

# Infection Prevention in Emergency Care: Strategies to Improve Practice

## Consensus Conference

Denver, Colorado, USA

October 7, 2012

### Conference Co-Chairs

Jeremiah Schuur, MD, MHS, FACEP

Connie Price, MD

### Sponsoring Organizations

Agency for Healthcare Research and Quality (AHRQ)

American College of Emergency Physicians (ACEP)

Brigham & Women's Hospital – Dept. of Emergency Medicine

Denver Health & Hospital

Mayo Clinic – Dept. of Emergency Medicine

Association for Professionals in Infection Control & Epidemiology (APIC)

The Society for Healthcare Epidemiology of America (SHEA)

### ***Funded by the Agency for Healthcare Research and Quality***

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# Infection Prevention in Emergency Care: Strategies to Improve Practice

**When:** October 7<sup>th</sup> 2012 | 8AM-5PM (day prior to ACEP Scientific Assembly)

**Where:** Centennial AB, Level 3| Hyatt Regency Denver at Colorado Convention Center

## AGENDA

- 7:00-8:00AM** Registration Table Open and Continental Breakfast Available
- 8:10-8:30** Introduction & Welcome from Conference Co-Chairs
- Jeremiah Schuur, MD, MHS, FACEP (Brigham and Women's Hospital)
  - Connie Price, MD (Denver Health and Hospital)
- 8:30-9:15** Morning Keynote: *Healthcare Associated Infections in the US: Success and Ongoing Challenges*
- Carolyn Clancy, MD, Director of the Agency for Healthcare Research and Quality
- 9:15-10:15** Moderated Panel: *The Role of Human Factors in ED Infection Prevention*
- 10:15-10:30** Break & Coffee
- 10:30-11:30** Moderated Case Discussion: *ED Infection Prevention Success Stories*
- 11:30-11:45** Break – Lunch Pick-Up
- 11:45-12:30** Lunch Keynote: *Engaging Patients and Staff in Infection Prevention*
- Kerry O'Connell, Patient and Health Care Advocate for Infection Prevention
- 12:30-12:45PM** Break; move into Small Groups
- 12:45-2:15** Small Group Session #1
- Patient Engagement
  - Human Factors
- Small Group Session #2
- Education and CME
  - Research Priorities
- 2:15-2:30** Coffee & Regroup (main conference room)
- 2:30-3:00** Afternoon Keynote: *Healthcare Associated Infections in an Era of Accountable Care: Policy Views*
- David Classen, MD, MS (University of Utah)
- 3:00-3:40** Moderated Panel: *Prioritization of Infection Prevention Research in the ED*
- 3:40-4:40** Workgroup Reports:
- Patient Engagement
  - Human Factors
  - Education and CME
- 4:40-5:00** Wrap Up from Conference Organizers

