Creating High Reliability Organizations

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Organization:
University of Chicago

Structured Abstract

Purpose: The major objective of this team-building grant was to create a sustainable interdisciplinary team and infrastructure to improve patient safety guided by the theme of high-reliability organizations (HRO). The strategic goals of the project included (1) creating a University of Chicago Developing Center for Research and Evaluation in Patient Safety (UC DCERPS), (2) conducting patient safety education, and (3) designing and completing a small patient safety research project.

Scope: The setting for the UC DCERPS is a university academic medical center with a history of influencing national policy in a number of domains, teaching teachers, conducting interdisciplinary inquiry, and caring for and researching questions particular to vulnerable populations and controversial social issues. The University also manages Argonne National Laboratory for the US Department of Energy.

Methods: We conducted a small, qualitative research project studying systems and cultural issues pertinent to defining and improving inpatient-outpatient physician communication and coordination. We also looked at the investigation of device-related safety issues as an exemplar of characterizing patterns of organizational failure and learning.

Results: We realized our main goal by creating new collaborative relationships, leading to additional funding, acquiring 2,000 SF (including building a state-of-the-art immersive medical simulation facility outfitted with access grid technology and functionality for small systems research and training), and playing a leadership role in the community by working with other institutions and DCERPS to conceive and implement a regional patient safety coalition.

Key words: patient safety, high-reliability organizations, organizational learning, patient safety education, safety culture, physician communication

Purpose

This section discusses the purpose and rationale for the UC DCERPS overall as well as the research project and educational curriculum, given the main objective of the P20 funding mechanism.

Purpose and rationale of the DCERPS

The University of Chicago was chosen as the site to create a patient safety center in 2000 from a number of competing options and offers. The principles guiding the choice at that time included several institutional leader champions, an institution with strong law, social science, policy, business, and engineering (Argonne) schools and institutes; well-known interdisciplinary culture; moderate organizational size and scale; and, importantly, proximity to national headquarters of most policy-setting bodies in healthcare safety matters and many national annual and ad hoc meetings and conferences. The University is known for its claim to nearly 80 Nobel Prize winners, second only to Cambridge University, England, and membership of the UC Hospital in the US News and World Report Honor Roll, a group of approximately 15 hospitals. The relative lack of established organizational efforts in patient safety was both an opportunity and a challenge – we had a relatively clean slate with which to begin and openness to new approaches as well as a challenge due to the many requirements of raising awareness,

competing with traditional priorities in an increasingly cost-pressured environment, and building necessary infrastructure.

Although many DCERPS chose themes focused on well-defined medical specialties, populations, and settings (e.g., pediatrics, emergency medicine, home health, neonatal intensive care, family medicine – primary care, and nursing homes), our theme was selected for its generalizability, compelling theoretical framework, and strategy of translating lessons from other industries – a hallmark of the patient safety movement highlighted in the 1999 Institute of Medicine report "To Err is Human." At the time of funding, there was no knowledge validating the HRO concept in healthcare. The four main HRO themes as outlined by Sagan (*Limits of Safety*, Princeton U. Press, 1993) – leadership, culture of safety, redundancy designed into systems, and organizational learning by all possible means – seemed adequate, however, to structure four main UC DCERPS cores and directions. These were (1) advanced simulation approaches for research, training, and education; (2) advanced learning systems, including electronic-based voluntary reporting, and culture surveys; (3) health policy, ethical, and legal matters; and (4) systems and culture research and improvement. We planned to carry out our mission by developing projects with the following characteristics – cross-cutting across healthcare clinical disciplines, potential for generalizability throughout a healthcare delivery organization, and likelihood of sustainability through incorporation of new processes into operational care and training.

Over time, we felt that these themes and projects would provide the necessary differentiation from more traditional quality centers and programs. Our constituencies were ultimately envisioned as seven groups: UC physician learners and related faculties and leaders; UC hospital provider employees and related managers and leaders; relevant UC graduate schools and institutes; regional organizations providing healthcare in our community; and national bodies influencing healthcare safety and quality structures and processes, many locally accessible to the UC DCERPS in Chicago, the patient safety research and development community, and healthcare consumers.

