



IssueBrief

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A photograph showing a human hand on the left and a white, articulated robotic hand on the right, both reaching towards each other against a clear blue sky background. The human hand is open, palm up, while the robotic hand is more closed, with fingers slightly curled.

It's all about the client: How augmented intelligence brings AI to bear on the case management process

Artificial intelligence, or AI, is already changing the practice of case management. Technologists, developers and data scientists are designing the platforms and tools that providers and payers are using to make care determinations, assess real-time risk and align workflows based on granular patient insights.

Case managers are incorporating these new tools into their daily workflow and their engagement with clients, says MaryBeth Kurland, CEO of the Commission for Case Manager Certification (CCMC). "It's still early, and over the next few years, case managers can expect to see technology tools becoming more advanced and integrated across the health care system."

Artificial intelligence refers to machine learning and algorithms that learn from data we feed it. In some cases, no human involvement is required.

But the robot overlords aren't taking over health care anytime soon. In case management, the human involvement remains essential.

Understanding augmented intelligence

Augmented intelligence has emerged as a response to artificial intelligence—one that asserts the value of the *human* experience. "The word 'augmented' reinforces the role that the human intelligence plays when taking this machine learning and heating it up against all this data that

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we bring into it,” explains Deborah Viola, PhD, vice president of data management and analytics at the Westchester Medical Center Health Network.

Augmented intelligence, she says, is an “alternative conceptualization” of AI that emphasizes that AI is designed to enhance and work with human intelligence, not replace it. A guiding principle is this: AI must always be understood to be a tool to augment professional clinical judgment, not a technology to replace or override it.¹

For case managers, this probably seems obvious; you may be able to remove the human element

from certain diagnostic tasks, but you cannot remove it from case management. So, in many ways, augmented intelligence encompasses what case managers do with technology every day. “Case management stands to benefit greatly from AI-driven analytics,” Kurland says, “but case managers will *always* bring their knowledge, wisdom and expertise to bear. It’s never *just* about the technology. It’s always about the client.”

Aligning AI and the case management process

Using data analytics already aligns with the case management process—especially the screening and assessment phases, Viola says. “What you’re really doing is *descriptive analytics*,” she says. That includes looking at health risk

assessments, diagnoses, biomedical screens, etc. “This allows us to classify, then stratify patients to determine the appropriate level of the intervention.”

Some organizations use AI algorithms to stratify before the assessment phase. As long as the patient lists are shared with the case management team, this process increases efficiency, says Viola. “Whether it’s automated or human, you review the information from the screening and assessment phases, and you think about the appropriate care plan for the patient.” And that, of course, touches on planning.

The data analytics team can support all of this and move from descriptive to predictive analytics, she says. For more on predictive analytics, see sidebar Turning your past into your future. In fact, that’s what she and her team have already accomplished.

“On the data and analytics side, we thought about how we could introduce this and help our case managers,” Viola recounts. But they didn’t have to: Two case manager teams approached her and her colleagues.

One case manager team was from the ambulatory side; the other from the acute care side. They started with ambulatory.

The case managers wanted a way to improve risk assessment. They asked for a daily work list of patients stratified by risk to help them align their resources and save time. Using historical

¹ Crigger, Elliott, and Christopher Khoury. (2019). “Making Policy on Augmented Intelligence in Health Care.” *Journal of Ethics. American Medical Association*.



Definitions

Artificial intelligence (AI) is the theory and development of computer systems able to perform tasks intelligently similar to a human.

Machine learning is a type of AI that gives the ability for a computer to learn without being explicitly programmed. It uses an algorithm to parse data, learn from it and make decisions accordingly.

Augmented Intelligence is an alternative conceptualization of AI emphasizing the fact that it is designed to enhance and work with human intelligence, not replace it. In 2018, the American Medical Association (AMA) adopted a new policy, “Augmented Intelligence in Health Care,” to provide a broad framework for using AI in health care in ways that help ensure that AI realizes the promised benefits for patients, providers and the health care community.^a

Predictive analytics is a category of data analytics aimed at making predictions about future outcomes based on historical data and analytics techniques such as statistical modeling and machine learning.^b

^a Crigger, Elliott, and Christopher Khoury. (2019). “Making Policy on Augmented Intelligence in Health Care.” *Journal of Ethics. American Medical Association*.