# Infection Prevention in Emergency Care: Strategies to Improve Practice

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- 9:15-10:15** Moderated Panel: *The Role of Human Factors in ED Infection Prevention*
- 9:15-9:30**
- Vicki Lewis, PhD (National Center Human Factors Engineering in Healthcare)
    - Discussion of what human factors engineering (HFE) is and how this system approach will unveil new opportunities for mitigating HAIs in the ED
    - Learning Objectives:
      - Provide a definition of human factors
      - List the domains of the sociotechnical system of healthcare
      - Provide one example of a human factors solution to HAIs in each domain
- 9:30-9:45**
- Robert Wears, MD, PhD, MS, FACEP (University of Florida)
    - Discussion of ED design project in Great Britain; highlight issues of ED culture and effect of design on environmental services staff and maintenance
    - Learning Objectives:
      - Describe 3-5 major avenues of improvement for infection prevention work
      - List in order of decreasing effectiveness 5 modalities for improvement
      - List places where HFE expertise might assist in infection prevention
- 9:45-10:00**
- Connie Price, MD, MPH (Denver Health and Hospital)
    - Learning Objectives:
      - Describe infection prevention from an organizational perspective
      - Demonstrate how human factors are critical to successful implementation of an infection prevention initiative
      - Apply strategies to an ED setting
- 10:00-10:15**
- Questions and discussion
- 10:15-10:30** Coffee Break
- 10:30-11:30** Moderated Case Discussion: *ED Infection Prevention Success Stories*
- 10:30-10:45**
- Case 1: Ella Franklin, RN, CRC, EDAC (ED One)
    - Discussion of Project ER One, how HAI prevention was built into the redesign of MedStar's Washington Hospital Center, lessons learned.
    - Learning Objectives:
      - Identify physical plant design features that facilitate infection preventing behaviors
      - Critique contagious disease response practices in their setting and describe opportunities to increase patient and staff protection
      - Describe process and design strategies that support optimal decontamination of the ED setting
- 10:45-11:00**
- Case 2: Stewart Wright, MD (University of Cincinnati)
    - University of Cincinnati ED's work to reduce Central Line Associated Bloodstream Infections (CLABSI)
    - Learning Objectives:
      - Understand the steps used at the University of Cincinnati to implement evidence-based infection control practices for central line insertion in the ED.
- 11:00-11:15**
- Case 3: Theresa Gregg, RN (Creighton University / Alegen Creighton Health)
    - Creighton University Medical Center ED's work to reduce Catheter Associated Urinary Tract Infections (CAUTI)
    - Learning Objectives:
      - Understand the steps used at the Creighton to implement evidence-based infection control practices for urinary catheter use and insertion.

<b>11:15-11:30</b>	<ul style="list-style-type: none"> <li>▪ Case 4: Jeremiah Schuur, MD, MHS (Brigham &amp; Women's Hospital) <ul style="list-style-type: none"> <li>○ Brigham &amp; Women Hospital ED's work to improve Hand Hygiene</li> <li>○ Learning Objectives: <ul style="list-style-type: none"> <li>▪ Understand the steps used at Brigham and Women's Hospital to improve hand hygiene practices.</li> </ul> </li> </ul> </li> <li>▪ Discussants: <ul style="list-style-type: none"> <li>○ Robert Wears, MD, PhD, MS, FACEP (University of Florida)</li> <li>○ Connie Price, MD, MPH (Denver Health and Hospital)</li> </ul> </li> </ul>
<b>11:30-11:45</b>	Break to pick up lunch
<b>11:45-12:30PM</b>	<p>Lunch Keynote: <i>Engaging Patients and Staff in Infection Prevention</i></p> <ul style="list-style-type: none"> <li>▪ Connie Price - Introduction</li> <li>▪ Kerry O'Connell (Patient &amp; Health Care Advocate for Infection Prevention) <ul style="list-style-type: none"> <li>○ Discussion of his experience as a patient with HAIs and subsequent work as a patient advocate</li> <li>○ Learning Objectives: <ul style="list-style-type: none"> <li>▪ Exemplify one patient's experience with HAIs</li> <li>▪ Reflect on the Emergency Department experience from the patient perspective</li> <li>▪ Examine the role of the patient in improving infection prevention</li> </ul> </li> </ul> </li> </ul>
<b>12:30-12:45</b>	Break; Move to Small Group Sessions
<b>12:45-2:15</b>	Small Group Sessions (2):
<b>12:45-1:25</b> <b>1:25-1:35</b> <b>1:35-2:15</b>	Small Group Session #1 Break (switch groups) Small Group Session #2 <ul style="list-style-type: none"> <li>▪ Patient Engagement</li> <li>▪ Human Factors</li> <li>▪ Education and CME</li> <li>▪ Research Priorities</li> </ul>
<b>2:15-2:30</b>	Reconvene (main conference room)
<b>2:30-3:00</b>	<p>Afternoon Keynote: <i>Healthcare Associated Infections in an Era of Accountable Care: Policy Views</i></p> <ul style="list-style-type: none"> <li>▪ David Classen, MD, MS (University of Utah) <ul style="list-style-type: none"> <li>○ Learning Objectives: <ul style="list-style-type: none"> <li>▪ Understand the future impact of infection control in the accountable care organization (ACO) model</li> <li>▪ Understand the impact of infection control in the ED in the ACO</li> </ul> </li> </ul> </li> </ul>
<b>3:00-3:40</b>	Moderated Panel: <i>Prioritization of Infection Prevention Research in the ED</i>
<b>3:00-3:10</b>	<ul style="list-style-type: none"> <li>▪ John Younger, MD, MS, FACEP (University of Michigan) <ul style="list-style-type: none"> <li>○ Research Gaps in Infection Prevention: A Perspective from Bench and Bedside</li> <li>○ Learning Objectives: <ul style="list-style-type: none"> <li>▪ Identify gaps in infection prevention research during Emergency Care</li> </ul> </li> </ul> </li> </ul>
<b>3:10-3:25</b>	<ul style="list-style-type: none"> <li>▪ Patricia Stone, PhD, FAAN (Columbia University) <ul style="list-style-type: none"> <li>○ Research Methods in Infection Prevention: What Might Work in the ED?</li> <li>○ Learning Objectives: <ul style="list-style-type: none"> <li>▪ Comparison of the strengths and weaknesses of different research strategies that can be applied to infection prevention questions in ED settings.</li> </ul> </li> </ul> </li> </ul>
<b>3:25-3:40</b>	<ul style="list-style-type: none"> <li>▪ Greg Moran, MD, FACEP (UCLA) and Arjun Venkatesh (Yale) <ul style="list-style-type: none"> <li>▪ Report from Workgroup and Discussant</li> </ul> </li> </ul>
<b>3:30-3:40</b>	<ul style="list-style-type: none"> <li>▪ Questions and discussion</li> </ul>
<b>3:40-4:40</b>	Workgroup Report-outs
<b>3:40-4:00</b>	<ul style="list-style-type: none"> <li>▪ Patient Engagement workgroup: Eileen Carter &amp; Erik Hess</li> </ul>
<b>4:00-4:20</b>	<ul style="list-style-type: none"> <li>▪ Provider Education workgroup: Chris Fee, Paula Karnick &amp; Jack Kelly</li> </ul>
<b>4:20-4:40</b>	<ul style="list-style-type: none"> <li>▪ Human Factors &amp; QI workgroup: Vicki Lewis &amp; Robert Wears</li> </ul>
<b>4:40-5:00</b>	Wrap Up from Conference Organizers: Next steps

