Contents

Volume 4. Technology and Medication Safety

Prologue: Technology and Medication Safety *Mary L. Grady*

Health Information Technology

"Safeware": Safety-Critical Computing and Health Care Information Technology *Robert L. Wears, Nancy G. Leveson.*

Improving Perioperative Patient Safety Through the Use of Information Technology *Paul J. St. Jacques, Michael N. Minear*.

The Impact of Health Information Technology on Work Process and Patient Care in Labor and Delivery *Emily M. Campbell, Hong Li, Tomi Mori, et al.*

Consolidated Imaging: Implementing a Regional Health Information Exchange System for Radiology in Southern Maine *Stephenie Loux, Robert Coleman, Matthew Ralston, et al.*

Personal Health Records to Improve Health Information Exchange and Patient Safety *James R. Fricton, Diane Davies.*

Improving Patient Safety Using ATHENA-Decision Support System Technology: The Opioid Therapy for Chronic Pain Experience *Martha Michel, Jodie Trafton, Susana Martins, et al.*

Implementing an Ambulatory e-Prescribing System: Strategies Employed and Lessons Learned to Minimize Unintended Consequences *Emily B. Devine, Jennifer L. Wilson-Norton, Nathan M. Lawless, et al.*

Measuring IT Sophistication in Nursing Homes Gregory L. Alexander, Dick Madsen, Stephanie Herrick, et al. The Potential of Hand-held Assistive Technology to Improve Safety for Elder Adults Aging in Place *Shirley Ann Becker, Frank M. Webbe.*

Efficiency Gains with Computerized Provider Order Entry *Andrew M. Steele, Mical DeBrow.*

Medication Safety

Clinical Pharmacists in Emergency Medicine *Rollin J. Fairbanks, Erik A. Rueckmann, Karen E. Kolstee, et al.*

Intravenous Infusion Safety Initiative: Collaboration, Evidence-Based Best Practices, and "Smart" Technology Help Avert High-Risk Adverse Drug Events and Improve Patient Outcomes *Ray R. Maddox, Sherry Danello, Carolyn K. Williams, et al.*

Continuous Respiratory Monitoring and a "Smart" Infusion System Improve Safety of Patient-Controlled Analgesia in the Postoperative Period *Ray R. Maddox, Harold Oglesby, Carolyn K. Williams, et al.*

Evaluation of a Medication Therapy Management Program in Medicare Beneficiaries at High Risk of Adverse Drug Events: Study Methods *Andrew L. Masica, Daniel R. Touchette, Rowena J. Dolor, et al.*

Medication Management Transactions and Errors in Family Medicine Offices: A Pilot Study *John Lynch, Jonathan Rosen, Andrew Selinger, et al.*

Evaluation of Medications Removed from Automated Dispensing Machines Using the Override Function Leading to Multiple System Changes *Karla Miller, Manisha Shah, Laura Hitchcock, et al.*

Imbedding Research in Practice to Improve Medication Safety Marsha A. Raebel, Elizabeth A. Chester, David W. Brand, et al.

Risk of Concurrent Use of Prescription Drugs with Herbal and Dietary Supplements in Ambulatory Care *Robert E. Graham, Tejal K. Gandhi, Joshua Borus, et al.* Using Home Visits to Understand Medication Errors in Children *Kathleen E. Walsh, Christopher J. Stille, Kathleen M. Mazor, et al.*

Developing a Community-Wide Electronic Shared Medication List Ron Stock, Eldon R. Mahoney, Dawn Gauthier, et al.