Purpose and rationale for the educational curricular approach
It became clear during the course of our DCERPS project that most constituencies were not ready to accept and deliver patient safety didactic content in place of other curricula in an already full schedule. In addition, at the time, there was a dearth of validated patient safety content, given the early stage of most major research projects. Furthermore, the patient safety training and education landscape was changing rapidly. Finally, summaries of basic concepts in patient safety theory were widely available on the internet from reputable sources – for example, briefings and reviews on the theory of human error applied to healthcare, epidemiological evidence for patient safety improvement, organizational psychology of systems failures and prevention, and the importance of teamwork.

On the other hand, there did appear to be acceptance of placement of relevant patient safety content into existing learning structures and events (i.e., clinical skills, social context of medicine, ethics, regularly scheduled leadership retreats, and public policy

forums). As the group working to establish itself as the most broadly and deeply knowledgeable UC source about patient safety, especially related to our theme and key core areas, we therefore worked to deliver workshops, lectures, published papers, media content (e.g., national radio broadcasts; websites accessible by public), and informed consultation to our constituencies, as defined above.

We also spent a considerable time designing and implementing the simulation safety facility, given what we felt was its importance to the long-term sustainability of patient safety education efforts. More than just clinical skills training, the facility was envisioned to be and has become a place where different disciplines of providers, researchers, managers, executives, and policymakers internal and external to the University meet not just to participate in and view simulations but to discuss a broad range of often-sensitive patient safety issues in a nonjudgmental, facilitated environment. Our most recently funded project is focused on exactly this phenomenon and specifically has looked at how enterprise-wide and industry adoption of advanced simulation approaches creates strong safety culture, especially as evidenced in non-healthcare domains with a much longer history of experience in safety.

As noted in results, below, our work in developing infrastructure (website, simulation center, expertise and interdisciplinary collaborations) in parallel with giving 50 lectures and a number of educational publications over the course of the project has set the stage for testing and implementation of structured curricula as patient safety content has matured and constituencies are primed to request and receive that content.

Purpose, rationale, and objectives for small research project
We developed and pursued several small research projects, and we finished one focused on inpatient-outpatient physician communication patterns. Pilot data from our institution revealed that, not infrequently, primary care internal medicine and family practice physicians might be completely unaware that their patients had been admitted to hospital and discharged with new problems and medications – until the patient showed up in their offices. In many other cases, they were aware that patients had been admitted but they were not consulted about managing new problems and met many barriers to participating in important care planning and decision making – important gaps in the process, given that these physicians often had special knowledge about patient conditions, history and preferences, and family-environmental constraints. These failures of communication and coordination had a negative impact on resource utilization (duplication of expensive and possibly risky or inappropriate tests, for example) and created errors of omission and threats to patient trust, leading to potential malpractice action and erosion of respect for the professions. We also hoped to broaden our collaborative network beyond perioperative services, where our DCERPS members had a very strong presence, to the general medicine and outpatient arenas.

The objectives of the study were to describe a broad range of insights into the gaps and threats to safety as perceived by all the physician stakeholders in the inpatient-outpatient transition and handoff process in our academic setting and to identify possible solutions and avenues for additional research.

Another project we pursued in a different direction focused on recurrent issues of device safety and involvement in preventable patient harms and hazards. We planned on using a focus on devices as an entrée or pathway to learning more about organizational constructs that we were interested in and that were highly relevant to our DCERPS theme – namely, organizational memory (or amnesia) for safety-related events and possible harms and organizational approaches to harm prevention (as in device safety training approaches). Numerous barriers and challenges were encountered in pursuing this line of research, and we discovered that the whole field of organizational learning and training for device safety was significantly underdeveloped. To help develop this understanding, we created a retreat for medical device experts (ECRI, FDA), in-house purchasing and environmental safety leaders, interdisciplinary users, and our DCERPS. One of the biggest barriers was discovering the details of actual adverse events for the purpose of elucidating the contribution of medical devices and user issues. The medical malpractice crisis in general and the highly contentious situation in Cook County, Illinois, rendered it extremely difficult to persuade institutions and to devise acceptable IRB-approved protocols to perform the required investigations.

