Diagnostic Error in Medicine
6th International Conference | September 22 – 25, 2013 | Chicago, IL | DEM2013.org

Jointly sponsored by the Society to Improve Diagnosis in Medicine and Northwestern University Feinberg School of Medicine

Keynote Speakers:

Christine K. Cassel, MD
NATIONAL QUALITY FORUM

Brent C. James, MD, MSTAT
INTERMOUNTAIN HEALTHCARE

Robert M. Wachter, MD
UCSF MEDICAL CENTER

Define. Measure. Improve.
Onsite Program
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Thank You to Our 2013 Organizational Members

The Society to Improve Diagnosis in Medicine recognizes Leading Organizations who support our Society and its Mission of attaining better outcomes through better diagnosis.

Founding Members

Silver Supporters

Interested in Becoming an SIDM Organizational Member?
Contact Georgia Casciato at gcasciato@comcast.net
or call (630) 248-2484.

Connect with us!

Join the social media conversation by following @ImproveDX tweets.
Use hashtag #SIDM2013 when discussing the Diagnostic Error in Medicine Conference on Twitter.

Leverage LinkedIn and the official SIDM Group page “Diagnostic Error in Medicine” for engaging in conversations.

Join SIDM virtually to stay connected with the healthcare community dedicated to reducing diagnostic error. Visit www.improvediagnosis.org today.
**Welcome to Chicago**

The theme for this year’s conference is “Define, Measure, Improve.” It sounds like a simple message, but to anyone familiar with diagnostic error, it is anything but. How do we define it? Once defined, how do we measure it in routine care settings? What strategies will drive the greatest improvements in diagnostic accuracy? Over the next few days, we will grapple with these issues and others. Through your participation, we hope advances can be made that will lead to improved patient outcomes.

I wish to acknowledge the committee members, identified later in the program, who have worked so hard to assemble a stellar program. I also wish to express gratitude to the Agency for Healthcare Research and Quality for their continuing and substantial support for this meeting and to Feinberg School of Medicine for being a wonderful partner. Finally, on behalf of all of us who have made this possible, we extend you our welcome and our wish for a productive meeting.

**Paul Epner, MBA, MEd**
Chair, Diagnostic Error in Medicine
6th International Conference

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**A Message from SIDM**

Although this is the sixth Diagnostic Error in Medicine meeting, this is the first Diagnostic Error in Medicine event hosted independently under the auspices of the Society to Improve Diagnostic Error in Medicine. Our ability to host this year’s event largely ‘on our own’ marks an important milestone for this meeting and for SIDM as well. Our Society is maturing, our meeting is thriving, and most importantly, the community of people interested in improving diagnosis, and reducing errors, is growing every year.

The Diagnostic Error in Medicine meeting is, without question, the most important work our Society sponsors. The gathering is our most effective way of advancing the SIDM vision to make diagnosis timely, accurate, efficient and safe. This past year we have seen impressive progress in raising awareness about diagnostic error, advancing research, and gathering tools to aid educators. The Conference energizes all of us, and provides us with a unique opportunity to interact with our colleagues and other stakeholders who share our vision.

The quality of this year’s meeting promises to be exceptional. Our thanks to Paul Epner, Diagnostic Error in Medicine Conference Chair, Donna Woods and Hardeep Singh, Conference Co-Chairs, and the Diagnostic Error in Medicine 2013 Planning Committee for designing such an engaging, diverse, and timely program.

Thanks for joining us this year, and for your efforts to advance the dialogue on diagnostic error. Both individually, and through our work together, we are starting to have an impact on reducing diagnostic error, and that’s our ultimate goal.

**Mark L. Graber, MD, FACP**
Founder and President, Society to Improve Diagnosis in Medicine
## Schedule At A Glance

*All sessions will be held in Conference Room A of the Feinberg Pavilion unless otherwise noted.*

### Sunday, September 22 | Pre-Conference

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>CME Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 a.m. – 6:00 p.m.</td>
<td>Registration Open&lt;br&gt;Foyer outside of Conference Room A of the Feinberg Pavilion</td>
<td>Conference Room A of the Feinberg Pavilion</td>
<td></td>
</tr>
<tr>
<td>8:00 a.m. – 1:00 p.m.</td>
<td>Research Summit (invitation only)&lt;br&gt;Conference Room D of the Feinberg Pavilion</td>
<td>Conference Room D of the Feinberg Pavilion</td>
<td>4.5</td>
</tr>
<tr>
<td>9:00 a.m. – 1:00 p.m.</td>
<td>Educator’s Workshop: Practical Approaches to Teaching Clinical Reasoning Skills&lt;br&gt;Conference Room BC of the Feinberg Pavilion</td>
<td>Conference Room BC of the Feinberg Pavilion</td>
<td>3.5</td>
</tr>
<tr>
<td>1:00 p.m. – 2:00 p.m.</td>
<td>Lunch (on your own)</td>
<td></td>
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<tr>
<td>2:00 p.m. – 6:00 p.m.</td>
<td>Short Course: Cognitive Psychology of Diagnostic Error&lt;br&gt;Conference Room D of the Feinberg Pavilion</td>
<td>Conference Room D of the Feinberg Pavilion</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>Short Course: Introduction to Diagnostic Errors&lt;br&gt;Conference Room BC of the Feinberg Pavilion</td>
<td>Conference Room BC of the Feinberg Pavilion</td>
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### Monday, September 23 | Day 1

<table>
<thead>
<tr>
<th>Time</th>
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<th>Location</th>
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<tbody>
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<td>7:30 a.m. – 6:30 p.m.</td>
<td>Registration Open&lt;br&gt;Foyer outside of Conference Room A of the Feinberg Pavilion</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>8:00 a.m. – 8:30 a.m.</td>
<td>Welcome Remarks</td>
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<tr>
<td>8:30 a.m. – 9:30 a.m.</td>
<td>Keynote Presentation: Bringing Diagnosis into the Quality and Safety Equations&lt;br&gt;Christine K. Cassel, MD, National Quality Forum</td>
<td>Conference Room A of the Feinberg Pavilion</td>
<td>1.0</td>
</tr>
<tr>
<td>9:30 a.m. – 10:30 a.m.</td>
<td>What's in a Name? — Controversies and Consensus in Describing Diagnostic Errors</td>
<td>Conference Room A of the Feinberg Pavilion</td>
<td>1.0</td>
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<tr>
<td>10:30 a.m. – 11:00 a.m.</td>
<td>Break and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>11:00 a.m. – 11:30 a.m.</td>
<td>Shifting Sands: Diagnosis, Diagnostic Error, and Changes Brought by DSM-5</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>11:30 a.m. – 12:00 p.m.</td>
<td>Diagnostic Challenges in Surgical Care</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>12:00 p.m. – 1:00 p.m.</td>
<td>Lunch and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>1:00 p.m. – 2:00 p.m.</td>
<td>The NIH Undiagnosed Diseases Program: Using Exome Sequencing and Other Genetic Tests for Diagnosis</td>
<td>Conference Room A of the Feinberg Pavilion</td>
<td>1.0</td>
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<tr>
<td>2:00 p.m. – 3:15 p.m.</td>
<td>Putting the Patient First: On the Way to Safer Diagnosis Through Patient Involvement at Three Tables — Exam Room, Board Room, and Policy</td>
<td>Conference Room A of the Feinberg Pavilion</td>
<td>1.5</td>
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<tr>
<td>3:15 p.m. – 3:45 p.m.</td>
<td>Break and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>3:45 p.m. – 5:00 p.m.</td>
<td>Information Technology Systems to Support Clinical Diagnosis and Reduce Diagnostic Error</td>
<td>Conference Room A of the Feinberg Pavilion</td>
<td>1.0</td>
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<tr>
<td>5:00 p.m. – 6:15 p.m.</td>
<td>Diagnostic Error and Clinical Reasoning Case Presentation&lt;br&gt;(CME Credit: 1.25)</td>
<td>Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>7:00 p.m.</td>
<td>Meet the Professor Dinners (optional — at individual's own expense)</td>
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</table>
All sessions will be held in Conference Room A of the Feinberg Pavilion unless otherwise noted.