Peer Reviewers

Additional Articles in this Publication

Volume 1. Assessment

Prologue: Laying the Foundation *Kerm Henriksen*

Looking Forward, Benefiting from the Past

Envisioning Patient Safety in the Year 2025: Eight Perspectives *Kerm Henriksen, Caitlin Oppenheimer, Lucian Leape, et al.*

What Exactly Is Patient Safety? *Linda Emanuel, Don Berwick, James Conway, et al.*

Reporting Systems

Improving the Value of Patient Safety Reporting Systems *Peter J. Pronovost, Laura L. Morlock, J. Bryan Sexton, et al.*

The Association Between Pharmacist Support and Voluntary Reporting of Medication Errors: An Analysis of MEDMARX[®] Data *Katherine J. Jones, Gary L. Cochran, Liyan Xu, et al.*

Proactive Postmarketing Surveillance: Overview and Lessons Learned from Medication Safety Research in the Veterans Health Administration *Robert R. Campbell, Andrea M. Spehar, Dustin D. French*

Medical Product Safety Network (MedSun) Collaborates with Medical Product Users to Create Specialty Subnetworks Donna Engleman, Suzanne Rich, Tina Powell, et al. Physician-Reported Adverse Events and Medical Errors in Obstetrics and Gynecology Martin November, Lucy Chie, Saul N. Weingart

26,000 Close Call Reports: Lessons from the University of Texas Close Call Reporting System Debora Simmons, JoAnn Mick, Krisanne Graves, et al.

Using an Anonymous Web-Based Incident Reporting Tool to Embed the Principles of a High-Reliability Organization *Paul Conlon, Rebecca Havlisch, Narendra Kini, et al.*

Voluntary Adverse Event Reporting in Rural Hospitals Charles P. Schade, Patricia Ruddick, David R. Lomely, et al.

Improving Error Reporting in Ambulatory Pediatrics with a Team Approach Daniel R. Neuspiel, Margo Guzman, Cari Harewood

Relationship Between Patient Harm and Reported Medical Errors in Primary Care: A Report from the ASIPS Collaborative David R. West, Wilson D. Pace, L. Miriam Dickinson, et al.

Structure and Features of a Care Enhancement Model Implementing the Patient Safety and Quality Improvement Act *William Riley, Bryan A. Liang, William Rutherford, et al.*

Taxonomies and Measurement

Development of a Comprehensive Medical Error Ontology Pallavi Mokkarala, Julie Brixey, Todd R. Johnson, et al.

Mapping a Large Patient Safety Database to the 2005 Patient Safety Event Taxonomy John R. Clarke, Janet Johnston, Monica Davis, et al.

A System to Describe and Reduce Medical Errors in Primary Care *Victoria Kaprielian, Truls Østbye, Samuel Warburton, et al.*

Beyond Nursing Quality Management: The Nation's First Regional Nursing Virtual Dashboard *Carolyn Aydin, Linda Burnes Bolton, Nancy Donaldson, et al.*

Using ICD-9-CM Codes in Hospital Claims Data to Detect Adverse Events in Patient Safety Surveillance *Paul Hougland, Jonathan Nebeker, Steve Pickard, et al.*

Adaption of AHRQ Patient Safety Indicators for Use in ICD-10 Administrative Data by an International Consortium *Hude Quan, Saskia Drösler, Vijaya Sundararajan, et al.*

Racial Disparities in Patient Safety Indicator (PSI) Rates in the Veterans Health Administration *Stephenie L. Shimada, Maria E. Montez-Rath, Susan A. Loveland, et al.*

Challenges and Lessons Learned

Patient Safety Learning Pilot: Narratives from the Frontlines Shirley E. Kellie, James B. Battles, Nancy M. Dixon, et al.

A Visual Computer Interface Concept for Making Error Reporting Useful at the Point of Care *Ranjit Singh, Wilson Pace, Ashok Singh, et al.*

Christiana Care Health System: Safety Mentor Program Michele Campbell, Christine Carrico, Carol Kerrigan Moore, et al.

News Media and Health Care Providers at the Crossroads of Medical Adverse Events Pamela Whitten, Mohan J. Dutta, Serena Carpenter, et al.