Scope

Scope of the UC DCERPS

The setting for the UC DCERPS is a university academic medical center with a history of influencing national policy in a number of domains, teaching teachers, conducting interdisciplinary inquiry, and caring for and researching questions particular to vulnerable populations and controversial social issues. The University also manages Argonne National Laboratory for the US Department of Energy. The UC DCERPS principals were all initially appointed in the Department of Anesthesiology and Critical Care; however, four departments and the hospital committed additional funds for 3 years to create a position for strategic development of the UC DCERPS. We leveraged AHRQ DCERPS funding to accomplish the project's main goal of eventually creating an interdisciplinary patient safety center with connections to regional, national, and AHRQ communities by building collaborations with the University of Chicago Hospitals Academy, Department of Patient Safety, other University safety-related projects (e.g., the ABC Testbed, NLM contract, Department of Surgery), our pilot project (Department of Internal Medicine and hospitalist program), and the Chicago Patient Safety Forum. Our immediate targeted audience at the University included approximately 400 medical students, 600 resident physicians in training, 1200 nurses and managers, and clinical faculty. In addition, we also targeted the graduate schools (law, business, social science) for prospecting for collaborators and openness to patient safety educational curricula. Although we were not ultimately successful in recruiting an MD/JD to the UC Law school with a joint position in our DCERPS, Dr. Small taught bioethics at the Law School for 3 years, with a strong emphasis on patient safety issues as they related to both tort law and theories of causality, to enlarge the perspectives of the law students, a number of whom traditionally graduate to accept positions that influence public policy and academia. The setting of our DCERPS in Chicago has enabled us to frequently create, direct, support, and advise seminars, conferences, courses, and interested national policymakers in cutting-edge patient safety matters. Our overarching strategy as a new

start-up in an increasingly challenging funding environment and an initially underdeveloped patient safety context has been to maintain a small core team focused on our strengths while we build relationships with a diversified group of collaborators and advisors.

Scope of the pilot project

The setting of our pilot project is a tertiary academic medical center with a complex and varying association with the community. As with most urban such centers, acquisition of and subsequent disassociation with primary care practices in the 1990s left a varied landscape for patients to navigate. Transitions in care are made even more complex by various arrangements within these large, heterogeneous academic organizations in terms of practice plan arrangements, lack of interoperability of messaging and health record systems, and call coverage arrangements. Although our setting is notable for a progressive, research-oriented hospitalist program, the clinical setting is plagued by the usual challenges in health information technology, a potential loss of information across transitions in care, and vulnerable patients with low health and language literacy.

Methods

Small groups of physicians were recruited and led through facilitated, confidential discussions about their direct experiences and insights with inpatient-outpatient physician communication and collaboration. These groups were designed to include primary care outpatient MDs, inpatient MDs, hospitalists, and housestaff. All material was taped and transcribed, identifiers were erased, and data were analyzed independently by four researchers (Mohr, Perovic – internal medicine quality improvement specialist, Small, and Meltzer) followed by discussion and consolidation of identified themes to the saturation point. The study was approved by the Institutional Review Board.

Results

This section describes the results of the research as well as other DCERPS outcomes.

A number of important themes emerged from analysis of the data. We describe the complexity of inpatient-outpatient MD communication patterns and note the many barriers in the absence of a seamless community-wide electronic health record. In addition, given new work hour regulations; increased handoffs and transitions in care; and heterogeneous call, meeting, and vacation schedules in both the outpatient and inpatient settings, it is extremely difficult for physicians at the point of care in any setting to reliably make timely contact with other targeted colleagues, let alone identify them by name and exact location to initiate contact.

Inpatient-outpatient MD coordination and communication patterns were formed by a balance of incentives – for example, existing financial and supervisory/mentoring relationships, social dynamics in the hospital/institution versus the broader outpatient community, and individual differences in communication styles and pursuit of varying standards of care and case control.

Many of the perceived solutions to the challenges encountered were thought to rest with health information technology applications that would (1) create forcing functions at key times in patient transit (i.e., admission, pre-discharge, and discharge) to ensure

medication updating and reconciliation, and presentation of new test results and problems; (2) update and make widely available the MD role and status, location, preferred means of communication, with clear instructions on how to complete communication; and (3) ensure closure on discharge regarding critical tests done but with results still pending.

Results will be submitted to a peer-reviewed publication, and copies will be forwarded to AHRQ with acknowledgment of support. Additional sharing of results will occur at regional and national meetings and will inform local systems improvements.