### Tuesday, September 24 | Day 2

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>7:30 a.m. – 6:00 p.m.</td>
<td>Registration Open&lt;br&gt;Foyer outside of Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>7:30 a.m. – 8:30 a.m.</td>
<td>Continental Breakfast and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
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<tr>
<td>8:00 a.m. – 10:00 a.m.</td>
<td>Posters and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
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</tr>
<tr>
<td>10:00 a.m. – 11:00 a.m.</td>
<td>Keynote Presentation: Meeting the Measurement Challenge of Diagnostic Error&lt;br&gt;Brent C. James, MD, MStat, Intermountain Healthcare (CME Credit: 1.0)</td>
<td></td>
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<tr>
<td>11:00 a.m. – 11:30 a.m.</td>
<td>What Was I Thinking...Or Not: Measuring Diagnostic Error for Improvement (CME Credit: 0.5)</td>
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<tr>
<td>11:30 a.m. – 12:00 p.m.</td>
<td>Panel: Solving Practical Problems of Diagnostic Error Measurement (CME Credit: 0.5)</td>
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<tr>
<td>12:00 p.m. – 1:00 p.m.</td>
<td>Lunch and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
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<tr>
<td>1:15 p.m. – 4:15 p.m.</td>
<td>Concurrent Sessions&lt;br&gt;<strong>Educator's Session:</strong> Teaching Clinical Reasoning in Undergraduate and Graduate Medical Education — How Should We Do It? Should We Do It?&lt;br&gt;<strong>Educator's Session:</strong> Do We Know How to Assess Clinical Reasoning? (CME Credit: 2.75)</td>
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<tr>
<td>4:15 p.m. – 5:45 p.m.</td>
<td>Oral Abstracts (CME Credit: 1.5)</td>
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<tr>
<td>5:45 p.m. – 6:15 p.m.</td>
<td>SIDM Business Meeting (All attendees welcome)</td>
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<tr>
<td>6:00 p.m. – 7:30 p.m.</td>
<td>Networking Reception&lt;br&gt;Sponsored by Best Doctors&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
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### Wednesday, September 25 | Day 3

<table>
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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>7:30 a.m. – 12:30 p.m.</td>
<td>Registration Open&lt;br&gt;Foyer outside of Conference Room A of the Feinberg Pavilion</td>
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<tr>
<td>7:30 a.m. – 8:00 a.m.</td>
<td>Continental Breakfast and Exhibits&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
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<tr>
<td>8:00 a.m. – 9:00 a.m.</td>
<td>Keynote Presentation: Diagnostic Error in the Patient Safety Universe: Is the Square Peg Getting Rounder?&lt;br&gt;Robert M. Wachter, MD, UCSF Medical Center (CME Credit: 1.0)</td>
<td></td>
</tr>
<tr>
<td>9:00 a.m. – 10:15 a.m.</td>
<td>How Evolving Testing Technologies Will Impact Diagnostic Accuracy in Radiology and Pathology (CME Credit: 1.25)</td>
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<tr>
<td>10:15 a.m. – 10:30 a.m.</td>
<td>Break&lt;br&gt;Krumlovsky Atrium in the Feinberg Pavilion</td>
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<tr>
<td>10:30 a.m. – 11:45 a.m.</td>
<td>Top Diagnostic Error Stories of 2013 (CME Credit: 1.25)</td>
<td></td>
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<tr>
<td>11:45 a.m. – 12:15 p.m.</td>
<td>Conference Retrospective (CME Credit: 0.5)</td>
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<tr>
<td>12:15 p.m. – 12:30 p.m.</td>
<td>Closing Remarks: Define, Measure, Improve (CME Credit: 0.25)</td>
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GENERAL INFORMATION

The Society to Improve Diagnosis in Medicine (SIDM) was founded with the goals of making diagnosis timely, accurate, cost-conscious, reliable and safe. The goals of the Diagnostic Error in Medicine 6th International Conference are to Define, Measure and Improve diagnosis in medicine.

Purpose and Scope
The ultimate goal of this conference is to improve patient safety by reducing the likelihood of diagnostic error in medicine. Minimizing diagnostic error is an essential component of safe patient care, and towards this end the conference activities are organized to summarize the current state of the field, review active research, and consider emerging educational and research themes that should be implemented to minimize diagnostic error.

Objectives and Course Goals
The Diagnostic Error in Medicine Conference is the premier event dedicated solely to the problem of diagnostic error, bringing together stakeholders with a shared goal of improving patient safety.

The goals of the Conference include:

- Acknowledging the frequency, impact, and public health significance of medical misdiagnosis
- Developing a constituency of advocates from across the healthcare delivery spectrum
- Defining the causality of, and exploring strategies to improve, diagnostic error in medicine
- Sharing research methods and results relevant to clinical reasoning, diagnostic error, and misdiagnosis-related harm

Grant Funding
Funding for this conference was made possible [in part] by Grant number: 1R13HS021774-01 from the Agency for Healthcare Research and Quality (AHRQ). The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

Accreditation and Credit Designation Statement
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the Society to Improve Diagnosis in Medicine and Northwestern University Feinberg School of Medicine.

The Northwestern University Feinberg School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

The Northwestern University Feinberg School of Medicine designates this live activity for a maximum of 31 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Registration Hours
Registration is located in the Krumlovsky Atrium outside of Conference Room A in the Feinberg Pavilion.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Time</th>
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<tbody>
<tr>
<td>Sunday, September 22</td>
<td>Pre-Conference Seminars</td>
<td>7:30 a.m. – 6:00 p.m.</td>
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<tr>
<td>Monday, September 23</td>
<td>Diagnostic Error in Medicine Conference – Day One</td>
<td>7:30 a.m. – 6:30 p.m.</td>
</tr>
<tr>
<td>Tuesday, September 24</td>
<td>Diagnostic Error in Medicine Conference – Day Two</td>
<td>7:30 a.m. – 6:00 p.m.</td>
</tr>
<tr>
<td>Wednesday, September 25</td>
<td>Diagnostic Error in Medicine Conference – Day Three</td>
<td>7:30 a.m. – 12:30 p.m.</td>
</tr>
</tbody>
</table>

Be sure to visit our Sponsors and Exhibitors in the Krumlovsky Atrium in the Feinberg Pavilion during all your breaks.

Evaluation
A form will be available onsite to attendees to evaluate each session and each speaker's presentation, as well as to identify future educational needs.

Outcomes Survey
A survey will be sent to all attendees within three months post activity to assist us in determining what impact this activity had on the attendee’s practice.

Notice About Off-Label Presentations
The Northwestern University Feinberg School of Medicine/Diagnostic Error in Medicine Conference may include presentations on drugs or devices, or use of drugs or devices that have not been approved by the Food and Drug Administration (FDA) or have been approved by the FDA for specific uses only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or device he or she wishes to use in clinical practice. The Northwestern University Feinberg School of Medicine is committed to the free exchange of medical education. Inclusion of any presentation in this program, including presentations on off-label uses, does not imply an endorsement by the Northwestern University Feinberg School of Medicine of the uses, products, or techniques presented.

Faculty Disclosure
Northwestern University Feinberg School of Medicine requires course directors, speakers, instructors, planners and other individuals who are in a position to control the content of this activity to disclose any relevant financial relationships. All identified potential conflicts of interest are thoroughly vetted by NUFeSM for fair balance; scientific objectivity of studies mentioned in the materials or used as the basis for content, and appropriateness of patient care recommendations. The faculty disclosures and the discussion of off-label usage will be indicated in the course syllabus.
Policy on Speaker and Provider Disclosure

It is the policy of the Northwestern University Feinberg School of Medicine that the speaker and provider disclose real or apparent conflicts of interest relating to the topics of this educational activity, and also disclose discussions of unlabeled/unapproved uses of drugs or devices during their presentation(s). The Northwestern University Feinberg School of Medicine Office of CME has established policies in place that will identify and resolve all conflicts of interest prior to this educational activity. Detailed disclosure will be made in the activity handout materials.

Americans with Disabilities Act

The Northwestern University Feinberg School of Medicine fully intends to comply with the legal requirements of the Americans with Disabilities Act. If any participant of this conference is in need of accommodation please indicate those needs on the registration form or submit written requests to the Office of CME at least one month prior to the conference date.