# We Would Like to Thank the Following Organizations and Departments for Their Support

## Agency for Healthcare Research and Quality (AHRQ)

AHRQ is the lead Federal agency charged with improving the quality, safety, efficiency, and effectiveness of health care for all Americans. As one of 12 agencies within the Department of Health and Human Services, AHRQ supports health services research that will improve the quality of health care and promote evidence-based decision-making.

## American College of Emergency Physicians (ACEP)

ACEP is the first and largest professional organization of emergency medicine physicians in the United States, with more than 28,000 physician members. ACEP supports quality emergency care and promotes the interests of the physicians who provide it.



## Brigham & Women's Hospital - Department of Emergency Medicine

BWH is a teaching affiliate of Harvard Medical School located in Boston. The BWH Emergency Department is dedicated to providing the most advanced and personalized emergency medical care possible to every patient who comes through the doors—nearly 60,000 each year, serving people from throughout the city of Boston, the commonwealth of Massachusetts, and New England.



## Association for Professionals in Infection Control & Epidemiology (APIC)

APIC is the leading professional association for infection preventionists (IPs) with more than 14,000 members. It is a multi-disciplinary, international organization whose mission is to create a safer world through the prevention of infection by advancing health care epidemiology through education, collaboration, research, practice and credentialing.



## Denver Health & Hospital

Denver Health is a comprehensive, integrated health care system providing level one care for all, regardless of ability to pay. It is Colorado's primary safety net institution. Twenty-five percent of all Denver residents, or approximately 150,000 individuals, receive their health care at Denver Health.



## Mayo Clinic - Department of Emergency Medicine

Mayo Clinic is a not-for-profit medical practice and medical research group based in Rochester, Minnesota, specializing in tertiary care. It is a worldwide leader in medical care, research and education for people from all walks of life. Each year Mayo emergency care physicians at all three locations see more than 80,000 patients in the emergency care setting.