Risk Assessment

Risk-Based Patient Safety Metrics Matthew C. Scanlon, Ben-Tzion Karsh, Kelly A. Saran

Leveraging Existing Assessments of Risk Now (LEARN) Safety Analysis: A Method for Extending Patient Safety Learning Donna M. Woods, Jane L. Holl, Jon Young, et al. A Model of Care Delivery to Reduce Falls in a Major Cancer Center Nancy E. Kline, Bridgette Thom, Wayne Quashie, et al.

Using a Computerized Fall Risk Assessment Process to Tailor Interventions in Acute Care Mary L. Hook, Elizabeth C. Devine, Norma M. Lang

Home Health Care Patients and Safety Hazards in the Home: Preliminary Findings Robyn R.M. Gershon, Monika Pogorzelska, Kristine A. Qureshi, et al.

Cause Analysis

The New York Model: Root Cause Analysis Driving Patient Safety Initiative to Ensure Correct Surgical and Invasive Procedures *Lawrence L. Faltz, John N. Morley, Ellen Flink, et al.*

Department of Veterans Affairs Emergency Airway Management Initiative Erik J. Stalhandske, Michael J. Bishop, James P. Bagian

Using Root Cause Analysis to Reduce Falls in Rural Health Care Facilities *Patricia Ruddick, Karen Hannah, Charles P. Schade, et al.*

Common Cause Analysis: Focus on Institutional Change Anne Marie Browne, Robert Mullen, Jeanette Teets, et al.

Volume 2. Culture and Redesign

Prologue: Culture and Redesign for Improved Patient Safety *James B. Battles*

Safety Culture and Organizational Issues

The AHRQ Hospital Survey on Patient Safety Culture: A Tool to Plan and Evaluate Patient Safety Programs *Katherine J. Jones, Anne Skinner, Liyan Xu, et al.*

Hospital Administrative Staff vs. Nursing Staff Responses to the AHRQ Hospital Survey on Patient Safety Culture *Karen L. Hannah, Charles P. Schade, David R. Lomely* Using the AHRQ Hospital Survey on Patient Safety Culture as an Intervention Tool for Regional Clinical Improvement Collaboratives Inga Adams-Pizarro, ZeAmma Walker, Janet Robinson, et al.

Measuring Safety Climate in Primary Care Offices *Gurdev Singh, Ranjit Singh, Eric J. Thomas, et al.*

The PeaceHealth Ambulatory Medication Safety Culture Survey Ronald Stock, Eldon R. Mahoney

Views of Emergency Medicine Trainees on Adverse Events and Negligence: Survey Results from an Emergency Medicine Training Program in a Regional Health Care System Following the National Standard of Care *Hardeek H. Shah, Annie Gjelsvik, Leo Kobayashi, et al.*

Is There an Association Between Patient Safety Indicators and Hospital Teaching Status? *Peter E. Rivard, Cindy L. Christiansen, Shibei Zhao, et al.*

Organizational Behavior Management in Health Care: Applications for Large-Scale Improvements in Patient Safety *Thomas R. Cunningham, E. Scott Geller*

Confidential Performance Feedback and Organizational Capacity Building to Improve Hospital Patient Safety: Results of a Randomized Trial *Peter M. Layde, Linda N. Meurer, Clare E. Guse, et al.*

Clinical Process Improvement

Resident Sign-Out: A Precarious Exchange of Critical Information in a Fast-Paced World Stephen M. Borowitz, Linda A. Waggoner-Fountain, Ellen J. Bass, et al.

Documentation of Mandated Discharge Summary Components in Transitions from Acute to Subacute Care *Amy J.H. Kind, Maureen A. Smith*

Challenges to Real-Time Decision Support in Health Care Mark Fitzgerald, Nathan Farrow, Pamela Scicluna, et al. Risk Reduction and Systematic Error Management: Standardization of the Pediatric Chemotherapy Process *Beverly Ann David, Ana Rodriguez, Stanley W. Marks*

Analysis of Patient Safety: Converting Complex Pediatric Chemotherapy Ordering Processes from Paper to Electronic Systems Donald K. Baker, James M. Hoffman, Gregory A. Hale, et al.

