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How a best practice alert cut unneeded transfusions

Embedding a decision support tool in an EMR to nudge physicians toward an evidence-based practice—without ruffling feathers—can be a delicate process. But two physicians at Dartmouth-Hitchcock Medical Center did just that when they launched a best practice alert that encourages adherence to new guidelines for ordering blood.

Any hospital or clinic can create an effective alert as long as the EMR already contains the basic tool and the IT team understands how it should be implemented, says Peter D. Solberg, MD, hospitalist and medical director of the information systems division at Dartmouth-Hitchcock.

So shortly after the medical center rolled out its Epic EMR four years ago, “which was a big culture change for the institution, we set to work on the transfusion alert,” says Nancy M. Dunbar, MD, assistant professor of pathology and medicine and medical director of the blood bank at Dartmouth-Hitchcock. The opportunity to show a success story for the EMR, she explains, “was, I think, one of the reasons this project got traction, because if we could reduce unnecessary transfusions, that would both improve patient care and result in cost savings to the institution.”

A second factor driving the need for a best practice alert was the implementation of a more restrictive transfusion policy. In addition to requiring that most nonbleeding inpatients have hemoglobin levels of not more than 7 g/dL to be considered appropriate candidates for RBC transfusion, the policy stipulates that transfusions for nonbleeding patients should be ordered as single units and that an interval hemoglobin should be measured before ordering additional units.

The new policy represented another culture change, Dr. Dunbar says, because “a lot of our older providers are in the habit of always ordering two-unit transfusions; that’s the way it’s historically been done. The newer thinking is, why give two when one will do; in other words, give one and assess response before you automatically give another.”

The alert is one sentence that pops up in a yellow box on the computerized physician order entry system screen, explains Dr. Dunbar. “There’s just one alert, and it says either ‘this hemoglobin is too high; the last hemoglobin we have is this number,’ or ‘hemoglobin hasn’t been measured in the last 24 hours.’” The physician is then prompted to select from a menu of appropriate indications, provide a free-text order justification, or cancel the order. Providers can also override the alert and proceed with the order, which is an important feature because “you don’t really know if it’s a routine transfusion or a bleeding emergency,” says Dr. Dunbar. “We give them the benefit of the doubt.” To encourage physicians to order one unit of blood at a time, the hospital’s information technology

team removed the buttons that allowed physicians to order multiple units with one click, leaving only a single one-click option to order one unit.

A study of the impact of the alert and the reconfiguration of the single-unit versus multiple-unit options in the first six months after implementation found that the proportion of two-unit transfusions decreased from 47 percent to 15 percent and the total number of RBC units transfused decreased by 27 percent.

This was good news to the team implementing the clinical decision support tools, which had ongoing support from an informatics group headed by Dr. Solberg and composed of physicians representing a variety of specialties. “Our group often serves as the ordering provider representative in these conversations, and they needed to approve this project,” Dr. Solberg says. Their input helped the IT group fine-tune where and when the alerts would appear. “We didn’t want it to fire in pediatrics, for example, but we did want it in inpatient adult units,” he explains. “We also had to identify what the appropriate thresholds are for transfusing in different clinical settings.”

Building a best practice alert is an “iterative process,” Dr. Solberg continues. “There are all these kinks and things you don’t understand, which had to be corrected in order for it to work properly. One nice aspect of this system is that you can turn it on silently in the background so that users don’t see the alerts, but IT people can see them and determine if they’re correct. So we tested and worked on it for months before we implemented it.”

Even so, “it was not an entirely smooth rollout,” says Dr. Dunbar. “There were some bumps where it was firing inappropriately, and I think there was some physician dissatisfaction with that. Also, we found that if a patient had multiple hemoglobins measured in the same 24-hour period, the alert was initially pulling the first and not the most recent. But we were able to fix those problems.”

Because the project was the IT team’s first foray into using Epic’s best practice alert tool, “it took hundreds of hours to build this,” says Dr. Solberg. “The hope would be that it would take less time in the future.”

While Drs. Dunbar and Solberg are aware of the potential danger of alert fatigue, they believe there may be other opportunities for pathology-related alerts at Dartmouth-Hitchcock—for example, to encourage appropriate test utilization. “Once you start to go down this road, there are lots of ways we can intervene to improve care,” says Dr. Solberg. “This is a very fertile area for growth in most organizations.”