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Notice About Accuracy of Content

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If such advice is desired, you should seek the services of a competent professional.

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Badges and Ribbons

Name badges must be worn at all times to gain access to all education sessions.

Please note the following ribbon categories to identify attendees:
- SIDM Board Members
- Planning Committee
- Session Faculty
- Exhibitor/Sponsor
- SIDM Supporter

Stars on each ribbon represent the number of Diagnostic Error in Medicine Conferences each individual has attended. Attendees can pick up their ribbons and stars at the Registration Desk.

Parking

Parking is available for attendees at 222 E Huron (located between Superior and Huron). The rates are $11 for 7 or less hours and $25 for 7-24 hours. Parking tickets can be validated at the customer service desks located on the first and second floors. Valet parking at the Hyatt is available for $59 a night. The garage is 2 blocks away.

For additional directions and parking information, please visit www.feinberg.northwestern.edu.
PLANNING COMMITTEE MEMBERS

Paul Epner, MBA, MEd (Chair)
Principal, Paul Epner, LLC

Hardeep Singh, MD, MPH (Co-Chair)
Chief, Health Policy, Quality and Informatics Program, Houston VA Center for Innovations in Quality, Effectiveness and Safety and Baylor College of Medicine

Donna Woods, EdM, PhD (Co-Chair)
Research Associate Professor and Co-Director Northwestern Graduate Programs in Healthcare Quality and Patient Safety and the Northwestern Program for Quality and Safety Innovation, Center for Healthcare Studies, Institute for Public Health and Medicine, Northwestern University Feinberg School of Medicine

Nikola Baumann, PhD, DABCC
Director, Central Clinical Laboratory and Central Processing, Mayo Clinic

Kathryn McDonald, MM
Executive Director and Senior Research Scholar, Center for Health Policy/Center for Primary Care and Outcomes Research, Stanford University

Robert Trowbridge, MD
Division Director, General Internal Medicine, Maine Medical Center

Lorri Zipperer, MA
Cybrarian, Zipperer Project Management

Laura Zwaan, PhD
EMGO Institute for Health and Care Research, VU University Medical Center, Amsterdam, the Netherlands

We gratefully acknowledge the support and efforts of other key contributors who helped planners prepare content for the annual conference:

Robert El-Kareh, MD, MS, MPH
Assistant Professor, Department of Medicine, University of California San Diego

Karen Cosby, MD, FACEP
Senior Attending, Department of Emergency Medicine, Cook County Hospital (Stroger) and Associate Professor, Rush University College of Medicine

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Co-Chair, Communications Committee

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Assistant Professor, Department of Medicine, University of California San Diego

Karen Cosby, MD, FACEP
Senior Attending, Department of Emergency Medicine, Cook County Hospital (Stroger) and Associate Professor, Rush University College of Medicine

NETWORKING EVENTS

Meet the Professor Dinners

Monday evening’s open schedule provides you with the opportunity to attend dinner with Conference Faculty members at a variety of nearby Chicago restaurants. You may sign up to attend upon arrival at the registration desk. Reservations have been pre-arranged, but meal costs are at the attendee’s own expense. Space is only available on a first-come, first-serve basis.

Best Doctors Cocktail Reception

You are cordially invited to attend a special welcome reception sponsored by Best Doctors, Inc. Join us in the Krumlovsky Atrium in the Feinberg Pavilion on Tuesday evening from 6:00 p.m. – 7:30 p.m. to enjoy cocktails and hors d’oeuvres, and network with your colleagues.
Research Summit

By invitation only

8:00 a.m. – 1:00 p.m.
Conference Room D of the Feinberg Pavilion

Moderators: Laura Zwaan, PhD, Postdoctoral Researcher, Department of Public and Occupational Health, VU University Medical Center, EMGO Institute for Health and Care Research, Amsterdam, the Netherlands
Hardeep Singh, MD, MPH, Chief, Health Policy, Quality and Informatics Program, Houston VA Center for Innovations in Quality, Effectiveness and Safety and Baylor College of Medicine

Leading research experts on diagnostic error will be invited to discuss important topics relevant to research on diagnostic error.

Learning Objectives:
- Describe the current context of research on diagnostic error
- Develop relevant research questions
- Apply new and existing methods to the research of diagnostic error and strategies for improvement

Educator’s Workshop: Practical Approaches to Teaching Clinical Reasoning Skills

9:00 a.m. – 1:00 p.m.
Conference Room BC of the Feinberg Pavilion

Moderator: Robert Trowbridge, MD, Division Director, General Internal Medicine, Department of Medicine, Maine Medical Center
Faculty: Stephen Martin, MD, EdM, Assistant Professor, Department of Family Medicine and Community Health, University of Massachusetts School of Medicine
Joseph Rencic, MD, Associate Professor of Medicine, Department of Internal Medicine, Tufts Medical Center
Scott Stern, MD, FACP, Professor of Medicine, Section of General Internal Medicine, Department of Medicine, The University of Chicago Pritzker School of Medicine

Although teaching clinical reasoning is central to medical education, there has been relatively little discussion regarding the approaches individual clinicians may utilize in fostering this critical skill. Clinician-educators will be provided with practical approaches to nurturing skill in clinical reasoning and avoidance of diagnostic error in multiple educational settings. An emphasis will be placed on techniques and approaches that can be applied to a wide spectrum of medical learners.

Learning Objectives:
- Describe three techniques individual clinician-educators can use to foster the clinical reasoning skills of medical learners
- Describe which teaching techniques are most appropriate for specific levels of medical learners
- Identify techniques for teaching avoidance of diagnostic error that they can immediately apply to their own educational setting

Short Course: Cognitive Psychology

2:00 p.m. – 6:00 p.m.
Conference Room D of the Feinberg Pavilion

Moderator: Laura Zwaan, PhD, Postdoctoral Researcher, Department of Public and Occupational Health, VU University Medical Center, EMGO Institute for Health and Care Research, Amsterdam, the Netherlands
Faculty: Jonathan Ilgen, MD, MCR, Assistant Professor, Division of Emergency Medicine, Department of Medicine, University of Washington
Geoffrey R. Norman, PhD, Professor, Department of Clinical Epidemiology and Biostatistics, McMaster University

During the course we will discuss the main theories of diagnostic reasoning and diagnostic decision making developed in psychology (e.g. dual process thinking, the use of heuristics, cognitive biases). We’ll also discuss potential ways to reduce cognitive errors will also be discussed (e.g. reflective practice).

Learning Objectives:
- Outline the main psychological models that apply to the diagnostic reasoning process
- Describe the strengths and vulnerabilities of human reasoning and the effects on the diagnostic reasoning process
- Describe (recent) research findings from the field of cognitive psychology of diagnostic reasoning

Short Course: Introduction to Diagnostic Errors

2:00 p.m. – 6:00 p.m.
Conference Room BC of the Feinberg Pavilion

Moderator: Hardeep Singh, MD, MPH, Chief, Health Policy, Quality and Informatics Program, Houston VA Center for Innovations in Quality, Effectiveness and Safety and Baylor College of Medicine
Faculty: Karen Cosby, MD, FACEP, Senior Attending, Department of Emergency Medicine, Cook County Hospital (Stroger) and Rush University Medical School
Pat Croskerry, MD, PhD, FRCP (Edin), Director, Critical Thinking Program, Division of Medical Education, Dalhousie University, Halifax, Nova Scotia, Canada
Mark L. Graber, MD, FACP, Senior Fellow, Health Care and Quality Outcomes, RTI International
Gordon D. Schiff, MD, Associate Director, Center for Patient Safety Research and Practice, Department of Medicine, Brigham and Women’s Hospital

Gain an understanding of the problem of diagnostic errors in terms of epidemiology, burden and processes involved. An interactive case-based analysis illustrating the complexity of diagnostic error will be shared, followed by a discussion to list systems and cognitive contributory factors.

