SCOTTSDALE INSTITUTE

INSIDE EDGE

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## Collaboration for Clinical Decision Support:

# An International Movement Toward Clinical Transformation

*EXECUTIVE SUMMARY*

A snowball may not be the first thing that comes to mind when considering clinical decision support (CDS), but the more involved you become in the CDS "movement," the more you realize it is, in the words of Jerry Osheroff, MD, like a snowball rolling down a hill, building up mass and momentum as it travels. Osheroff should know. With Scottsdale Institute as convener and facilitator, he's helped create and lead an international collaborative effort to better implement CDS in hospitals and health systems as the key tool in preventing medication errors, improving care quality and addressing changes in reimbursement signaled by "Never Events" and "Present on Admission."[1]

Osheroff, chief clinical informatics officer for Thomson Reuters, an SI sponsor, has combined SI's traditional collaborative opportunities with new Web 2.0 social media tools to not only dramatically expand the pool of experts working together on CDS but to accelerate the extraction and synthesis of the deep content gathered in the process. Given the stakes—CDS can literally mean the difference between life and death for millions of patients—this is a momentous undertaking.

The latest fruit of this collaboration is the book, "Improving Medication Use and Outcomes with CDS: A Step-by-Step Guide," slated for release by HIMSS in January 2009 (www.himss.org/cdsguide). In addition to playing a major role in convening the original group that kicked off the new guide, SI is a proud co-publisher and co-sponsor of the new guidebook,[2] which focuses on medication management, building out the CDS guidance outlined in HIMSS' best-selling 2005 book "Improving Outcomes with Clinical Decision Support: An Implementer's Guide," for which Osheroff was lead author.[3]

The new CDS book involved nearly 100 contributors and reviewers, including 13 co-editors. Collaborative technologies facilitated the process: The group used a wiki and SIWebII; Listserves of AMDIS, AMIA, HIMSS and ASHP were used to solicit reviewers (More than 200 requests to review came in only a few days.); Google Docs forms were utilized to gather feedback by chapter and reviewer.

1 See *Inside Edge* August 2008 for an overview of Never Events and Present on Admission.
2 In addition to SI and HIMSS, co-publishers are AMIA, ISMP, ASHP and AMDIS. In addition to SI, the book's co-sponsors are AHRQ, Epic, Eclipsys, CPSI, Memorial Hermann Healthcare System and Advocate Health Care.
3 Co-authors: Eric A. Pifer, MD, Jonathan M. Teich, MD, PhD, Dean F. Sittig, PhD, Robert A. Jenders, MD

***Scottsdale Institute Conferences 2008-2010***

**Spring Conference 2009**
April 29-May 1, 2009
Camelback Inn,
Scottsdale, Ariz.

**Fall Forum 2009**
Hosted by Texas Health Resources
Sept. 24-25, 2009
Fort Worth, Texas

**Spring Conference 2010**
April 14-16
Camelback Inn,
Scottsdale, Ariz.

**Fall Forum 2010**
Hosted by Intermountain Healthcare
Sept. 30-Oct. 1, 2010
Snowbird, Utah

SCOTTSDALE INSTITUTE

**Membership Services Office:**
1660 Highway 100 South
Suite 306
Minneapolis, MN 55416
T. 952.545.5880
F. 952.545.6116
E. scottsdale@scottsdaleinstitute.org
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**December 18**
*Is Medication Administration Technology Creating a Win/ Win at the Bedside?*
- Jason Hess, research director, KLAS Enterprises, Orem, Utah