We perceived the DCERPS P20 grant mainly as a foundation on which to build a center by leveraging the start-up funds, credibility, and networking within the AHRQ grantee community. We wish therefore to note the additional funding we acquired with relevant objectives to our theme and building infrastructure for patient safety improvement.

- AHRQ U18 HS11905, 2001-2005 (PI: Kaplan, Columbia), subcontract with main objectives of creating the first specific, in-depth physician safety culture tool, building and evaluating immersive team simulation infrastructure and projects, developing patients as sources of information to identify hazards and patterns of preventable risks, and supporting the development and dissemination of the MERS-TH electronic safety reporting and learning system.
- A National Library of Medicine (NLM) contract 2003-2006 (PI: Silverstein, U Chicago) to build and integrate an advanced networking infrastructure and simulation and visualization technologies to carry out demonstration projects in clinical and training settings to improve patient, provider, and organizational outcomes.
- A Robert Wood Johnson Foundation grant 2004-2006 (PI: Small, Co PI Metis, U Chicago) to develop innovative simulation-based curricula for nursing unit teams to improve failure to rescue, to better understand how advanced simulation in other high-consequence industries helped create robust safety culture across complex organizations and to create tools to educate healthcare leaders about the potential of enterprise-wide simulation approaches.
- A subcontract to CODA in collaboration with the FDA to the Developing Center to create and implement an international conference, "Improving Medical Device Safety: Supporting Resilience and Innovation in Healthcare Organizations," Chicago, 2002.
- Brought a feasibility study to build a network and deliver a plan to create the Chicago Medical Simulation Learning Center; Small and Metis served as the key consultants to the Institute of Medicine, Chicago (2002-2003).

Website

http://patientsafety.uchicago.edu

We are in the process of adding additional content to our public website. This will include information about the first physician patient safety culture survey we have created and implemented with UC NORC (National Opinion Research Council) and Columbia University under another funded project as well as the UC rapid response team project, with which we have been closely involved (designing and implementing data collection for patient, provider ,and organizational outcomes; simulation-based team training). Patient safety curricula will include, for example, material about reducing adverse drug events (cases for provider learning in addition to a high-alert medication hospital policy developed by the PI with the input of a multidisciplinary task force, with the intent of increasing understanding for rationale and adoption by physicians). Additional material will include annotated references about subjects relating to organizational issues in patient safety, as discussed in the publications and lectures noted below.

Chicago Patient Safety Forum (CPSF)

http://www.chicagopatientsafety.org/

The PI was one of five principals in creating the first regional patient safety coalition in the state of Illinois in 2001. As the coalition expanded and adopted a formal set of bylaws, rules, and procedures, he was elected in an open public process to the first elected Steering Committee and currently serves as the chair of the Scientific Council, one of four such councils (the others being the Councils of Organizations, Professionals, and Consumers). Kay Metis has also been a leader in the Steering Committee of the CPSF. AHRQ P20 support has helped us play these collaborative and leadership roles.

Interaction with other DCERPS

During the course of the project, we met multiple times with the other local Chicago DCERPS (PI: Schiff), both at Cook County Hospital and at UC. More formally, we held a brief retreat at UC for four Midwestern DCERPS (PIs Hicker, Schiff, Carayon, Small). At our two international conferences in 2001 and 2002 at the University of Chicago Graduate School of Business Gleacher Center, we invited and provided funds as needed for DCERPS PIs to meet in Chicago. These included Weinger, Schiff, Wears, and Small as well as CLIPS grantees Cook and his team. Small also traveled to the Wisconsin DCERPS for lectures, seminars, and brainstorming conversations, and Small and Metis visited the Brown University site of the Wears DCERPS, which resulted in an ongoing collaboration (as described below in the discussion of the simulation facility and access grid-enabled telecollaboration).

Select List of Publications

These publications were selected for their relevance to our DCERPS theme and partial- or full-effort support by the P20 funding. AHRQ P20 acknowledgment was noted in all cases in the final proofs by the PI when UC DCERPS members were concerned. In some cases, acknowledgment was not included in the final copy for unknown reasons.