^b Edwards, John. (2019, August 16). “Predictive analytics: Transforming data into future insights.” *CIO*.

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data and machine learning, Viola's team did just that. She shared the following case study about the project:

Problem: Case managers, with limited resources, needed an automated and reliable way to stratify a daily worklist of patients by risk.

Objective: Develop a readmission risk model that provides a risk score for each discharged inpatient indicating the patient's likelihood of being readmitted to the hospital.

Solution: Integrated Discharge & Population Health Planning Platform

We built a predictive model that creates a patient work list, stratified by risk and paired with additional relevant information.

It's accessible through a care management platform.

The predictive model was developed using an algorithm (the "random forest" algorithm) on historical data: 54,000 inpatient discharges. It provides a risk score for each discharged inpatient indicating that patient's likelihood of being readmitted.

Measuring Success: Improved accuracy and efficiency by identifying patients most at risk by 17% and saved 1,327 hours that had been used to assess risk and gather information from different sources. Those hours are now used to provide more patient care.

Read more: <https://www.healthcareitnews.com/news/machine-learning-system-saves-case-managers-1327-hours-year>

"Lo and behold we were able, in a very efficient way and working with the team, to produce a tool of great value to them that allowed them to more appropriately target patients," she says.

In another situation, the case managers were interested in identifying those making repeated visits to the emergency department to target them for additional support. Descriptive analytics was the appropriate approach for this objective. Using historical data and a set of criteria to define "high utilizers," the team generated a list of patients for intervention. They didn't have to deploy AI.

What both examples illustrate, Viola says, is that the data analytics team can solve problems for case managers. "Everything we've developed has actually come from our own teams here. We don't think 'build it and they will come.'" Case managers and others bring the problems to them.

"It is very much a partnership. There isn't any model we developed here that we could have developed just sitting in a cubicle in front of our computers. What really helps is when we have an appreciation of what each other does."

She encourages case managers to think about this within their own organizations: Where is it that having a little bit more data might be helpful to you?




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The data analytics team is your friend: A checklist

As Viola makes clear, case managers can turn to their data analytics team for assistance. To make the most use of them, it helps to know what you need.

Ask yourself:

-  Where would having a little bit more data be useful?
-  What questions do you have about your patient population?
-  What data will help you help your clients and your organizations?

Bring those questions to your data analytics team, and you're likely to end up with valuable insights.

Turning your past into your future

Whether in retail, streaming video or health care, predictive analytics allows us to turn past data into future care, Viola says. To elucidate, she quotes Jill Lepore, Harvard professor and *New Yorker* staff writer:

"Predictive algorithms start out as historians: they study historical data to detect patterns. Then they become prophets: they devise mathematical formulas that explain the pattern, test the formulas against historical data withheld for the purpose, and use the formulas to make predictions about the future. That's why Amazon, Google, Facebook, and everyone else are collecting your data to feed to their algorithms: they want to turn your past into your future."[†]

Amazon would not exist without this machine learning, Viola points out. Based on your purchases it can predict what you'll be interested in buying next, she says. "Netflix uses that same machine learning to suggest other programming you might enjoy, based on your viewing history."

The historical data we look at is descriptive analytics. "We're all able to do this, and we can answer some very important questions," she says. Predictive analytics takes descriptive analytics a step further, allowing case management teams to identify the highest-risk clients.

In short, says Kurland, augmented intelligence allows case managers to use past data to ensure optimal care in the future.

[†] Lepore, Jill. (2019). "What 2018 Looked Like Fifty Years Ago." *The New Yorker*.

Even organizations that lack sophisticated AI technology can benefit. "We still have the power of descriptive analytics, and we still have the power of bringing in our own human experiences and thinking about how we might be able to improve on some of the work."

Of course, it's not just the case managers and data analytics professionals who need access to data. Patients and caregivers need it, too.

Become better consumers

Case managers can help clients become better consumers by helping them understand their health information and advocating for access. It's hard to be a health care consumer when you can't even access your own personal health data, but that's changing, she says.

"I think the federal government's Blue Button initiative is a good first step."