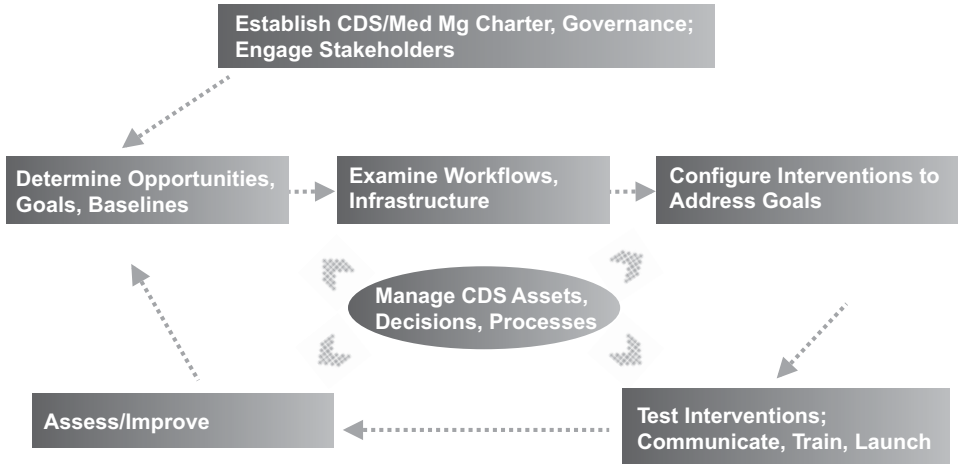
**January 8**
*Bridging Information Gaps across the Healthcare Continuum*
- Eric Leader, VP, Technology Architecture, Carefx, and former Chief Technology Architect, CHW, Phoenix

**January 12**
*The National Health IT Agenda: Progress Toward Interoperability*
- John W. Loonsk, MD, Office of the National Coordinator, Health and Human Services, Washington, D.C.

**January 13**
*Episodes of Care Measurement Using Payer Claims Data*
- Dogu Celebi, Chief Medical Officer, Ingenix Health Solutions, Eden Prairie, Minn.
- Dan Dunn, PhD, Chief Technology Officer, Ingenix Health Solutions, Eden Prairie, Minn.
- Nick Hilger, Senior VP, Ingenix Health Solutions, Eden Prairie, Minn.

*more events on next page*

## Medication Management Approach From New CDS Implementers' Guide




As a scribe brought in to help convert the "pearls" of content from these experts into narrative form, I was struck by the revolutionary nature of the process. It was exhilarating for a veteran healthcare IT writer to participate with many leading CDS experts, most from SI-member organizations, in what seemed to me an unprecedented initiative of cooperative sharing for the public good. Each of these contributors was balancing a demanding day job with his or her volunteer time on the team. I was impressed by their hard work, courtesy, patience and goodwill, especially given that they were all volunteers.

The new book is a valuable resource that weaves together the insights from many different individuals, roles and organizations. We encourage healthcare organizations to buy it and use it.

Before the ink is even dry on the new guidebook, the collaborative process that produced it has spawned several follow-on efforts. For example, one focuses on optimizing CDS in addressing specific performance imperatives. In this initiative, several leading participants in the book collaborative have begun by sharing and synthesizing CDS strategies for preventing venous thromboembolism or VTE (a common and deadly hospital acquired condition for which Medicare is no longer providing reimbursement); they expect to add other participants and address other topics over time.

## THOMSON REUTERS

**Jerry Osheroff, MD, Chief Clinical Informatics Officer, Thomson Reuters, Cherry Hill, N.J.**

In another follow-up effort to the book, Osheroff is developing a wiki to support ongoing conversation among implementers around the recommendations in the new CDS guide—both projects are

outlined further below. All these collaborative efforts are beginning to return value to the participants, and are expected to create tools and resources (like the latest guide) that are highly useful to others. Learn about these collaboratives (for example, by keeping an eye on pertinent SI communities and events, such as the 1/29/09 webinar) and consider joining.

This issue of *Inside Edge* aims to introduce you to the new guidebook, which hopefully your organization will find to be a powerful tool for enhancing the success and value of your CDS and performance improvement efforts. To do this we've interviewed several participants in this project and follow-on initiatives to tell their stories. We hope to spark your interest in participating in this shared enterprise, as well as others that harness collaboration approaches and technologies to advance care delivery.