Small SD, Barach PR. Patient Safety and Health Policy. Hematology Oncology Clinics Special issue on Health Policy and Law. 2002; 16:1463-1482

Small SD, Sweitzer BJ. General vs. regional anesthesia not an arbitrary decision: how should health workers handle fear of HIV transmission? American Medical Association News, Ethics Forum, 45(45): 21, 2002

Ziv A, Wolpe PR, Small SD, Glick S. Simulation-Based Medical Education: An Ethical Analysis. Academic Medicine 2003; 78(8):783-789

Hammons T, Piland N, Small SD, Hatlie M, Burstin H. Ambulatory patient safety: what we know and need to know. J of Amb Care Management. 2003; 26(1):63-83

Liang BA, Small SD. Communicating About Care: Addressing Federal-State issues in peer review and mediation to promote patient safety.   Houston Journal of Health Law and Policy Symposium: Federalism in Health Care 2003; 3(2):219-264

Small SD, Metis KT, Sweitzer BJ, Knudsen E., Longnecker C. The Developing Center for Patient Safety at the University of Chicago. Poster presented at the Agency for Healthcare and Research National Patient Safety Meeting, Washing ton, DC, 2003.

Small SD. Thoughts on Patient Safety Education and the Role of Simulation. Virtual Mentor – an Ethics Journal of the American Medical Association. 2004;6
http://www.ama-assn.org/ama/pub/category/12059.html

Shapiro, MJ, Morey J, Small SD, Langford V, Kaylor C, Jagminas L, Suner S, Salisbury M, Simon R, Jay G. Simulation Based Teamwork Training for Emergency Department Staff: Does it improve clinical team performance when added to an existing didactic teamwork curriculum? Qual Safety in Health Care;2004;13;417-421

Spencer F and Small SD. Organizing for Patient Safety at the Institutional Level, in Surgical Patient Safety: Essential Information for Surgeons in Today's Environment. Ed B. Manuel and P. Nora.. 2004

Small SD and Gibson R. Ethical Dilemmas in Health Care – Cases for Study, in Patankar, M., Brown J., and Treadwell M. eds. Ethics of Safety: Cases From Aviation Maintenance, Health Care, and Occupational and Environmental Health. Aldershot, England: Ashgate, 2004, 230-240.

Small SD. Medical Device Associated Safety and Risk – Surveillance and Stratagems. *JAMA* 2004; 291:367-71

Raman J, Small SD, Qualter N. Results of a Medical Emergency Team Pilot Study on a Cardiothoracic Surgery Service. Presented, University of Chicago Hospitals First Annual Quality Fair (peer reviewed), October 2005

Select Lectures

These fifty lectures were all or partially enabled by our P20 funding during the term of the grant.

Many fulfilled our objectives in patient safety education, targeting a variety of healthcare providers, from medical students to nurses to leaders and executives locally, regionally, and nationally. Some lectures attempted to translate HRO conceptual frameworks to healthcare and stimulate thinking about how they might be applied by clinicians and decision makers. Other lectures developed specific themes related to cultures of safety (reporting and learning systems, barriers to adoption of such systems). Bibliographies and other references were distributed as appropriate at these events.

2001

Ethical tensions in patient safety
    Ethics Institute of the American Medical Association, Chicago,
Illinois Leadership and patient safety in clinical microsystems
    National Association of Children's Hospitals and Related Institutions
    Orlando, Florida
Medical Simulation
    University of Chicago Department of Anesthesia and Critical Care
    Annual Meeting, Chicago, Illinois
Conference Co-Director: Advancing Medical Education – Simulation, Teamwork,
    Patient Safety
    Paper presentation – Teamwork
Meeting sponsor/steering committee founding member and facilitator
    Inaugural Chicago Patient Safety Forum Meeting, Chicago, Illinois

2002

Model for a State Voluntary, Confidential Learning System: Reporting and
    Disclosure Issues. The Health Policy Institute of Southern Illinois
    Healthcare and Southern Illinois University School of Law, Carbondale,
    Illinois
Cutting edge patient safety applications
    Illinois Hospital Association Board Leadership Retreat, Kohler, Wisconsin
Practice makes perfect – Learning simulation tools
    World Research Group conference on Improving Patient Safety and
    Preventing Medical Error, Chicago, Illinois
The Impact of organizational culture on medical errors and patient safety

42nd Interscience Conference on Antimicrobial Agents and Chemotherapy, San Diego, California