Participating organizations make it easy for patients to download and share their own health records. Several federal agencies, including the Departments of Defense, Medicare and Veterans Affairs, have implemented this capability for their beneficiaries. Viola also notes that numerous health plans and EHR vendors support this initiative. "It not only helps the patient have a better experience with providers, it allows them to share this information with caregivers and trusted individuals and organizations."

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But it all comes down to turning data into actionable information.

Plenty of data, not so much information

As an industry, health care creates and stores an enormous amount of data. "In fact, 30% percent of the entire world's store of data has been generated by the health care industry."

So, we *should* be able to produce more meaningful information, but that's not happening to the extent it should. She explains why: "The data exists but the sources are disparate, access is not always automated, and beyond measuring length of stay or mortality, analytics become more challenging. We need to actually be able to think about that data and say, 'How does this help us understand where we're getting value?'"

And that, Viola says, leads to another question: How can we contribute in a value-based type of payment program when traditionally we've worked in a

fee-for-service environment? "What kind of measures and metrics beyond, let's say, length of stay, would we need to even demonstrate those types of contributions?" Such questions, Viola says, open the door to many types of analyses.

Teach and advocate

"Case managers can be vocal advocates for how we can improve care for our patient clients," Viola says. Case managers can encourage clients to ask for data from their providers and health plans, while also advocating for them to have a better understanding of what the data means. "First and foremost, we need the information, and we need it in an understandable format. We spend a lot of time trying to help our patients understand what's available and what their coverage will allow so they can act on that information to make the decisions they need to make."

The Commission is already playing a role, says Kurland: "We regularly develop up-to-date educational materials to deal with issues that go beyond the case management process—including the impact of technology and data analytics. We not only host webinars and our New World Symposium, but we have also integrated these topics into our Case Management Body of Knowledge and Code of Professional Conduct for Case Managers."

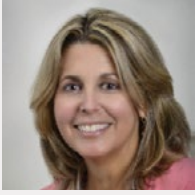
It's essential that case managers stay abreast of this topic:

"Technology, data and analytics have a very significant impact on the practice of case management, both how we're using it in our daily work and how our clients are using it to manage their health. It's exciting to think about the possibilities that come with easier, faster access to the information that we need, to help clients live their healthiest lives."

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About the Experts



Deborah Viola, PhD
Vice President
Data Management and Analytics
Westchester Medical Center Health Network

Deborah is responsible for information management activities across the Network including business intelligence, clinical efficiency, strategic analytics and population health analytics. Deborah provides leadership and vision for the planning and implementation of the enterprise data warehouse. This includes coordinating consultations with stakeholders across a ten-hospital system to defining business rules and system requirements that support the implementation of new technologies. Currently her team is focused on intentional analytics that integrate data and technology to enable interoperability that supports patient-provider relationships.

Prior to joining Westchester Medical Center, Deborah was an associate professor, director and co-founder of the doctoral program in health policy and management and the Center for Long Term Care Research & Policy at New York Medical College. She remains on the faculty as adjunct associate professor of health policy and management.

She received a doctorate in economics in 1998 from the Graduate School at the City University of New York as a Robert E. Gilleece Fellow. She has published across a wide range of topics; her recent work includes the development and refinement of new tools to integrate the social determinants of health into clinical treatment and prevention.



MaryBeth Kurland, CAE
Chief Executive Officer
Commission for Case Manager Certification

MaryBeth Kurland leads and sets the Commission's strategic mission and vision. She manages relationships with likeminded organizations and oversees business development as well as the Commission's programs, products and services. She works directly with the Board of Commissioners, building its corps of volunteer and subject-matter experts who directly support and evaluate certification and related services.

Prior to becoming CEO, Kurland served as the Commission's chief operations officer and was staff lead for the development and launch of the Commission's signature conference, the CCMC New World Symposium®. Kurland brings extensive experience to her role, having served as executive director of organizations including the Association of Medical Media, Office Business Center Association International and the League of Professional System Administrators.

She holds a bachelor's degree from the University of Delaware and is a member of the Institute for Credentialing Excellence, the American Society of Association Executives and the Mid-Atlantic Society of Association Executives. In 2011, Kurland was recognized as Association TRENDS Young & Aspiring Association Professional.



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