## "It's my life"

"We felt honored to be a part of the collaborative that developed this latest guide on CDS and medication management," says Anwar Sirajuddin, MBBS, MS, clinical informaticist at Memorial Hermann Health System, an 11-hospital, integrated delivery system based in Houston, and an associate editor of the new book. "We used the previous CDS guide for everything, and we always thought it would be nice to participate. The main thing I work with is CDS. It's my life. After nearly three years I've learned so much from live experience," he says.

"Since our CDS initiatives are relatively new to the organization as a whole, this guide will give a better perspective on how to approach our local performance imperatives with CDS," Sirajuddin says. Going forward, Memorial Hermann will "refer to the new book over and over again to drive all of our CDS initiatives in a systematic manner. We would like to have everyone who is on our CDS oversight committee read this book and use it to help drive our CDS governance process," he says.

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**Anwar Sirajuddin, MBBS, Clinical Informaticist, Memorial Hermann Healthcare, Houston**

"It will help us to get everyone on the same page. Being the core developers/implementers of CDS interventions, it will help everyone to understand why we might be doing what we are doing."

Sirajuddin goes on to say that the amount of data flowing into the entire guidebook project was enormous, overwhelming the group with "lessons learned" and creating a major challenge for the group to filter and process this information. "We didn't have a good structure. After we sat down and did a lot of brainstorming we decided to organize it into eight chapters. Until we got that structure nailed down we were floundering. But there was still so much information and formatting that information, determining which comes first, and so on. That's a little tricky. There isn't a lot of literature out there. We were just taking a lot of experiences from folks."

*Upcoming Events continued*

**January 20**
*Banner Health E-Discovery Preparedness and Response Planning*
- Maritza Santamaria-Hoffman, RN, JD, Associate Litigation Attorney, Banner Health/Risk Management, Phoenix
- Matthew T. Clarke, Attorney, Ryley, Carlock & Applewhite, Phoenix

**January 21**
*Transparency through the EMR at Norton Healthcare*
- Steve Hester, CMO, Norton Healthcare, Louisville

**January 22**
*The Commonwealth Fund: Why Not the Best?*
- Anne-Marie J. Audet, MD, MSc, SM, VP, Quality Improvement and Efficiency, The Commonwealth Fund., New York, N.Y.

**January 27**
*IT Service Management: Aligning IT with the Business of Healthcare*
- Avery Cloud, MBA, PhD, VP, CIO, New Hanover Health Network, Wilmington, N.C.

**January 29**
*Improving Medication Management, Safety and Other Outcomes with Clinical Decision Support: A Step-by-Step Guide*
- Jerry Osheroff, MD, Chief Clinical Informatics Officer, Thomson Reuters, Cherry Hill, N.J.
- Joel Shoolin, DO, Vice President, Advocate HealthCare, Oak Brook, Ill.,
- Sirajuddin Anwar, MBBS, MS, Clinical Decision Support Lead, Memorial Hermann Healthcare, Houston