Directions in Patient Safety – keynote lecture. OSF Healthcare Network Leadership Forum, Peoria, Illinois

Conference Director: Enhancing Organizational Resilience and Medical Device Safety, University of Chicago Graduate School of Business Gleacher Center, Chicago, Illinois

2003

Advanced Safety Information Systems: policy, rationale, and implementation
University of Chicago Hospital Department of Patient Safety Risk Management series, Chicago, Illinois

Medical-legal issues in patient safety, co-leader
Institute of Medicine, Chicago Patient Safety Forum at the University of Chicago Graduate School of Business Gleacher Center

Simulation approaches to improving patient safety
American Association of Operating Room Nurses National Meeting,
Chicago, Illinois

Information flow in complex organizations
Brown University Emergency Medicine Grand Rounds, Providence, Rhode Island

Harm and causation at the intersection of medicine, science, and the law
Pritzker Medical School, University of Chicago, Chicago, Illinois

Local, state and regional patient safety initiatives (panelist)
Agency for Healthcare Research and Quality National Patient Safety Meeting, Arlington, Virginia

Advanced reporting systems
Missouri State Patient Safety Leadership Forum. St. Louis, Missouri

Models for Recovery
Third Halifax Forum on Patient Safety. Halifax, Nova Scotia

Patient Safety – past, present and future
National Canadian patient safety meeting. Halifax, Nova Scotia

Reframing the question of human era – new models in patient safety
Cornell Medical School Anesthesia Grand Rounds
New York, New York

Organizational reliability (panelist – patient safety)
American College of Surgeons National Clinical Congress
Chicago, Illinois

2004

The "new look" in patient safety: systems, cultures, and human factors:
does it require a new look at legal issues? Challenges for Clinicians in the New Millenium Department of Anesthesia and Critical Care 6th Annual Conference, Chicago, Illinois

Patient safety
> Pritzker Medical School Year II Student Class – Clinical Skills
> February, Chicago, Illinois

Training for the Unexpected: Leading Healthcare to a New Level of Safety:
> Lessons from High Hazard Industries. American Hospital Association,
> Agency for Healthcare Quality and Research, Health Research and
> Education Trust, and the Hospital and Healthsystem Association of
> Pennsylvania, Park City, Utah

Information technology and improving healthcare safety. Medical Informatics
> – University of Chicago Department of Computer Science graduate school

Patient Safety – Systems, Culture, and Human Factors
> Chicago Medical Society Annual Meeting – Chicago Area Medical
> Schools

Patient Safety and Tort Reform
> Chicago Medical Society Annual Meeting

Culture and Coping with Hazard at the Organizational Level. National Meeting of
> the American Health Quality Association, Center for Medicare and
> Medicaid Services, New Orleans

Immersive Systems Simulations for Patient Safety and Medical Disaster
> Management, World Congress of Anesthesia, Paris, France

Medical-Legal Patient Safety Leadership Lecture Series, Co-Delivered with
> Stephan Landsman, Clifford Professor of Tort Law and Social Policy,
> DePaul University, funded by the Otho SA Sprague Memorial Institute for
> the Institute of Medicine, Chicago

The Medical Leadership Group, April 2004
> Illinois Hospital Association Leadership Safety Task Force, May 2004

Systems Simulation Presentation and Demonstration – Leadership Event at the
> American College of Surgeons, (Director), May 25, 2004. Co-sponsored
> by the UC Developing Center for Patient Safety, the Institute of Medicine,
> Chicago, and METI

Historical Perspective and Contemporary Issues in Bioethics. Argonne National
> Laboratory Undergraduate Student Special Ethics Seminar – a partnership
> between Argonne National Laboratory, DePaul University, and the
> University of Chicago, July 2004

Simulation Approaches and Integration into an Organizational Safety Program.
    Illinois Foundation for Quality Healthcare 2004 Quality Forum – Peak
    Performance: Reaching the Summit Through Quality Improvement.
    Springfield, Illinois, September 1, 2004 – and,
    Lisle-Naperville, Illinois, September 2, 2004

Principles and Practice of Voluntary and Mandatory Safety Reporting Systems in
    the Illinois Context. Promoting Patient Safety in Illinois: Medical and
    Legal Aspects. Presented by Chicago Patient Safety Forum and the
    Institute of Medicine, Chicago, at the Harold Washington Library,
    Chicago, Illinois