## The Society for Healthcare Epidemiology of America (SHEA)

SHEA's mission is to prevent and control healthcare-associated infections and advance the field of healthcare epidemiology. SHEA has helped define best practices in healthcare epidemiology worldwide since its founding in 1980. SHEA is dedicated to advancing the science and practice of healthcare epidemiology and preventing and controlling morbidity, mortality, and the cost of care linked to healthcare-associated infections.





# Personal Acknowledgements

*We would like to extend our gratitude to all of the following individuals for the time and effort they have put into making this consensus conference a success.*

## **Participants** *(full list on page 19)*

### **Workgroup Leaders**

Eileen Carter	Chris Fee	Vicki Lewis
Erik Hess	Paula Karnick	John Kelly
Pat Stone	Robert Wears	John Younger

### **Steering Committee Members**

Craig Deao	Ella Franklin	Terry Fairbanks
Julius Pham	Stephen Liang	Brian Livingston
Katharine Luther	James Luz	Dan Martin
Greg Moran	Kerry O'Connell	Julie Reagan
Sukhjit 'Sarge' Takhar	Deborah Yokoe	Arjun Venkatesh

### **Representatives from Sponsoring Organizations**

Jennifer Bright	Marilyn Hanchett	Paul Kivela
Cynthia Singh	Ginger Westbrook	Lisa Brannum

### **BWH Staff**

David Parker	Corine Sinnette	Robert Slane
Katherine Wai		

## Welcome Remarks

Since the early days of medicine, healthcare practitioners have recognized the balance between acting to help patients and avoiding harm. In emergency medicine, these tensions are apparent in our daily work: whether to intubate a patient in respiratory distress, whether to admit a patient to the hospital with dizziness of unclear ideology, and whether to place a central venous catheter in a patient on the borderline of early sepsis.

Healthcare providers' role in causing infections has been known since at least the time of Ignaz Semmelweis in the 1840s. Over the last 10 years the role of healthcare associated infections has been clearly quantified and significant steps have been taken to reduce their toll. For example, there has been renewed emphasis on appropriate hand hygiene, and evidence-based practice bundles to avoid central line associated bloodstream infections and catheter associated urinary tract infections have been developed in hospitals and intensive care units. Yet, these practices have been slower to be adopted in emergency departments.

Emergency Departments are a potential setting for transmission of healthcare associated infections (HAI). There are approximately 4800 EDs in the U.S., and patients make over 136 million visits annually. Patient populations are diverse, including the chronically ill and the previously healthy, the rich and the poor, the young and the old, the immunocompetent and the immunosuppressed. Multiple patients are in close proximity, often separated only by curtains. Healthcare workers in the ED have varied levels of training, yet share a concern for immediate patient care needs as opposed to prevention, and a common environment that is crowded, interruption filled and chaotic. Questions such as whether and how to place central lines and urinary catheters and when to perform hand hygiene (HH) may seem less important than the immediate needs of multiple sick patients.

That then is our goal today. We aim to bring together emergency medicine providers, infection prevention professionals, and hospital quality staff to identify barriers to implementing evidence-based practices in emergency departments, and share successful strategies. We also hope to set an agenda for future work, whether it is quality improvement projects that individuals will work on when they go home, or multicenter research studies that we will ask federal agencies to fund.

On behalf of our steering committee and our sponsoring organizations, let me welcome you and thank you for your participation. We look forward to engaging with you at the conference and hopefully in the future.