Learning Objectives:
- Discuss the problem of diagnostic errors in terms of epidemiology, burden and processes involved
- Analyze the complexity of diagnostic error
- List systems and cognitive contributory factors
Monday, September 23 | Day 1

Welcome Remarks
8:00 a.m. – 8:30 a.m.
Paul Epner, MBA, MEd., Chair, Diagnostic Error in Medicine 6th International Conference
Raymond H. Curry, MD, Vice Dean for Education, Professor, Department of Medicine, General Internal Medicine and Geriatrics and President, McGaw Medical Center of Northwestern University
Gary Noskin, MD, Professor in Medicine-Infectious Diseases and Program for Quality and Safety Innovation, Center for Healthcare Studies - Institute for Public Health and Medicine, Northwestern University
Mark L. Graber, MD, FACP, Senior Fellow, Health Care and Quality Outcomes, RTI International

Keynote Presentation
Bringing Diagnosis into the Quality and Safety Equations
8:30 a.m. – 9:30 a.m.
Christine K. Cassel, MD, MACP, President and CEO, National Quality Forum
The centuries-old debate over whether diagnosis or treatment is more important cannot ever be answered, but no one debates that the right treatment depends on the correct diagnosis. Yet, diagnosis apparently gets overlooked in most efforts to ensure quality and safety. How is it then that improving diagnosis goes largely unrepresented in the current quality framework? The time has come for the healthcare quality and safety communities to give these twin pillars of medical care equal consideration in matters of training, research, and policy. Dr. Cassel will share her views on how we arrived at this point and how we can, and must, change course in the future.

Learning Objectives:
- Discuss the relationship between diagnosis and treatment
- Identify strategies to improve diagnostic training, research, and policy

What’s in a Name? – Controversies and Consensus in Describing Diagnostic Errors
9:30 a.m. – 10:30 a.m.
Moderator: Paul Epner, MBA, MEd, Principal, Paul Epner, LLC
Faculty: Mark L. Graber, MD, FACP, Senior Fellow, Health Care and Quality Outcomes, RTI International
David E. Newman-Toker, MD, PhD, Associate Professor, Department of Neurology, The Johns Hopkins University School of Medicine
Hardeep Singh, MD, MPH, Chief, Health Policy, Quality and Informatics Program, Houston VA Center for Innovations in Quality, Effectiveness and Safety and Baylor College of Medicine
Gordon D. Schiff, MD, Associate Director, Center for Patient Safety Research and Practice, Department of Medicine, Brigham and Women’s Hospital

Assessing the effectiveness of interventions to reduce the burden of diagnostic errors does, in part, require relevant measures. The development of those measures will, in turn, require consensus definitions of what constitutes a diagnostic error. Internationally recognized experts in the field will explore differences in the use of terminology surrounding errors in diagnosis, as well as the broader implications of these distinctions, with interactive debate.

Learning Objectives:
- Apply multiple approaches to defining diagnostic error
- Apply definitions to diverse clinical vignettes

Shifting Sands: Diagnosis, Diagnostic Error, and Changes Brought by DSM-5
11:00 a.m. – 11:30 a.m.
Moderator: Donna Woods, EdM, PhD, Research Associate Professor and Co-Director Northwestern Graduate Programs in Healthcare Quality and Patient Safety and the Northwestern Program for Quality and Safety Innovation, Center for Healthcare Studies, Institute for Public Health and Medicine, Northwestern University Feinberg School of Medicine
Faculty: Stephen Dinwiddie, MD, Professor, Department of Psychiatry and Behavioral Sciences, Northwestern University Feinberg School of Medicine

The ways in which psychiatric diagnostic constructs can be validated and inter-rater agreement maximized will be discussed, as will how the diagnostic challenges in light of the American Psychiatric Association’s recent publication of the latest Diagnostic and Statistical Manual (DSM-5) has changed psychiatric classification. How concurrent mental illness can influence presentation of physical symptoms (or masquerade as physical illness) will be also be addressed.

Learning Objectives:
- Identify strategies for developing psychiatric constructs that can be validated
- Discuss diagnostic challenges related to the DSM-5
- Explore the impact on diagnosis from concurrent mental illnesses
Diagnostic Challenges in Surgical Care
11:30 a.m. – 12:00 p.m.
Moderator: Donna Woods, EdM, PhD, Research Associate Professor and Co-Director Northwestern Graduate Programs in Healthcare Quality and Patient Safety and the Northwestern Program for Quality and Safety Innovation, Center for Healthcare Studies, Institute for Public Health and Medicine, Northwestern University Feinberg School of Medicine
Faculty: David Bentrem, MD, MS, FACS, Harold L. and Margaret N. Method Research Professor in Surgery, Northwestern University Feinberg School of Medicine

This presentation will discuss sources of error in the treatment of patients undergoing surgical procedures. Errors in diagnosing conditions in surgical patients will be highlighted.

Learning Objectives:
• Identify factors associated with error in surgical care
• Analyze the impact of diagnostic error in surgical care

The NIH Undiagnosed Diseases Program: Using Exome Sequencing and Other Genetic Tests for Diagnosis
1:00 p.m. – 2:00 p.m.
William A. Gahl, MD, PhD, Clinical Director, National Human Genome Research Institute, NIH

A key tool in NIH's Undiagnosed Disease Program (UDP) is genetic testing combined with phenotyping and used in a process of discovery when applied to undiagnosed cases. Review UDP's program, its use of exome testing and some discussions of the challenges sure to face diagnosticians as the testing becomes more routine.

Learning Objectives:
• Identify the benefits of a diagnosis, no matter how dire the prognosis
• Discuss the importance of investigating rare diseases and the relevance to common diseases
• The power and problems associated with Next Generation Sequencing

Putting the Patient First: On the Way to Safer Diagnosis through Patient Involvement at Three Tables – Examination Room, Board Room, and Policy
2:00 p.m. – 3:15 p.m.
Moderator: Kathryn McDonald, MM, Executive Director and Senior Research Scholar, Center for Health Policy/Center for Primary Care and Outcomes Research, Stanford University
Faculty: Liz Boehm, Director, Patient Experience Collaborative, ExperiaHealth
Martine Ehrenclou, MA, Author, “The Take Charge Patient” and “Critical Conditions”

Dominick Frosch, PhD, Associate Professor of Medicine, University of California, Los Angeles; Fellow, Gordon and Betty Moore Foundation’s Patient Care Program

Active conversations around these three metaphoric tables will be guided by representatives in each area, sharing their knowledge of ways that patients are already involved in the impact of such involvement at a given table. Patient and family representatives from last year’s DEM Conference will respond to the ideas raised. This discussion will then incorporate all ideas, with possible ways to improve diagnostic safety being brought to the forefront.

Learning Objectives:
• Describe the three strategic roles for patient involvement in diagnostic error mitigation
• List specific examples of patient involvement in improving diagnostic safety, and benefits of involvement
• Identify high priority opportunities for meaningful patient involvement in diagnostic error mitigation for themselves and for the patient safety field

Information Technology Systems to Support Clinical Diagnosis and Reduce Diagnostic Error
3:45 p.m. – 5:00 p.m.
Moderator: Donna Woods, EdM, PhD, Research Associate Professor and Co-Director Northwestern Graduate Programs in Healthcare Quality and Patient Safety and the Northwestern Program for Quality and Safety Innovation, Center for Healthcare Studies, Institute for Public Health and Medicine, Northwestern University Feinberg School of Medicine
Faculty: Abel N. Kho, MD, Assistant Professor in Medicine-General Internal Medicine and Geriatrics and Preventive Medicine-Health and Biomedical Informatics
David Liebovitz, MD, Associate Professor in Medicine-General Internal Medicine and Geriatrics and Preventive Medicine-Health and Biomedical Informatics and Director, Master’s in Medical Informatics Program

EHRs have significant unrealized potential to support and facilitate both diagnostics and clinical thinking. A panel of experts will share their experience working on the cutting edge of these developments including new approaches to EHR design, Health Information Exchange, and the use of patient portals to inform diagnostic decisions.