Making the Health Care System Safer: Third Annual Patient Safety Research
    Conference, Agency for Healthcare Research and Quality, Washington,
    DC
    Panel member, "Taxonomy for Patient Safety"
    Panel member, Simulations in Patient Safety Research and Training"
    Panel moderator and member, "Resilience and Innovation in Health Care
    Organizations"

Teamwork Components of Defusing Organizational Accidents
    National Meeting of the Ophthalmic Anesthesia Society – a
    multidisciplinary society of anesthesiologists, surgeons, and
    nurses, Chicago, Illinois

    University of Chicago Law School Bioethics Seminar

State of the Art Review of Medical Simulation and Update – Chicago Regional
    Medical Simulation Center, Metropolitan Chicago Healthcare Council,
    Chicago, Illinois

Integrated Learning Systems to Improve Safety – Infrastructure and Applications.
    JCAHO Public Policy Symposium, A Prescription for Patient Safety
    and Medical Liability Reform, Washington, DC

2005

Introduction to Safety in Health Care: Policy, Science, Practice. Pritzker Medical
    School Clinical Skills Class, plenary session

Simulation applied to systems and culture in health care: experience, applications,
    and infrastructure. Center for Quality and Productivity
    Improvement, University of Wisconsin, Madison

Graduate Student Research Seminar – Patient Safety and Human Factors
Engineering. Center for Quality and Productivity Improvement,
University of Wisconsin, Madison

Implementation of a Model Regional Simulation Center. Ninth Annual Human
Patient Simulation Network International Meeting, Sarasota, Florida

Immersive Simulation and Culture Change. Ninth Annual Patient Simulation
Network International Meeting, Sarasota, Florida

An Ecological Framework for the Ethics of Safety Critical Systems. Chicago
Clinical Ethics Program Annual Meeting, March 2005, Loyola University

Mac Neal Hospital Leadership Retreat – Oak Brook, Illinois
High Performance vs. Minimum Standard Training: Simulation
Approaches and Integration into an Organizational Safety Program

The Roles of Leadership, Cultures of Safety, and Lessons from Other
Industries

Advanced Simulation and Applications in Other Industries. Sao Paolo Congress
of Anesthesiology, Sao Paolo, Brazil

Modeling Simulation Approaches for Hospital Based Medicine Practices. Society
for Hospital Medicine National Meeting, Chicago, Illinois

Chicago Medical Society Midwestern Clinical Conference Fall Series – Patient
Safety. Update and Review, co-presented with DCERPS PI John Hickner,
American Academy of Family Practice

The Developing Center for Patient Safety/Simulation and Safety Center

Our simulation and safety center is on the UC campus in a University building that is 5
to 10 minutes from the hospital complex, just above the Office for Continuing Medical
Education. Although the model follows a fairly traditional scheme (i.e., simulation
arena, control and debriefing rooms equipped with one-way glass observation), we
introduced several innovations. The simulation arena was designed to accept up to six or
seven simulated/actual patients (as in standardized patients or trained human actors)
simultaneously. This enables us to perform small systems or microsystems simulations,
such as those in emergency rooms and post-anesthesia care and intensive care units. It
also enables us to carry out patient hospital unit/floor simulations with multiple patients,
something that, to our knowledge, has not been done before but represents the greater
majority of inpatient care experiences on a volume consideration alone.

We also established the first access grid (www.accessgrid.org) or AG installation in a medical simulation center. Invented in the past several years by Argonne National Laboratory and managed by the University of Chicago for the Department of Energy, the AG is an internet-2-based technology supporting room-to-room digital communication systems. Simply put, the AG can accept any number of digital data streams (audio, visual)), and display them on a large wall in the form of a projected computer desktop with all windows and images manipulated at a distance via a wireless or table "mouse." The AG supports real-time, high-presence sharing of very large multimedia streaming files, such as simulations, debriefings, and visualization of patient data files. The AG also enables new types of distance learning and collaboration in real time and may leverage expensive, complex methods, such as immersive team simulations, to be developed, researched, and shared in a less costly manner across regions and larger distances. We are now embarking on studies using the AG that focus on interdisciplinary project cost reduction and productivity (significant reduction in site visit costs, for example,) and impact on group and individual learning). To that end, we have enabled the Brown University simulation center, focusing on emergency medicine, to install and implement an AG in their facility (the second such simulation center worldwide to do so) and begin telecollaboration on a pilot emergency medicine-based patient safety project.