—Jan Bowers

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Health care heavy hitters in Pittsburgh form alliance

The University of Pittsburgh Medical Center has joined with Carnegie Mellon University and the University of Pittsburgh to form the Pittsburgh Health Data Alliance, which will consist of research and development centers focused on expanding health data analytics.

UPMC will, over the next six years, fund the research and development centers, starting with Pitt’s Center for Commercial Applications of Healthcare Data and Carnegie Mellon’s Center for Machine Learning and Health. The centers will also have access to several hundred million dollars in research grants and benefit from the expertise of scientists from all three collaborating institutions.

The Center for the Commercial Applications of Healthcare Data will research and invent new technology for potential use in commercial theranostics and imaging systems for patients and physicians. It will focus on personalized medicine for understanding diseases such as cancer and various lung disorders, genomics and imaging data, and methods for data capture and health care analytics. The center will be spearheaded by Michael Becich, MD, PhD, chair of the Department of Biomedical Informatics at Pitt.

The Center for Machine Learning and Health will focus on big health care data analytics; personalized medicine and disease modeling; issues of privacy, security, and compliance in the context of big data; data-driven patient and

provider education and training; and a new general framework for big data in health care. It will be led by Eric Xing, PhD, a professor in Carnegie Mellon's Department of Machine Learning.

"Through this partnership, our brilliant scientists at Pitt and CMU will have unprecedented resources for turning their innovative ideas into products and services that can truly better the lives of patients and society," says Patrick Gallagher, chancellor of the University of Pittsburgh. "The knowledge created here will result in the spin-off of many new companies and thousands of new jobs over the next decade."

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Omnyx and Argent enter digital pathology agreement

Omnyx, LLC, has executed a memorandum of understanding with Argent Global Services to provide hospitals and academic research facilities with consulting and change-management solutions that make it easier for pathology labs to adopt digital technologies.

Through the agreement, Omnyx will leverage Argent's 20 years of consulting expertise and add to its consulting portfolio a range of pilot offerings focused on operations improvement, organizational change management for digital pathology, and performance assessment and benchmarking.

"Together, we aim to improve digital pathology workflow and, ultimately, help pathologists connect patients with the right treatment," says Steve Stone, managing director of Argent, a process engineering and management consulting firm. "As pathologists adjust to new scanning equipment and software," he continues, "our joint consulting services will work with them to make a seamless transition and transform the way in which their labs utilize smart scanners and brilliant software throughout the clinical process."

The companies expect to make their joint offerings available to customers later this year through Omnyx, the digital pathology joint venture between GE Healthcare and the University of Pittsburgh Medical Center.

[**Omnyx**](#), 412-894-2100

[**Argent Global Services**](#), 405-848-1682

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AccuCore has introduced Lab Checklist Automation 5.5 to assist pathology laboratories with quality audits and inspections.

"Lab Checklist Automation reduces time managing your checklist [and] improves productivity by ensuring compliance while minimizing preparation for inspections and audits," according to a statement from the company. "It reduces risk by enabling governance of information relating to your checklist by uniting documents, forms, reports, and lab processes."

The cloud-based solution includes all checklist items and compliance measures in one dashboard. It can be used to help develop lab policies, procedures, and processes. Users can be trained on the system in less than 15 minutes.

[**AccuCore Group**](#), 267-564-5015

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Cartagenia upgrades software for genetics labs

Cartagenia, a provider of variant assessment and reporting support software, has released an upgrade of its Bench Lab NGS software platform. Users of the software can now implement the recently released American College of Medical Genetics and Genomics/Association for Molecular Pathology recommendations for standards and guidelines on interpreting sequence variants.

In a separate announcement, Cartagenia reported that it has entered a partnership with N-of-One, a provider of patient-specific clinical interpretation for molecular profiles at the disease, gene, and variant level. Users will be able to access N-of-One's services in the Bench Lab NGS software platform, allowing pathology genetics labs to integrate N-of-One clinical interpretation based on genomic profiling and tumor information into their somatic variant analyses and reporting workflows.

[Cartagenia](#), 617-475-5105

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Biomedical Systems adds to clinical trial offerings

Biomedical Systems has launched its second-generation clinical outcome assessment software for clinical trials. The new electronic patient recorded outcome, or ePRO, technology offers three platforms to collect and transmit patient data.

Biomedical Systems' electronic clinical outcome assessment, or eCOA, technology is used for clinical trials in more than 40 countries.

[Biomedical Systems](#), 314-576-6800

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