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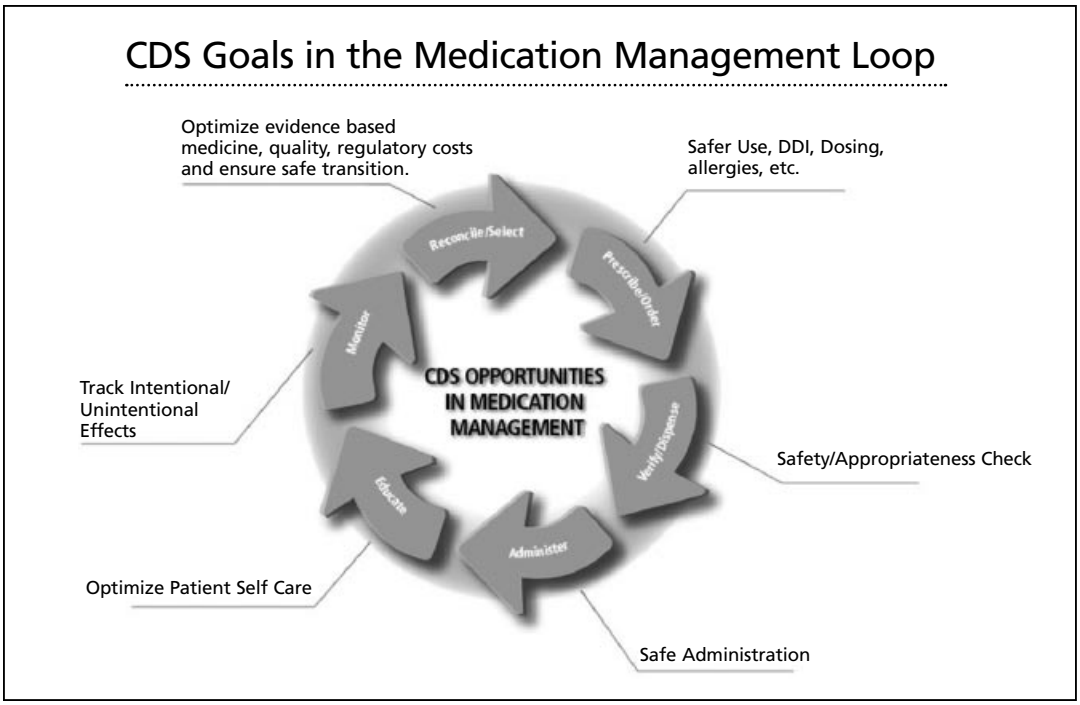


*"The whole concept of using CDS is fairly new to most of us," says Sirajuddin, who embodies the new CDS professional role that has emerged in the last three years at leading health systems.*

Despite the obstacles, the previous CDS book provided a critical roadmap. "The whole concept of using CDS is fairly new to most of us," says Sirajuddin, who embodies the new CDS professional role that has emerged in the last three years at leading health systems. There was a nice interplay between what each participant in the project knew they could share with others and what the participants were able to draw from the process to improve their local efforts. For example, Sirajuddin contributed lessons from his tasks highlighted below to the guide, and was able to apply to his day job what he learned from the other project collaborators.

## A day in the CDS life

A typical day for him begins by tackling the working list of CDS interventions from Memorial Hermann's EHR vendor and determining if it's even possible for the clinical information system to implement what he says is largely a list of concepts. They include, for example, using CDS to monitor anticoagulants to make sure patients are not receiving dangerous amounts, or the inappropriate use of sedatives in the elderly. Vendors are just one source; the other key source is the medical literature that exists on a specific medication.

Once it's determined if a particular CDS intervention can be implemented, the next step is to ascertain how. How will physicians, nurses and pharmacists be involved? Myriad factors and pathways are considered. It's necessary to identify workflow and how it would change. "You discuss it with that person as a primary stakeholder," explains Sirajuddin. "My role is to help prioritize. I give them options and we come to a consensus. I document it and then present it to a CDS oversight committee comprised of the various clinical users, departments and physicians and nurses. They look at it and say, 'It's good.'"

He then creates a mini-project plan that identifies the different tasks required for the build-out and test of the CDS. "While you're testing you're simultaneously putting out education to the stakeholders. You're also working with the data-repository group that has access to the back-end data and creates reports both of performance and financial data. They can provide us with data specificity. This is the metrics component in the new CDS Guidebook—how can we extract data that tells how we're using this tool and how we can improve?" says Sirajuddin.

"There are a whole lot of things occurring simultaneously and I'm the focal point," he says. "Once you start getting metrics you can monitor and see the scope of improvement and take it back to the CDS steering committee. It's a continuous cycle," says Sirajuddin, that the new guidebook has outlined in an understandable, step-by-step manner.

## Present at the creation

"This is probably the closest thing to a gold standard reference tool for CDS," says Luis Saldana, MD, MBA, medical director for clinical decision support at Texas Health Resources, based in Arlington, and an associate editor of the new CDS book. "The book will be a tool for us, a reference to assure that we are following accepted practices and principles of the field, which is short on such gold standard references."

The book should also be valuable into the future. "We always seem to circle back to the fundamentals when evaluating our own performance and strategy, and we will refer to this often to help assure that we keep our CDS program on track," he says. "CMIOs and all members of our decision support team will use the book. I hope those in positions to make decisions about budgets will also use it as a guide."