Site visits to the UC simulation safety facility have included the Chief Naval Office strategic visioning team; a team from the National Library of Medicine managing the contract to UC for the grid installation and related projects (PI: Silverstein); an executive leadership and operational safety group from a large, integrated health service delivery network in Chicago); the Illinois Foundation for Quality Health Care (Illinois-Iowa QIO); and executives and leaders from The Joint Commission, the Metropolitan Chicago HealthCare Council (trade organization for over 100 hospitals and physician groups in the Chicago region), and Illinois Institute of Technology, among others. For many, this represented their first hands-on exposure to an immersive team training medical simulation facility as well as the concept of multipatient, small systems simulation and application to training and improvement of patient safety culture.

View from control room to simulation room during team training

Multipatient simulation arena with the control room in the background
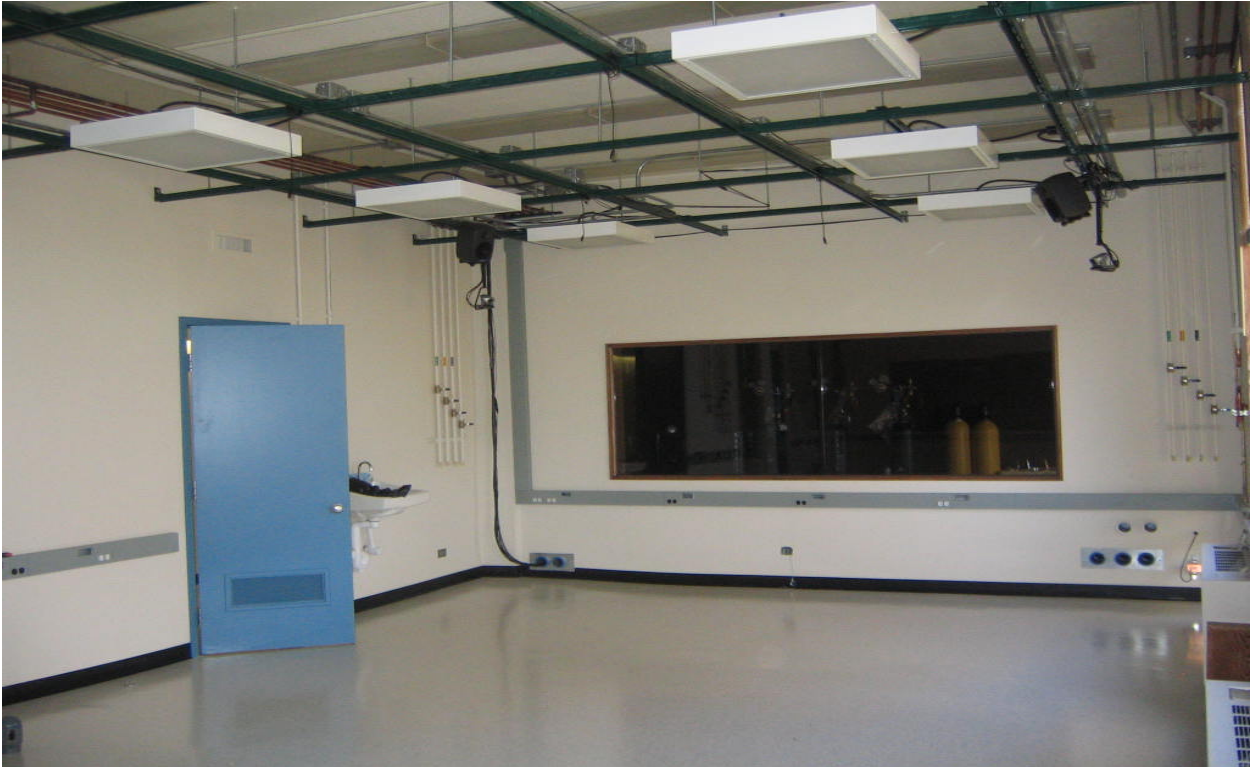
View of debriefing room – Rapid Response Team training in progress using the AG