Sincerely,

Jeremiah Schuur, MD, MHS  
Director of Quality, Safety & Performance  
Improvement for Department of Emergency  
Medicine  
Brigham & Women's Hospital  
Assistant Professor, Harvard Medical School

Connie Savor Price, MD  
Medical Director, Infection Prevention and  
Control  
Chief, Division of Infectious Diseases  
Denver Health and Hospital  
Associate Professor of Medicine, University of  
Colorado-Denver

# Workgroup Aims & Session Outlines

## Patient Engagement

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### Aims / Objectives:

- Aim to collaboratively identify patient-centered strategies, interventions or approaches to improve infection prevention in the emergency department (ED)

### Scope:

- Identify and discuss patient engagement strategies with demonstrated effectiveness in the ED or those amenable to translation to the ED environment
- Propose novel patient-centered infection prevention strategies or approaches as areas for future research
- Identify barriers and facilitators to staff engagement in infection prevention

### Timeline:

- Overview
- Small Breakout Groups (barriers and strategies to patient engagement)
- Ranking Exercise



## Human Factors / Quality Improvement

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### Aims / Objectives:

- This workgroup will consider infection prevention in the emergency department (ED) through a human factors lens. A systems approach will be used to examine five domains: external environment, organization, technical factors, physical environment, and people.

### Scope:

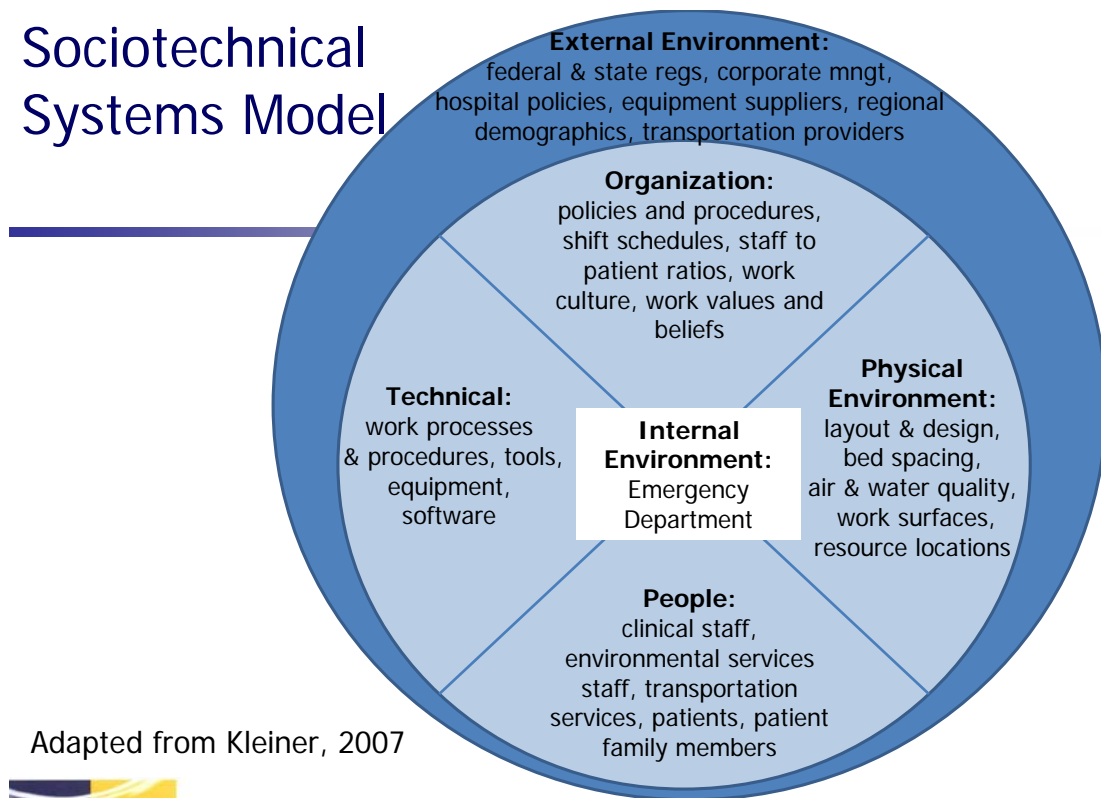
- Review the five domains of a human factors analysis
- Review the “Ground Rules” for developing interventions
- Consider interventions in each domain and solicit additions to the list
- Participants will discuss the challenges and barriers of the interventions in the ED and provide ideas for how to address each barrier