Learning Objectives:
• Describe methods and tools to improve the quality, safety of the diagnostic processes
• Demonstrate an understanding of new methods to better engage patients and family in the diagnostic process
• Demonstrate an understanding of tools and methods for improved coordination of clinical information to support diagnosis
• Describe implications of the tools discussed for “meaningful use”
Monday, September 23 | Day 1 (continued)

Diagnostic Error and Clinical Reasoning Case Presentation
5:00 p.m. – 6:15 p.m.
Moderator: Karen Cosby, MD, FACEP, Senior Attending, Department of Emergency Medicine, Cook County Hospital (Stroger) and Associate Professor, Rush University College of Medicine

Case #1: “Is it a Cold or Not? That is the problem.”
Case Presenter: Takashi Watari, Shonan Kamakura General Hospital

The "Professor" Discussant: Gurpreet Dhaliwal, MD, Associate Professor of Clinical Medicine, University of California San Francisco and San Francisco VA Medical Center

Case #2: “Are We All on the Same Page About the Error?”
Case Presenter: Maria Caridad Davalos, MD, Texas Children’s Hospital

The "Professor" Discussant: Geeta Singhal, MD, MEd, Attending, Pediatric Hospital Medicine, Director, BCM Office of Faculty Development, Associate Professor, Pediatrics, Baylor College of Medicine, Texas Children’s Hospital

Learning Objectives:
- Describe methods clinicians utilize in approaching the diagnostic process
- Expose the complexity and multi-factorial etiology of many diagnostic errors
- Describe techniques the clinician may use to avoid common causes of diagnostic error

Meet the Professor Dinners
7:00 p.m.
Monday evening’s open schedule provides you with the opportunity to go to dinner with a member of the conference Faculty and a small group of other attendees. All evening activities are at the participant's own expense. Sign up for dinner reservations at the Registration Desk. You will be able to select the Faculty member of your choice, but the cuisine and budget are subject to availability.

Don’t forget to use hashtag #SIDM2013 when discussing the Diagnostic Error in Medicine Conference on Twitter.
Tuesday, September 24 | Day 2

Poster Session
8:00 a.m. – 10:00 a.m.
Krumlovsky Atrium in the Feinberg Pavilion
Laura Zwaan, PhD, Postdoctoral Researcher, Department of Public and Occupational Health, VU University Medical Center, EMGO Institute for Health and Care Research, Amsterdam, the Netherlands
Robert El-Kareh, MD, MS, MPH, Assistant Professor, Department of Medicine, University of California San Diego

Learning Objective:
• Discuss research related to diagnostic error in medicine

Keynote Presentation
Meeting the Measurement Challenge of Diagnostic Error
10:00 a.m. – 11:00 a.m.
Brent C. James, MD, MStat, Chief Quality Officer and Director, Institute for Health Care Delivery Research, Intermountain Healthcare

Measurement is key to quality improvement. Until the Institute of Medicine established the morbidity and mortality of medical errors, resolution of problems was not a priority. The ability to measure a problem is key to assessing effectiveness of practices to reduce the problem. Missed, wrong, or delayed diagnoses are a measurement challenge. The nature of the challenge will be described and a strategy for moving forward will be put forth.

Learning Objectives:
• Evaluate the impact of measurement on the reduction of errors
• Identify strategies for increasing the use of measurement in diagnostic error

What Was I Thinking…Or Not: Measuring Diagnostic Error for Improvement
11:00 a.m. – 11:30 a.m.
Kaveh Shojania, MD, Director, University of Toronto Centre for Quality Improvement and Patient Safety (C-QuIPS)

Approaches to measuring diagnostic error, include the taxonomy, common types, analysis, and development of diagnostic error measurement. Current research and the future of research in measuring diagnostic error will be shared.

Learning Objectives:
• Define the current taxonomy of diagnostic error
• Discuss methodologies that will lead to more accurate measurement of the impact of diagnostic error on patient safety
• Identify strategies for health IT to assist with improving diagnostic accuracy

Panel: Solving Practical Problems of Diagnostic Error Measurement
11:30 a.m. – 12:00 p.m.
Moderator: Paul Epner, MBA, MEd, Principal, Paul Epner, LLC
Faculty: Daniel J. Castillo, MD, MBA, Medical Director, Division of Healthcare Quality Evaluation, The Joint Commission
Timothy Hofer, MD, MSc, University of Michigan Health System, Center for Clinical Management Research
Brent C. James, MD, MStat, Chief Quality Officer and Director, Institute for Health Care Delivery Research, Intermountain Healthcare
Kaveh Shojania, MD, Director, University of Toronto Centre for Quality Improvement and Patient Safety (C-QuIPS)

The panel will respond to questions from the moderator and attendees regarding measurement strategies that can be employed today.

Learning Objective:
• Discuss techniques to measure diagnostic error

Medical Improv: Creative Expansion of Communication Skills**
12:00 p.m. – 1:00 p.m.
Katie Watson, JD, Assistant Professor, Medical Humanities and Bioethics Program, Northwestern University Feinberg School of Medicine, and Adjunct Faculty, Second City Training Center

Improvisational theater skills have a surprising overlap with the communication skills required of healthcare teams.

Learning Objectives:
• Discuss how medical improv training can help reduce diagnostic error
• Participate in hands-on improv exercises
• Discuss the educational potential of medical improv

**Limited seats available, additional sign-up required at the Registration Desk. Please pick up your lunch before entering the session.

Educator’s Session: Teaching Clinical Reasoning in Undergraduate and Graduate Medical Education — How Should We Do It? Should We Do It?
1:15 p.m. – 2:45 p.m.
Moderator: Robert Trowbridge, MD, Division Director, General Internal Medicine, Department of Medicine, Maine Medical Center
Faculty: Judith L. Bowen, MD, Senior Advisor, Interprofessional Initiative, Office of the Provost, Oregon Health & Science University; Professor, OHSU School of Medicine; Education Consultant, Veterans Health Administration Office of Academic Affiliations
Joseph Rencic, MD, Associate Professor of Medicine, Department of Internal Medicine, Tufts Medical Center

There is a lack of consensus on whether clinical reasoning skills can be explicitly taught. Furthermore, the best methods of teaching clinical reasoning and when such instruction should occur in medical education
are uncertain. This session will review the evidence supporting teaching clinical reasoning, promoting diagnostic reliability and discuss when and how such instruction might occur.

Learning Objectives:
- Describe the evidence supporting the teaching of clinical reasoning
- Identify the benefits and drawbacks of explicit instruction in avoidance of diagnostic error in medical learners
- Describe the benefits and drawbacks of clinical reasoning instruction at different levels of medical education

“Your Results are Back” — Identifying Gaps and Improving the Follow-up and Communication of Diagnostic Test Results
1:15 p.m. – 4:15 p.m.
The Pritzker Auditorium

Moderator: Nikola A. Baumann, PhD, DABCC, Director, Central Clinical Laboratory and Central Processing, Department of Laboratory Medicine and Pathology, Mayo Clinic

Faculty: Michael Astion, MD, PhD, Medical Director, Department of Pathology and Laboratories, Seattle Children’s Hospital, and Clinical Professor of Laboratory Medicine, Department of Laboratory Medicine, University of Washington
Corinne R. Fantz, PhD, Associate Professor, Department of Pathology and Laboratory Medicine, Emory University School of Medicine
Gordon D. Schiff, MD, Associate Director, Center for Patient Safety Research and Practice, Department of Medicine, Brigham and Women’s Hospital
Hardeep Singh, MD, MPH, Chief, Health Policy, Quality and Informatics Program, Houston VA Center for Innovations in Quality, Effectiveness and Safety and Baylor College of Medicine
Michael L. Volk, MD, MS, Assistant Professor, Department of Internal Medicine, University of Michigan

Laboratory and radiologic tests often provide much of the essential information needed for accurate diagnoses. Diagnostic errors may occur when test results are missed, miscommunicated or misinterpreted. This session will identify gaps, system failures, potential system fixes, and opportunities to improve relaying diagnostic information to clinicians. System failures including failure to follow-up on laboratory test results, failure to communicate critical results, and the often underappreciated risks surrounding esoteric or complex laboratory testing and unsolicited diagnostic information will be highlighted. Discuss pros and cons of electronic system solutions and explore the expanding role of the patient in the diagnostic process.

Learning Objectives:
- Identify gaps in the processes currently used to communicate diagnostic test results
- Identify risks associated with esoteric laboratory testing and unsolicited diagnostic information
- Develop new approaches to improve the follow-up and communication of diagnostic test results
- Describe how the patient’s role in the diagnostic process may change with the advent of direct access to their own test results and patient portals

Educator’s Session: Do We Know How to Assess Clinical Reasoning?
3:00 p.m. – 4:15 p.m.