Promoting Best Practice and Safety Through Preprinted Physician Orders George Ehringer, Barbara Duffy

The Impact of Standardized Order Sets on Quality and Financial Outcomes *David J. Ballard, Gerald Ogola, Neil S. Fleming, et al.*

Clinical Impact of an Anticoagulation Screening Service at a Pediatric Tertiary Care Facility *Kathy M. Harney, Patricia A. Branowicki, Margaret McCabe, et al.*

Creating Safety in the Testing Process in Primary Care Offices Nancy C. Elder, Timothy R. McEwen, John M. Flach, et al.

Role of External Coach in Advancing Research Translation in Hospital-Based Performance Improvement Nancy Donaldson, Dana Rutledge, Kristin Geiser

Strategies for Improving Patient Safety in Small Rural Hospitals Judith Tupper, Andrew Coburn, Stephanie Loux, et al.

Systems Redesign

Systems-Based Practice: Improving the Safety and Quality of Patient Care by Recognizing and Improving the System in Which We Work *Julie K. Johnson, Stephen H. Miller, Sheldon D. Horowitz*

Designing the Built Environment for a Culture and System of Patient Safety – A Conceptual, New Design Process *Kenneth N. Dickerman, Paul Barach*

Implementation of Systems Redesign: Approaches to Spread and Sustain Adoption

Heather Woodward Hagg, Jamie Workman-Germann, Mindy Flanagan, et al. Transforming the Morbidity and Mortality Conference into an Instrument for Systemwide Improvement Jamie N. Deis, Keegan M. Smith, Michael D. Warren, et al.

Collaboratives and Patient Involvement

The Patient Safety Education Project: An International Collaboration *Linda Emanuel, Merrilyn Walton, Martin Hatlie, et al.*

Harnessing the Potential of Health Care Collaboratives: Lessons from the Keystone ICU Project *Christine A. Goeschel, Peter J. Pronovost*

VHA's National Falls Collaborative and Prevention Programs *Erik Stalhandske, Peter Mills, Pat Quigley, et al.*

Hospital Language Services: Quality Improvement and Performance Measures Marsha Regenstein, Jennifer Huang, Catherine West, et al.

Using Patient Complaints to Promote Patient Safety James W. Pichert, Gerald Hickson, Ilene Moore

From Public Testimony to Vehicle for Statewide Action: Experience of the Michigan State Commission on Patient Safety *Diane Valade, Ruth Mohr, Vicky Debold, et al.*

The Rural Physician Peer Review Model[©]: A Virtual Solution *Josie R. Williams, Kathy K. Mechler, Ralitsa B. Atkins, et al.*

Volume 3. Performance and Tools

Prologue: The Shift toward Performance and Tools *Margaret A. Keyes*

Teamwork and Communication

TeamSTEPPSTM: Team Strategies and Tools to Enhance Performance and Patient Safety *Heidi B. King, James Battles, David P. Baker, et al.* Understanding Quality and Safety Problems in the Ambulatory Environment: Seeking Improvement with Promising Teamwork Tools and Strategies John S. Webster, Heidi B. King, Lauren M. Toomey, et al.

Building Self-Empowered Teams for Improving Safety in Postoperative Pain Management *Ranjit Singh, Bruce Naughton, Diana Anderson, et al.*

Beyond Rapid Response Teams: Instituting a "Rover Team" Improves the Management of At-Risk Patients, Facilitates Proactive Interventions, and Improves Outcomes *Rémi M. Heuckel, Jennifer L. Turi, Ira M. Cheifetz, et al.*

Improving Referral Communication Using a Referral Tool Within an Electronic Medical Record *Tejal K. Gandhi, Nancy L. Keating, Matthew Ditmore, et al.*

Improving Patient Safety Through Provider Communication Strategy Enhancements *Catherine Dingley, Kay Daugherty, Mary K. Derieg, et al.*

Improving Clinical Communication and Patient Safety: Clinician-Recommended Solutions Donna M. Woods, Jane L. Holl, Denise Angst, et al.