Saldana says the book provides a key component to THR's quest for quality. "Hopefully it will help us to build and maintain a high quality CDS program which will enhance the utility and safety of our EHR and CPOE systems at THR."

Ferdinand Velasco, MD, CMIO, Texas Health Resources, Arlington, Texas

Texas Health Resources

Another of the new book's associate editors, Ferdinand Velasco, MD, CMIO at THR, was serving on a HIMSS CDS task force chaired by Osheroff and was inspired by the original book on CDS, when the idea arose to "operationalize" it to the next level. "This is an important early application of Web 2.0 capabilities to medical informatics," he says. "It was a good experiment." By allowing multiple people to post content to the same document, the wiki was able to bring together mass collaboration on a particular subject that to our knowledge hasn't occurred in this way for CDS. Contributors from across the country, many grappling with just how to implement an effective CDS program in their own organizations, joined in the effort and stayed on to become associate editors assigned to chapters. Velasco, for example, ended up creating an initial draft

***"This is an important early application of Web 2.0 capabilities to medical informatics. It was a good experiment."***

synthesis of content that became Chapter Four, which deals with optimizing CDS for medication management within various clinical information systems such as CPOE, eMAR, and PHR.

Velasco recalls the fluid nature of the early discussion and writing: "It was a free-for-all. Like going to a conference and running into someone you know and saying, 'We have a problem. Do you have any experience with this?' Then you get a pearl. The problem is how do you compile all the individual insights?" This is exactly what Osheroff hopes to address in the follow-up efforts to use the well-vetted structure of the new guidebook to organize conversations among implementers who are trying to use the book to facilitate their own local implementations. For example, people across the country (and beyond) will be able to post feedback and insights on how they applied the book's concepts, and results they experienced. In this way, the guidance will become dynamic and hopefully ever more useful over time. "The journey is not yet over," Velasco says.

## Good marriage

"I'm personally interested in CDS and medication management and it seemed like a good marriage," says Joel Shoolin, DO, VP clinical information at Chicago-based Advocate Health Care, in reference to joining the collaborative that resulted in the new CDS guide for medication management. "It put together two pieces I'm interested in. It sounded a like a good opportunity to share—and we all didn't have to be in the same place."

Shoolin, also an associate editor of the new guidebook, says harnessing social media and the Internet for collaboration on best practices in that area was eye-opening. "The wiki concept was new to me. The book grew so large, it was sometimes difficult to move around. It wasn't what we were used to. I was more focused on my section on change management and communication (Chapter Six) but it gave people the opportunity to easily look at each other's work. That's how it was different than putting it on a Word document. It was more interactive and was easy to post recommendations."

*"We'll use the new guidebook at our CDS committee and pharmacy council for enlightenment and a way to standardize our processes and approach to medication CDS. My goal is to decrease ADEs to the Six Sigma level."*

Advocate Health Care

**Joe Shoolin, DO, VP, Clinical Information, Advocate Health Care, Oak Brook, Ill.**

The value of the new book, he says, "will be to raise awareness that medication management is a high priority and CDS is a tool to improve patient safety in this arena. We'll use it at our CDS committee and pharmacy council for enlightenment and a way to standardize our processes and approach to medication CDS. My goal is to decrease ADEs to the Six Sigma level."

Shoolin says Advocate was already well along in its implementation of CDS for medication management and that his participation in the collaborative was driven by the desire to share his lessons learned with other organizations. However, he was also interested in the book to better implement CDS throughout Advocate. "Part of my intention was to see what we can do to share with other people within Advocate" and the book seemed like a good way to do that, he says.

"We've done a lot of modification to our CDS system, especially to minimize annoyance from overdoing alerts," says Shoolin, adding that Advocate's EHR vendor, Cerner, has also evolved from its original static product to one that is much more configurable today. For example, some of the built-in alerts for drug/drug and allergy interactions were both much too sensitive and yet not specific enough, he notes. "Anything and everything was coming up as an alert. It's a case of the theoretical versus the practical."

