Algorithms Have a Role in Health Care, But Their Power Must Be Checked

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Patients aren't automobiles, and doctors aren't robots. Yet healthcare regulators are turning to formulaic computer algorithms to dictate how patients should be cared for, substituting machine-driven directives for the expertise of practicing physicians. Though algorithms and guidelines have a role in medicine, their power must be checked.

As recently reported in The Verge, states' Medicaid administrators are increasingly using algorithm software to make determinations regarding the home healthcare needs of patients in their long-term care systems. The article points to numerous instances in which incorrect or inadequate data fed into the systems, or poorly designed algorithms, caused sudden withdrawal of essential care from chronically dependent patients. This problem is not unique to Medicaid patients on long-term care.

Algorithms are employed by third-party payers to authorize tests, treatments, and hospitalizations. They are increasingly being used by healthcare regulators to "standardize" patient care, with a goal toward to reducing medical errors, redundancy of services, and, ultimately, healthcare costs. As a practicing general surgeon, this means I must adapt the way I care for my patients to algorithms derived by a consensus of experts who advise the designers of the algorithm.

These algorithms, often euphemistically called "guidelines," are one-size-fits-all recipes clinicians are *expected* to follow, despite their benign appellation. The electronic health record systems in hospitals and medical practices "nudge" practitioners to follow the algorithm and prevent doctors from ordering tests or performing procedures unless they follow the prescribed pathway. Sometimes they even require tests to be ordered that a practitioner may deem unnecessary. To override the algorithm, many steps and justifications are usually required, and practitioners are monitored for compliance with the guidelines. Too many overrides or deviations from the guidelines can lead to investigations and possible practice restrictions or other disciplinary actions. So practitioners have a strong incentive to adhere to the algorithm.

But patients are not machines designed to factory specification, and their malfunctions cannot all be addressed by consulting the manufacturer's instruction manual. Patients vary physically as well as cognitively and emotionally. They differ in the way they react to stress. They differ not only in their physiological responses to disease processes but in the way in which these responses are expressed through signs and symptoms. There are a variety of patient responses to different medical or surgical interventions.

Doctors are not one-size-fits-all either. Despite the tendency for those in health policy to disparage "intuitive" medical practice as not rational or evidence-based, so-called "intuitive medicine" should not be dismissed out of hand. Having been in clinical practice for over 35 years, I have been exposed to the many variations in history, symptoms, and physical findings—often counterintuitive ones—in which patients can manifest certain illnesses or respond to medical or surgical interventions. More experienced practitioners are able to see through the shortcomings in the guidelines and exercise proper judgment, even if that means deviating from the algorithm. Less experienced practitioners are more inclined to stick to the guidelines.

What's more, practicing under the yoke of the algorithm discourages critical thinking. There is a tendency to surrender to the algorithm. This jeopardizes good patient care and can impact outcomes. There are times when a patient's presentation and response to treatment do not follow the algorithm—their DNA did not get the memo about the guidelines. A physician must think "outside the box" to help that patient—an attribute that is discouraged and becomes a lost skill under the algorithmic regime.

This is not to say that algorithms and guidelines should be completely abandoned. They are useful and mostly correct. But algorithms should be judged in a proper light and applied more loosely. Algorithms should be the servants of patients and doctors, not their masters.

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