Moderator: Jonathan Ilgen, MD, MC, Assistant Professor, Division of Emergency Medicine, Department of Medicine, University of Washington

Faculty: Geoffrey R. Norman, PhD, Professor, Department of Clinical Epidemiology and Biostatistics, McMaster University
Ingrid Philibert, PhD, MBA, Senior Vice President, Department of Field Activities, Accreditation Council for Graduate Medical Education

Although skill in clinical reasoning is considered a hallmark of clinical excellence, the best methods for assessing the clinical reasoning abilities of an individual clinician are unclear. This uncertainty applies to clinicians at all levels of clinical experience. This session will review the controversies in assessment of clinical reasoning skill and detail several methods for doing so.

Learning Objectives:
- Describe the evidence supporting the assessment of clinical reasoning
- Describe two methods for assessing clinical reasoning skills in medical learners and the advantages and disadvantages of each
- Describe two methods for assessing clinical reasoning skills in practicing physicians and the advantages and disadvantages of each

Oral Abstracts
4:15 p.m. – 5:45 p.m.

Robert El-Kareh, MD, MS, MPH, Assistant Professor, Department of Medicine, University of California San Diego

Please see full Oral Abstracts details starting on page 16.

SIDM Business Meeting
5:45 p.m. – 6:15 p.m.

Please join the Society to Improve Diagnosis in Medicine leaders to review the performance of the Society over the past year and discuss plans for the future. All attendees are welcome and encouraged to participate.

Networking Reception
Sponsored by Best Doctors
6:00 p.m. – 7:30 p.m.
Krumlovsky Atrium in the Feinberg Pavilion
**Keynote Presentation**

**Diagnostic Error in the Patient Safety Universe: Is the Square Peg Getting Rounder?**

8:00 a.m. – 9:00 a.m.

Robert M. Wachter, MD, Professor and Associate Chair, Department of Medicine, UCSF Medical Center

Diagnostic errors were left behind in the early days of the patient safety field. Patient safety and diagnostic accuracy are beginning to come together, as key organizations recognize the cost of diagnostic errors, information technology passes through its initial implementation phase and moves toward a greater focus on decision support, and efforts by researchers and educators demonstrates the value of a focus on diagnosis.

**Learning Objectives:**

- Describe the transformation of the relationship between diagnostic error and patient safety
- Describe the increased focus on decision support in demonstrating the value of diagnostic focus

**How Evolving Testing Technologies will Impact Diagnostic Accuracy in Radiology and Pathology**

9:00 a.m. – 10:15 a.m.

**Moderator:** Paul Epner, MBA, MEd., Principal, Paul Epner, LLC

**Faculty:**
- Paul Chang, MD, FSIIM, Professor and Vice Chairman, Department of Radiology, University of Chicago School of Medicine
- Robert J. Penny, MD, PhD, CEO, Paradigm, Inc., International Genomics Consortium

Genetic testing is already having a major impact on diagnosis that extends to new ways of classifying tumors, selecting treatments and forecasting response. As the cost of whole genome sequencing declines, further advances will be made. New and evolving imaging modalities are also having dramatic impact. However, there have been many controversies around overuse and costs of both of these technologies. The speakers will take us through the issues and provide glimpses of the future.

**Learning Objectives:**

- Describe the role today of molecular pathology and imaging in reducing diagnostic errors and improving diagnostic accuracy
- Describe changes in the capabilities of these technologies over the next five years and how they will impact diagnostic accuracy

**Top Diagnostic Error Stories of 2013**

10:30 a.m. – 11:45 a.m.

**Moderator:** Laura Zwaan, PhD, Postdoctoral Researcher, Department of Public and Occupational Health, VU University Medical Center, EMGO Institute for Health and Care Research, Amsterdam, the Netherlands

**Faculty:**
- Mark L. Graber, MD, FACP, Senior Fellow, Health Care and Quality Outcomes, RTI International
- Gordon D. Schiff, MD, Associate Director, Center for Patient Safety Research and Practice, Department of Medicine, Brigham and Women’s Hospital

Experts will present the top ten most significant diagnostic error research articles published in the last twelve months. The research methods and main findings will also be discussed.

**Learning Objectives:**

- Portray the main findings of the recently published articles in the field of diagnostic error
- Describe the current directions of diagnostic error research

**Conference Retrospective**

11:45 a.m. – 12:15 p.m.

George Lundberg, MD, Editor in Chief, CollabRx, The Lundberg Institute

Dr. Lundberg, known to many as the former Editor-in-Chief of *JAMA* and former Editor of *Medscape*, will provide his perspective on the work of the Conference as it is wrapped up.

**Closing Remarks: Define, Measure, Improve**

12:15 p.m. – 12:30 p.m.

Paul Epner, MBA, MEd, Chair, Diagnostic Error in Medicine 6th International Conference
Faculty

Keynote Speakers

Christine K. Cassel, MD

Christine K. Cassel, MD, President and CEO of the National Quality Forum, is a leading expert in geriatric medicine, medical ethics and quality of care.

Dr. Cassel is one of 20 scientists chosen by President Obama to serve on the President’s Council of Advisors on Science and Technology (PCAST), which advises the President in areas where an understanding of science, technology, and innovation is key to forming responsible and effective policy. She is the co-chair and physician leader of PCAST working groups that have made recommendations to the President on issues relating to health information technology and ways to promote scientific innovation in drug development and evaluation.

In addition to having chaired influential Institute of Medicine (IOM) reports on end-of-life care and public health, she served on the IOM’s Comparative Effective Research Committee mandated by Congress to set priorities for the national CER effort (PCORI). Modern Healthcare has recognized Dr. Cassel among the 100 most influential people in healthcare, and among the 50 most influential physicians. An active scholar and lecturer, she is the author or co-author of 14 books and more than 200 journal articles on geriatric medicine, aging, bioethics and health policy. She edited four editions of Geriatric Medicine, a leading textbook in the field. Her most recent book is Medicare Matters: What Geriatric Medicine Can Teach American Health Care.

A national leader in efforts to inspire quality care, Dr. Cassel was a founding member of the Commonwealth Fund’s Commission on a High Performance Health System, and served on the IOM committees that wrote the influential reports To Err is Human and Crossing the Quality Chasm. She was appointed by President Clinton to the President’s Advisory Commission on Consumer Protection and Quality in the Health Care Industry in 1997.

Through the Intermountain Advanced Training Program in Clinical Practice Improvement (ATP), he has trained almost 5,000 senior physician, nursing, and administrative executives drawn from around the world in clinical management methods, with proven improvement results (and nearly 50 “daughter” training programs in eight countries).

He is Chief Quality Officer, and Executive Director, Institute for Health Care Delivery Research at Intermountain Healthcare, based in Salt Lake City, Utah.

Robert M. Wachter, MD

Robert M. Wachter, MD is Professor and Associate Chair of the Department of Medicine at the University of California, San Francisco, where he directs the 60-physician Division of Hospital Medicine. Author of 250 articles and six books, he coined the term “hospitalist” in 1996 and is generally considered the “father” of the hospitalist field, the fastest growing specialty in the history of modern medicine. He is past president of the Society of Hospital Medicine, and is currently the chair of the American Board of Internal Medicine.

In the safety and quality arenas, he edits the U.S. Government’s two leading websites on safety (they receive about one million yearly visits) and has written two bestselling books on the subject, including Understanding Patient Safety, of which the second edition was published in 2012. In 2004, he received the John M. Eisenberg Award, the nation’s top honor in patient safety.