## New frontier

A follow-up CDS collaborative led by Osheroff is relying on concepts and framework articulated in the latest CDS guidebook to address an even more specific imperative and challenge—eliminate hospital-acquired venous-thromboembolism, that is, blood clots acquired after surgery that are preventable with appropriate measures.

"First," says Memorial Hermann's Sirajuddin, citing the CDS guidebook, "we have to figure out what the opportunities are. For example, this is the prevalence of VTE; this is how it harms the patient, how much it's going to cost us. Next is to catalog our clinical information systems, to identify functionality available for delivering CDS interventions. We're pretty much applying every step of the new book. The next step is workflow assessment identifying who's responsible. Six care-delivery organizations are participating in the VTE project. We're all sharing the details and pros and cons of various CDS approaches. We needed to come up with standardized approaches to CDS-enabled workflow that can be adopted across organizations with different technology infrastructure and care processes. Then we identify interventions, going back to the guidebook chapter 'Designing Your Interventions,'" he says.

"This is a case study to determine if we can build on the value from that guide for even deeper collaborative performance improvement dives into very specific projects of high impact and high value. If six organizations can do that effectively, then we hope we can scale this to other organizations and conditions. Finding and applying the best approaches to CDS isn't a one-man show, it's a collaborative effort," Sirajuddin says.

"Never Events" and "Present on Admission" criteria are some of the drivers for the follow-on VTE collaborative, says Advocate's Shoolin, whose positive experience with the new guidebook has inspired him to continue on with the VTE collaborative. The goal of mass collaboration is to create a contagious methodology. "It becomes a viral movement," he says, in reference to such collaborative information sharing. THR's Velasco and Saldana are participating in the VTE initiative as well.

## Power of collaboration

David Collins, director of healthcare information systems at HIMSS, is leading HIMSS staff participation in the VTE collaborative. He notes that VTE was selected as the next CDS target for collaboration because it is the leading cause of preventable hospital deaths and one of the conditions for which CMS stopped reimbursement last month.

**Registration begins in January for the Spring Conference in Arizona**

**April 29-May 1, 2009**
*"IT Business Case, Value, and Cost"*

David Collins, Director, Healthcare Information Systems, HIMSS, Chicago

*"We are developing a new collaborative approach to learning from peers as to what works in applying CDS to address care delivery imperatives. We hope to go from six organizations—which represent many more facilities—to 60 to 600 and then 6,000."*

"We are not in the business of writing new clinical guidelines," says Collins. "We are developing a new collaborative approach to learning from peers as to what works in applying CDS to address care delivery imperatives. We hope to go from six organizations—which represent many more facilities—to 60 to 600 and then 6,000," that is, to ultimately involve all U.S. hospitals in the collaborative effort to harness the power of CDS to help improve care outcomes.

The process involves using a wiki, posting discussions and responses, and participating in weekly calls. "We're looking at common lessons and opportunities across six pilot sites. Everyone is doing their own thing as far as implementing CDS for VTE and then reporting back to the group," he says. From these explorations the group will develop "model CDS implementation practices" to advance their individual and collective efforts, and to share with others.

The VTE group took several weeks to settle on the free PB wiki, which allows discussions and posting of documents like PowerPoint presentations, spreadsheets and word processing documents. "It's fairly user-friendly," says Collins, who among other things is tasked with finding further grant funding for the project.

The collaborative's activities—that is related to the latest guidebook and the follow-on VTE effort—are being presented at meetings of the various participating societies: SI, AMIA, HIMSS, ASHP, AMDIS. Details of upcoming events will be distributed via the new wiki and the listserves of those organizations.

"What I'd like to see develop is even more of a consortium, even more experts joining in on this project," says Collins. "We can identify other areas to focus on. Everyone is learning lessons and compiling what works. That's the power of these associations."

