, temperature, and blood-pressure. The Visensia Safety Index can spot a patient deterioration from 6 hours a way with 86% positive predictive accuracy, from an algorithm that was originally designed to quantify jet-engine blade wear for Rolls-Royce invented at Oxford University.

This will make them uniquely suited for near real-time ambulatory waveform data ingestion, and 12 Lead ECG Management (including annotated ECG (aECG). I would not be surprised if they did not have an eye on IQVIA. It would seem that the wearable ambulatory surveillance market is as sound as the Bionet project anticipated, and in fact used the same Visensia/Unscrambl.ai data consumption model that Hillrom now uses, except better. It will be interesting to see how Philips Medical, who just purchased Capsule Technologies, counterplays with their own surveillance product line.