For the past five years, Modern Healthcare magazine has named him one of the 50 Most Influential Physician Executives in the U.S. (#14 in 2012). He has served on the healthcare advisory boards of several companies, including Google. His blog, www.wachtersworld.org, is one of the nation’s most popular healthcare blogs.
Additional Faculty

Michael Aston, MD, PhD, Medical Director, Department of Pathology and Laboratories, Seattle Children’s Hospital, and Clinical Professor of Laboratory Medicine, Department of Laboratory Medicine, University of Washington

Nikola A. Baumann, PhD, DABCC, Director, Central Clinical Laboratory and Central Processing, Department of Laboratory Medicine and Pathology, Mayo Clinic

David Bentrem, MD, MS, FACS, Harold L. and Margaret N. Method Research Professor in Surgery, Northwestern University Feinberg School of Medicine

Liz Boehm, Director, Patient Experience Collaborative, ExperiaHealth

Judith L. Bowen, MD, Senior Advisor, Interprofessional Initiative, Office of the Provost, Oregon Health & Science University; Professor, OHSU School of Medicine; Education Consultant, Veterans Health Administration Office of Academic Affiliations

Daniel J. Castillo, MD, MBA, Medical Director, Division of Healthcare Quality Evaluation, The Joint Commission

Paul Chang, MD, FSIM, Professor and Vice Chairman, Department of Radiology, University of Chicago School of Medicine

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Gary Noskin, MD, Professor in Medicine-Infectious Diseases and Program for Quality and Safety Innovation, Center for Healthcare Studies - Institute for Public Health and Medicine, Northwestern University

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Hardeep Singh, MD, MPH, Chief, Health Policy, Quality and Informatics Program, Houston VA Center for Innovations in Quality, Effectiveness and Safety and Baylor College of Medicine

Geeta Singhal, MD, Med, Attending, Pediatric Hospital Medicine, Director, BCM, Office of Faculty Development, Associate Professor, Pediatrics, Baylor College of Medicine, Texas Children’s Hospital

Scott Stern, MD, FACP, Professor of Medicine, Section of General Internal Medicine, Department of Medicine, University of Chicago Pritzker School of Medicine

Robert Trowbridge, MD, Division Director, General Internal Medicine, Department of Medicine, Maine Medical Center

Michael L. Volk, MD, Assistant Professor, Department of Internal Medicine, University of Michigan

Takashi Watari, Shonan Kamakura General Hospital

Katie Watson, JD, Assistant Professor, Medical Humanities and Bioethics Program, Northwestern University Feinberg School of Medicine, and Adjunct Faculty, Second City Training Center

Donna Woods, EdM, PhD, Research Associate Professor and Co-Director Northwestern Graduate Programs in Healthcare Quality and Patient Safety and the Northwestern Program for Quality and Safety Innovation, Center for Healthcare Studies, Institute for Public Health and Medicine, Northwestern University Feinberg School of Medicine

Lori Zipperer, MA, Cybrarian, Zipperer Project Management

Laura Zwaan, PhD, Postdoctoral Researcher, Department of Public and Occupational Health, VU University Medical Center, EMGO Institute for Health and Care Research, Amsterdam, the Netherlands
The Epidemiology of Risk of Missed or Delayed Diagnosis of Cancer Among Undiagnosed Patients Presenting to Primary Care Physicians

Georgios (Yoryos) Lyrazeitopoulos, MD, FFPH, FRCP, MPH, DTM&H, Cambridge Centre for Health Services Research
Gary Abel, PhD, Cambridge Centre for Health Services Research
Richard Neal, PhD, North Wales Clinical School
Greg Rubin, FRCGP, University of Durham School of Medicine

Background: Worldwide, most patients with cancer first present to a non-specialist doctor (typically a primary care physician). Whether doctors suspect cancer promptly in order to initiate timely investigations and/or specialist referrals has important implications for patient experience and patient safety. There is currently limited appreciation of how the risk of missed / delayed (hereafter ‘delayed’) diagnosis of cancer varies between different patient groups.

Methods: We used data from both a national patient survey (n=13,035, 18 different types cancers) and a (doctor- or nurse-led) national clinical audit survey (n=41,299, 24 cancers). The two surveys used very different sampling frames and data collection methods. Multivariable analysis was used to profile variation in two outcome measures: The primary care interval (number of days from presentation to referral) and the number of pre-referral consultations – both measures are correlated.

Results: There is wide variation in the risk of delayed diagnosis of cancer. Patient-reported data indicate that delayed diagnosis is more frequent among younger patients, those belonging to racial/ethnic minorities and women. Both patient-reported and audit data indicate that delayed diagnosis of cancer is relatively common (30% to 50%) for cancers that tend to present with atypical symptoms (including multiple myeloma, pancreatic, stomach, ovarian and lung cancer, Figure 1). By contrast, delayed diagnosis is relatively rare (<10%) for cancers with relatively specific ‘symptom signatures’ such as breast cancer and melanoma (Figure 1). There are also interactions of cancer by socio-demographic characteristic, particularly for gender by urinary tract (bladder or renal) cancers.

Conclusion: The findings can help inform strategies for reducing diagnostic error or delay. For ‘difficult-to-miss’ cancers it may be possible to use measures of delayed diagnosis (such as number of pre-referral consultations) as performance indicators to compare different (regional, state, or national) healthcare systems. For ‘easy-to-miss’ cancers, the development of new point-of-care tests is critical. For cancers with intermediate level of diagnostic difficulty, clinical decision support tools may be useful. Combining the three approaches and further stratifying improvement initiatives by socio-demographic characteristic may also be justified.

Why Do Patients Present With Advanced Colorectal Cancer? - A Retrospective Study of Delays in Diagnosis Leads to Rapid-Cycle Quality Improvement

Michael Kanter, MD, Southern California Permanente Medical Group
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Background: When colon cancer is diagnosed at an advanced stage, cure rates are lower. To learn why advanced stage presentations occur and how we can prevent them, we first conducted a retrospective study of 61 patients presenting with stage III or IV colorectal cancer (CRC) during 2010-11. We used these findings to devise and implement interventions to help ensure diagnosis at an earlier stage.

Methods: Patients were selected from the Southern California region of Kaiser Permanente, an integrated delivery system that manages 3.6 million members. Electronic health records were reviewed to identify all prior CRC screening tests and potentially related prior symptoms and lab test abnormalities for up to the past ten years. The interventions were added to an existing outpatient safety net program that electronically searches our databases for diagnostic errors and triggers appropriate interventions.

Results: Retrospective chart review found the following reasons for presentation at advanced stages. Eleven patients experienced rectal bleeding with the bleeding falsely attributed to hemorrhoids. Five patients had iron-deficiency anemia without gastrointestinal workup. Twelve patients had positive immunological fecal occult blood tests (iFOBT) without colonoscopy. Seventeen patients had undergone CRC screening. Twelve patients had presumed false negative CRC screening (4 by iFOBT, 3 by sigmoidoscopy, and 6 by colonoscopy). In 11 cases, there was no opportunity for an earlier diagnosis. Using this information, we rapidly developed two separate programs to detect rectal bleeding and possible iron deficiency anemia not properly worked up. 118 outpatients aged 55-75 with rectal bleeding but no subsequent colonoscopy were identified using ICD9 codes 569.3x and 455xx. Their charts were reviewed by a gastroenterologist. 82 were referred for colonoscopy. We found 1 carcinoid tumor, 5 tubular adenomas, 9 hyperplastic polyps, and 14 non-neoplastic diagnoses including hemorrhoids and diverticular disease. 206 outpatients aged 55-75 with presumed iron deficiency anemia and no subsequent colonoscopy were identified during a recent quarter based on microcytosis, normal renal function, and hemoglobin < 14 g/dl and red cell count (RBC) < 4.7M/microliter (males) or hemoglobin < 12 g/dl and RBC < 4.2M/microliter (females). 128 of these patients were referred after gastroenterologist review for colonoscopy. 8 tubular adenomas, 18 hyperplastic polyps, and 29 non-neoplastic diseases were detected.

Conclusion: Rapid-cycle improvement allowed findings from a retrospective chart review study to be rapidly incorporated into the outpatient safety net program. Further study will be needed to determine its impact on the stage at diagnosis.
The Causes and Effects of Delay to Surgical Diagnosis

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Background: A retrospective cross-sectional analysis (Jan 2009 to December 2012) to assess the causes and effects of delays to surgical diagnoses in patients who died in public and private hospitals participating in the Australian Audits of Surgical Mortality.

Methods: Deaths (n=10,881) were assigned to one of two groups (no delay versus delay). Statistical analyses were performed for both groups and expressed as frequencies and Odds Ratios (OR) with 95% confidence interval (CI).

