



Computers that learn, an IoT riot, other tech trends coming to practices soon

by: Roy Edroso

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Health IT

Medical tech innovations are much in the news these days. While many of these seem like distant, pie-in-the-sky ideas, experts tell *Part B News* you can expect see some widely used in practices over the next few years.

Natural language processing (NLP), for example, is emerging as a way to clean up unstructured data. Retail giant Amazon's AWS (Amazon Web Services) division announced Nov. 27 that it was launching Comprehend Medical – “a natural language processing service that makes it easy to use machine learning to extract relevant medical information from unstructured text ... [such as] doctors' notes, clinical trial reports and patient health records.” It's currently available only to customers of AWS.

An example of a possible use for Comprehend Medical given on the AWS home page is that it can “extract ‘methicillin-resistant Staphylococcus aureus,’ often input as ‘MRSA,’ and provide context, such as whether a patient has tested positive or negative, to make the extracted term meaningful.” Amazon also suggests applications for population health, identifying optimal candidates for clinical trials and more.

Comprehend Medical is not the only entity promising to parse raw medical data with technology. A spokesman for the Israeli firm MedAware tells us its product “utilizes AI [artificial intelligence] technology to eliminate prescription errors” by learning “the prescribing patterns of physicians, patients and institutions to identify those prescriptions that are outliers to learned pattern, catching the most unexpected errors [such as] a healthy patient prescribed chemo [or] an 80-year-old woman prescribed birth control.”

Taqee Khaled, director of innovation and strategy at digital business consultancy The Nerdery in Minneapolis, envisions many applications for programs that think and learn in practice administration: for example, “the possibilities for AI algorithms to look at vaccine and drug consumption rates, as a function of both broad seasonality as well as other hidden patterns, could create greater cost efficiency and quality of care,” Khaled says. “We're not seeing that quite yet, but it's not far away.”

It's all connected

Internet of things. Another hot topic is patient devices connected to, and communicating with, your electronic health record (EHR) on the “internet of things” (IoT) model that has given us Alexa and home maintenance apps like Nest. Though much of the discussion of these devices have centered on the Apple Watch and its potential as a health-monitoring source for providers, experts to whom *Part B News* spoke say this trend will develop from many directions ([PBN 1/20/17](#)).

Interactive health care technology for patients and their care partners will take off as those products become more seamless and reliable, expects Liddy Manson, director of the AgingWell Hub at Georgetown University's Global Social Enterprise Initiative. That happened in the case of her daughter, a Type 1 diabetic who resisted using blood glucose trackers into which she had to enter data manually until they were fully automatic – like the Dexcom unit she eventually adopted.

Manson predicts fast adoption for products that provide end-to-end service – as a hypothetical (for now) example, an automated pill-dispensing technology that delivers prescriptions “blister-packed from CVS with a HIPAA-compliant Alexa telling you to take your medication. That's what's going to make the seesaw tip: making solutions as an additive to technology that people are already using.” Some companies are already heading in that direction, she says, such as Withings with its Bluetooth-enabled products such as a scale that also reads BMI, muscle and bone mass and heart rate.

Khaled knows several companies working on funding for and testing IoT ideas for hospitals. One such idea: Smart catheters. “You might have several [catheterized] patients in a ward, and a nurse's note: ‘five hours before that one is replaced,’” says Khaled. “Now think about a place where the device is counting the time and sending messages to an IoT cloud, which pushes it to the nursing station where a heatmap is visualizing infection control risk.”

Manson says CMS is likely to support automated systems like these with its remote monitoring codes because of both the care and the cost advantages they offer; take, for example, a remote hypertension monitoring whereby “if you’re outside the range, a nurse will call. For Medicare, it will be cheaper to pay for a nurse to watch alerts than for the patient to end up in the ER.”

Health information exchanges (HIEs) for chronic care management (CCM). You may not have thought much about HIEs lately, but these helper organizations created by the Affordable Care Act to help practices with their health IT can play a big part in medical tech development (PBN 9/2/13). Health care business consultancy HealthBI in Phoenix contracts with HIEs, sometimes on behalf of its payer-clients, to help with care coordination because the HIEs have connections among multiple providers that the providers themselves may not have.

In a typical scenario, “a member registers in the ED [emergency department], the HIE is notified and sends us the notification in real time,” says Claire Zimmerman, vice president, product innovation and management at the company. “In five minutes, we can tell our providers that the member is in the hospital and apprise them on the member’s condition.” Then the providers can map out appropriate follow-up.

“We work with the HIEs with a robust footprint, such as Heath Current here in Arizona, and others who have cracked the nut in statewide adoption,” says Zimmerman. “When [the HIE environment] is not so sophisticated, we work with the payers to go to the hospitals directly.”

Apps for opioids. The opioid crisis and the federal government’s commitment to fighting it provide fertile ground for tech product development. In May the U.S. Food & Drug Administration (FDA) launched an “innovation challenge” to get tech companies to develop “novel solutions to detecting, treating and preventing addiction, addressing diversion and treating pain.” In November FDA selected eight winners of the challenge, including a pain therapy device from Avanos and a rapid dry screen from Algomex Rx, which products FDA promised expedited review and other special considerations.

Meanwhile FDA continues to advance other opioid treatment helpers; on Dec. 10, for example, the agency cleared the reSET-O mobile app “to help increase retention (the amount of time a patient participates) in an outpatient treatment program for individuals with opioid use disorder (OUD).” And private companies are cooking up their own solutions: health care services company KAMMCO, for example, has just launched a dashboard for providers in their HIE that “allows clinicians to identify individuals in their patient population who received at least one prescription/administration of opioids/controlled substances, by facility and date range up to 12 months.” This provides more complete data than even typical prescription drug monitoring programs (PDMPs), the company claims, because in addition to filled prescription data, it also includes medications administered to patients in healthcare facilities.

Telehealth vs. burnout

Tech for docs’ sake. While experts generally expect more telehealth, and more payment for telehealth, in the medium if not near future, Letitia Dzirasa, M.D., health innovation officer for software company Fearless Solutions in Baltimore, sees a usually overlooked driver for that adoption: the growing issue of provider burnout ([PBN 7/16/18](#)).

“As a physician, I see a desire on the part of more and more physicians to practice remotely,” says Dzirasa. “As we see more physician burnout and fewer PCPs [primary care providers] in practice, telehealth will become a more popular option. Physicians want better work-life balance; there’s a shift in culture, especially among primary care providers, because they’re under more pressure as the first line; in the shift from inpatient to outpatient care to reduce cost, PCPs get more pressure and see more burnout.”

Expect more tech to be devoted to maximizing the time and minimizing the hassle for providers. “Look across the current literature, and you’ll see the term ‘quadruple aim’ is emerging over the past 18 to 24 months,” says Khaled. It’s similar to the better-known triple aim -- better care, better population health behaviors and reduced costs -- but adds improvement of the clinician experience ([PBN 10/6/10](#)). “We talk about cost, care quality and patient experience, but what’s often overlooked is clinicians and their high-margin pressure,” says Khaled. “What about that? When we reduce administrative burden, the dream is, we increase efficiency [in the practice].”

Certain small-tech innovations also will offer practice administration efficiencies – for example, tablets used for patient education, replacing the pamphlet racks of old, says Dzirasa. “As the patient waits, for example, they can go over aspects of their disease, which can be customized to the patient’s condition, education levels, etc. If patients don’t want to read something [in the waiting room], they’re usually willing to *watch* something.” – Roy Edroso (redroso@decisionhealth.com)