Simulation

In Situ Simulation: Challenges and Results Mary D. Patterson, George T. Blike, Vinay M. Nadkarni

The Nature, Characteristics and Patterns of Perinatal Critical Events Teams *William Riley, Helen Hansen, Ayse P. Gürses, et al.*

Failure Modes and Effects Analysis Based on *In Situ* Simulations: A Methodology to Improve Understanding of Risks and Failures *Stanley Davis, William Riley, Ayse P. Gürses, et al.*

The Mobile Mock Operating Room: Bringing Team Training to the Point of Care John T. Paige, Valeriy Kozmenko, Tong Yang, et al.

Examining the Effectiveness of Debriefing at the Point of Care in Simulation-Based Operating Room Team Training *Ramnarayan Paragi Gururaja, Tong Yang, John T. Paige, et al.*

Effect of Recent Refresher Training on *in Situ* Simulated Pediatric Tracheal Intubation Psychomotor Skill Performance *Akira Nishisaki, Louis Scrattish, John Boulet, et al.*

Simulation-Based Education Improves Patient Safety in Ambulatory Care *Beth A. LaVelle, Joanne J. McLaughlin*

Human Factors

Pillars of a Smart, Safe Operating Room F. Jacob Seagull, Gerald R. Moses, Adrian E. Park

High-Hanging Fruit: Improving Transitions in Health Care Shawn J. Perry, Robert L. Wears, Emily S. Patterson

Minding the Gaps: Creating Resilience in Health Care Christopher Nemeth, Robert Wears, David Woods, et al.

Error Producing Conditions in the Intensive Care Unit Frank A. Drews, Adrian Musters, Matthew H. Samore

Patient Monitors in Critical Care: Lessons for Improvement *Frank A. Drews*

Tools and Practices

Developing the Tools to Administer a Comprehensive Hospital Discharge Program: The ReEngineered Discharge (RED) Program *Brian Jack, Jeffrey Greenwald, Shaula Forsythe, et al.*

Creating an Accurate Medication List in the Outpatient Setting Through a Patient-Centered Approach *Kathryn Kraft Leonhardt, Patti Pagel, Deborah Bonin, et al.*

The Use of Modest Incentives to Boost Adoption of Safety Practices and Systems *Gregg S. Meyer, David F. Torchiana, Deborah Colton, et al.*

Using Data Mining to Predict Errors in Chronic Disease Care Ryan M. McCabe, Gediminas Adomavicius, Paul E. Johnson, et al.

Venous Thromboembolism Safety Toolkit: A Systems Approach to Patient Safety Brenda K. Zierler, Ann Wittkowsky, Gene Peterson, et al.

Using Process Measures to Improve Patient Safety Practices to Prevent Pulmonary Embolism *Ellen Flink, Harold Kilburn, Jr., Tong Wang, et al.*

A Tool to Assess Compliance in Anticoagulation Management Carla S. Huber, James M. Levett, Joan M. Atkinson

Using Lean Six Sigma[®] Tools to Compare INR Measurements from Different Laboratories Within a Community *Brion Hurley, James M. Levett, Carla Huber, et al.*

Using Six Sigma[®] Methodology to Improve Handoff Communication in High-Risk Patients *Kshitij P. Mistry, James Jaggers, Andrew J. Lodge, et al.*

10-Year Experience Integrating Strategic Performance Improvement Initiatives: Can the Balanced Scorecard, Six Sigma[®], and Team Training All Thrive in a Single Hospital? *Jon N. Meliones, Michael Alton, Jane Mericle, et al.*

Impact of Staff-Led Safety Walk Rounds *Vicki L. Montgomery*

Development of a Web-Based Patient Safety Resource: AHRQ Patient Safety Network (PSNet) Niraj L. Sehgal, Sumant R. Ranji, Kaveh G. Shojania, et al.