Results: Delay was experienced in 10.1% (828/8,218) of deaths. The primary source of delay was medical units at 34.8% (350/1,006). The most frequent cause of delay was attributed to diagnostic support services or their misuse (58.9%). This was most frequently due to the inexperience of staff (23.9%). General surgery (gastrointestinal) patients were twice as likely to be delayed at 11.6% (679/5,842) of cases compared with 6.3% (149/2,376) of cases from all other surgical specialties (OR 1.97, 95% CI 1.64-2.36). Delays in surgical diagnoses resulted in increased risks for being treated in ICU (OR 1.36, 95% CI 1.31-1.85), for unplanned return to theatre (OR 1.40, 95% CI 1.16-1.70), and for post-operative complications (OR 1.11, 95% CI 1.00-1.22). Delay had an effect on median length of hospital stay for all surgical patients: median (interquartile range) 8 days (IQR 3 -17) for delayed patients versus 7 days (IQR 2 - 17) for non-delayed patients.

Conclusion: Delayed patients experienced increased risk of being treated in ICU, of having unplanned return to theatre and for having post-operative complications. Patients from general surgery are at increased risk of delay compared with other surgical specialties. Consultant input in delayed general surgical patients should be standard.

A Comprehensive Approach to the Issue of Pathologic Diagnosis Quality and Accuracy in Vietnam

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Background: Pathologic diagnoses for patients in developing nations, if available, are prone to errors due to many challenges. Improper, inadequate or non-sampling of tissue, substandard processing or reagents, and incomplete diagnostic tools or un-validated stains hamper the pathologists, who themselves may suffer from incomplete training and resources to render an accurate diagnosis. The diagnostic quality gap results in waste of healthcare and human resources.

Methods: We devised a multifaceted, multi-year effort to improve the diagnostic quality of pathologic diagnoses in Vietnam. These include 1) educational and training interventions and assessments directed at practicing pathologists, educator pathologists, and technical personnel; 2) promotion of intra-country and international case consultation capabilities using telepathology and other tools; and 3) promotion of improved supply chain and management efforts to enhance laboratory materiel quality. The telepathology consultation system is designed to engage all stakeholders in an equitable manner so that the benefits accrued and costs incurred are distributed in a manner to make the program sustainable.

Results: A total of nine in-country educational events over the past four years, presented at four different sites and involving 12 international experts, have been attended by a very high percentage of practicing Vietnamese pathologists. Consultation cases handled by the local and international experts have begun to grow, and the number of pathologists submitting cases for consultation has increased. Metrics on diagnostic concordance between primary and referral diagnosis for patients seeking second opinion or definitive care in major centers are being collected as a surrogate for diagnostic quality. Web-based instruction directed at pathologists and some technical personnel have been viewed by approximately 50 individuals in Vietnamese laboratories. Digital microscopy performance improvement cases, in a self-assessment format, have been sent directly to 10 pathologists at major centers, and forwarded indirectly to approximately 100 others, with encouraging responses. Translation issues have been minimal.

Conclusion: Vietnamese pathologists and pathology laboratory technical staff welcome the intellectual and moral support and educational contributions of committed international colleagues, and recognize the quality gap issue as significant. Collaboration in designing means of increasing access for patients to high quality pathology diagnostic services depends upon trust in the level of commitment from all parties. Digital pathology tools, if properly sited and supported, offer the chance to significantly change the quality of pathologic diagnosis available to patients in developing countries, and to elevate the performance of local pathologists.
Checklists to Reduce Diagnostic Errors: A Randomized Controlled Trial

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Background: Diagnostic checklists have been proposed to help decrease diagnostic errors, but they have not been systematically studied in practice.

Methods: Fourteen family physicians and emergency physicians were randomized to use a diagnostic checklist vs. provide usual care with no checklist. The checklists consisted of differential diagnoses for 63 presenting symptoms in primary care, such as headache, abdominal pain, and dizziness. Checklist physicians reported their primary diagnosis and differential diagnosis to the investigator, following the history and physical exam. They then read aloud the checklist for the patient's presenting symptom and reported any changes in the primary diagnosis or differential diagnosis. No-checklist physicians reported their primary and differential diagnosis after the history and physical but then cared for their patients as usual. One month after the patient encounter, the principal investigator reviewed the medical records and telephoned patients to determine the final diagnosis. The primary outcome was diagnostic error. Diagnostic error was defined as a meaningful discrepancy between the chart diagnosis and the final diagnosis. Meaningful was defined as a discrepancy that potentially could have altered the patient's management plan.

Results: The 14 physicians saw 100 patients with acute complaints in an emergency department and a family practice clinic (range 2 to 10 patients per physician). The most common complaints were abdominal pain (n = 17), back pain (n = 10), and cough (n = 10). The most common final diagnoses were musculoskeletal back pain (n=9), urinary tract infection (n = 7), and viral upper respiratory infection (n=6). Checklist physicians made 7 diagnostic errors after seeing 53 patients (7/53 = 13%); no-checklist physicians made 10 diagnostic errors after seeing 47 patients (10/47 = 21%) (odds ratio = 0.56; 95% confidence interval, 0.20 - 1.58). None of the diagnostic errors led to mortality or serious morbidity. Examples of diagnostic errors included a chart diagnosis of dermatitis vs. a final diagnosis of head lice; and a chart diagnosis of urinary tract infection vs. a final diagnosis of kidney stone. The primary diagnosis was changed after the checklist review in 2 patients. Among checklist physicians, the number of diagnoses in the differential increased from a mean of 4.3 to 6.5 diagnoses per patient (paired t test, P < .001). The mean time to review the checklist was 80 seconds (standard deviation 41 seconds).

Conclusion: The diagnostic checklists used in this study did not significantly improve diagnostic accuracy.

Does Collaboration Lead to Fewer Diagnostic Errors?

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Background: Physician Assistants (PA) and physicians frequently collaborate to make diagnostic and treatment decisions. Unfortunately, missed and delayed diagnoses occur with relative frequency and pose a substantial threat to patient safety. Active reflection is a suggested strategy to improve diagnostic accuracy, but it is not well studied in either physician or Physician Assistant (PA) education. Reflective strategies thought to reduce the incidence of missed or delayed diagnoses include the use of diagnostic reminder systems (DRS) and collaboration with other providers when making diagnostic decisions. This study compared the impact of two different forms of reflection on PA student diagnostic accuracy during a series of standardized patient (SP) cases; use of Isabel PRO (a web-based DRS) and interprofessional discussion with a resident physician.

Methods: Sixty-five (n=65) first year PA students (PAS-1) completed a series of four SP cases. SP case presentations were designed to include diagnoses frequently missed in actual settings. After each case, PAS-1 subjects submitted their diagnostic decisions and suggestions for further testing. PAS-1 subjects were then divided into two treatment groups; a) Isabel-PRO treatment group (n=38) where PAS-1 subjects were allowed to use a web-based DRS to augment their diagnostic decisions and b) Resident-discussion treatment group (n=27) where PAS-1 subjects engaged in interprofessional discussion with a resident to augment their diagnostic decisions. PAS-1 diagnostic decisions were reported as a diagnostic accuracy score (DAS). DAS scores were reported pre-intervention (Pre-Isabel DAS or Pre-Resident DAS) or after intervention (Post-Isabel DAS or Post-Resident DAS). Pre and Post measures were compared within treatment groups and final DAS was compared between treatment groups.

Results: Statistically significant improvements were noted in PAS-1 diagnostic decisions after using Isabel PRO. PAS-1 diagnostic decisions did not significantly improve after resident discussion. Additionally, PAS-1 subjects tended to be more overconfident in their diagnostic decisions after resident discussion. Resident subjects made more accurate final diagnostic decisions if the PAS-1 subject they discussed the case with had more accurate initial diagnostic decisions.

Conclusion: Interprofessional discussion while making diagnostic decisions may be helpful at improving diagnostic accuracy, but it should not be assumed that collaboration will correct for cognitive biases that are known to lead to diagnostic errors in individual providers. The results of this study suggest that it may be advisable for both individuals and collaborative groups charged with making diagnostic decisions to use evidence based diagnostic reminder system when engaging in clinical reasoning activities.
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