## Leveraging your own

As medical director, clinical decision support, HealthEast in St. Paul, Minn., Paul Kleeberg, MD, is focused largely on converting the organization's system over to CPOE, so he had to do a "bit of a sales job" to convince HealthEast management to get involved in the VTE project. Kleeberg, who is also a reviewer and contributor to the new guide and chairs the HIMSS patient safety committee, says the first CDS guidebook was a good book to help answer the question, "How can I leverage the tools in our own system to improve outcomes in care?"

Kleeberg says the structured process of the first CDS guidebook, which covered areas like governance, inventory of existing systems and methods for evaluation and feedback, provides "a good working method for incorporating CDS into your organization. The new book dials down more specifically into all components of medication management. It's a more focused view, goes into greater depths and specifics," he notes.

The follow-on (VTE) project hones down even more finely on a specific and health system imperative and more limited set of care processes and outcomes. "The six care delivery organizations involved in the collaborative are talking about every CDS component related preventing hospital-acquired VTE. The hope is we can produce a set of 'model CDS practices' that can be used by a wide range of care sites, irrespective of the specific types or amount of clinical information systems they have deployed. That will require an organization to determine things like what their baseline population is—(over 18 years of age, over 14 for pediatric hospitals, etc.) Also, what tools do they use in grading risk?" says Kleeberg.

"Our system has baselines and our outcomes look at the percent of patients screened, not so much how many VTEs but how often is screening done when appropriate," he says. Part of the process is determining exactly what works best in preventing VTEs. It's a challenge because there are myriad details like the fact that a particular nurse asked a particular question during the screening. "Do you do a blinded study over five years—the gold standard of science? We can't afford to do that. Are there complications from the prophylaxis, blood thinners or coagulants?" he asks.

"This is to be continued. It takes a lot of phone time, we share lots of information on the wiki, drill down and do a round robin on each element—for example, how is each site using CDS to help make sure that patients are stratified for VTE risk, and to ensure that those who need it have appropriate VTE prophylaxis ordered and administered."

## Conclusion

"This is not a book, it's a conversation," Osheroff says in the preface to the new CDS book. An ongoing conversation focused on driving widespread improvements in care delivery processes and outcomes. It follows then that reading this one-of-kind guidebook for implementing CDS for medication management is just the beginning. Collaboration, it's clear on many levels today, is the zeitgeist or spirit of the age. And whether it's addressing medication management, core measures, or other pressing drivers, he says, "mass collaboration facilitates the many-to-many conversations needed to create an effective roadmap for getting through this jungle. We can do much better working together than toiling in relative isolation —which is typically how organizations approach CDS."

Consider this your official invitation to join in the fray. Get involved in an SI community such as the CDS Community at SIWebII. "You stand more to gain from participating in a collaborative than from going it alone. Those working together in our CDS efforts are finding the process very productive, helpful and even enjoyable. The stakes—often the wellbeing, life, and death of patients that have entrusted their care to us—couldn't be higher, so there's a strong obligation to get this right," he says.

Says Osheroff: "In 2003 five of us came together with this dream of synthesizing best practices for CDS. It began as a teeny snowball rolling down the hill." Today that snowball is on its way to becoming an avalanche. We hope you'll join in.

***Consider this your official invitation to join in the fray. Get involved in an SI community such as the CDS Community at SIWebII.***

**Advisors**

Paul Browne, Trinity Health
David Classen, MD, CSC
George Conklin, CHRISTUS Health
Amy Ferretti, Carefx
Deborah Gash, Saint Luke's Health System
Tom Giella, Korn/Ferry
Steve Heck, Navigant Consulting
Nick Hilger, Ingenix
Marianne James, Cincinnati Children's Hospital Medical Center
Jim Jones, Hewlett Packard
Thanos Karros, Exogen
Gilad Kuperman, MD, New York Presbyterian Hospital
Adam McMullin, Hill-Rom
Mitch Morris, MD, Deloitte LLP
Patrick O'Hare, Spectrum Health
Jerry Osheroff, MD, Thomson Reuters
Brian Patty, MD, HealthEast
M. Michael Shabot, MD, Memorial Hermann Healthcare System
Joel Shoolin, DO, Advocate Health Care
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