### Timeline:

- **5 minutes** – Review the five domains of a human factors analysis (The five domains will be presented earlier in the day during the panel session, “The Role of Human Factors in Infection Prevention”)
- **5 minutes** - Review the “Ground Rules” for developing interventions
- **10 minutes** - Consider interventions in each domain and solicit additions to the list
- **25 minutes** - Participants will discuss the challenges and barriers of the interventions when tried in the ED and provide ideas for how to address each barrier



# Sociotechnical Systems Model



Adapted from Kleiner, 2007



MedStar Health

National Center for Human Factors Engineering in Healthcare

www.MedicalHumanFactors.net

## Identified Variances

Domains	#	Example
External Environment	5	There is a fistula-first policy but not all patients are eligible for a fistula or graft
Organizational Factor	8	Discrepancy between 5 hr put-on window and protocol to put on 3 patients in 30 minutes
Technical Factor	6	Work processes do not support early wound detection
Physical Environment	10	Surface contamination on high touch areas
People Factor – clinical staff, environmental services staff, patients	28	Knowledge of ES staff regarding types of infections in the Dialysis Unit





## **Provider Education**

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### **Aims / Objectives:**

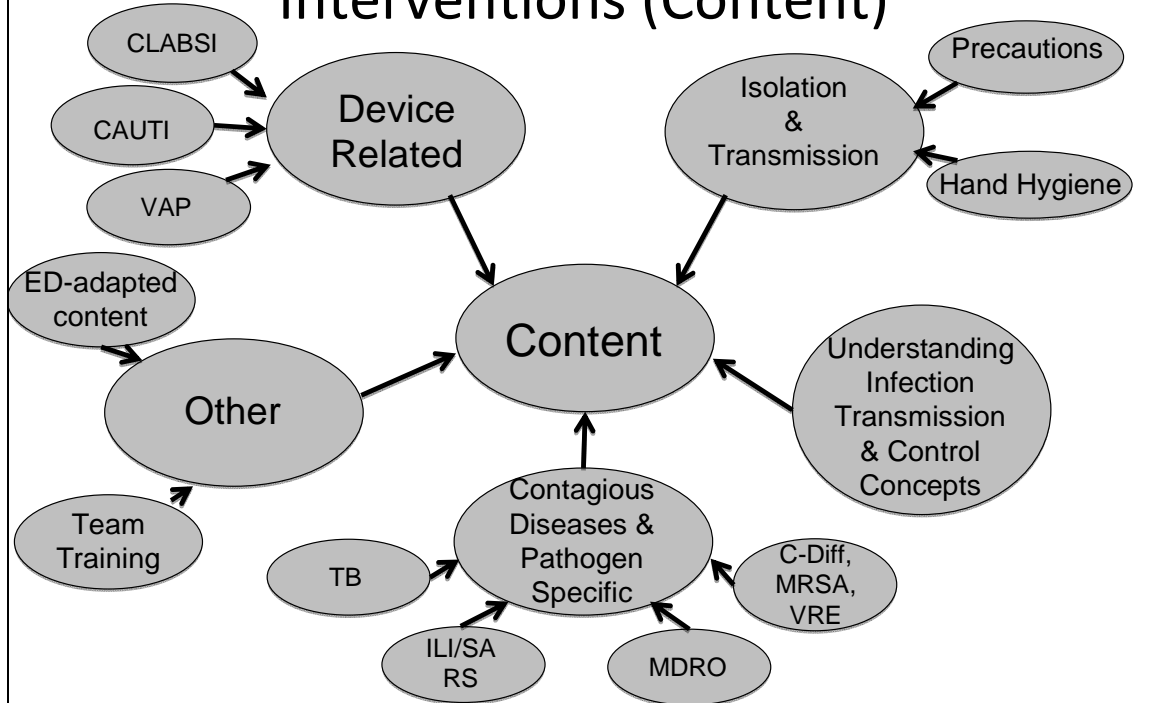
- Review ED infection prevention (IP) education/curricular expectations & guidelines for residents, faculty, and nurses
- Determine ED IP education content strengths & gaps
- Determine methodologies best suited to educate ED providers in IP and translation to clinical activities
- Prioritize suggested ED IP education content and methodologies
- Propose next steps for disseminating the identified topics and methods

### **Timeline:**

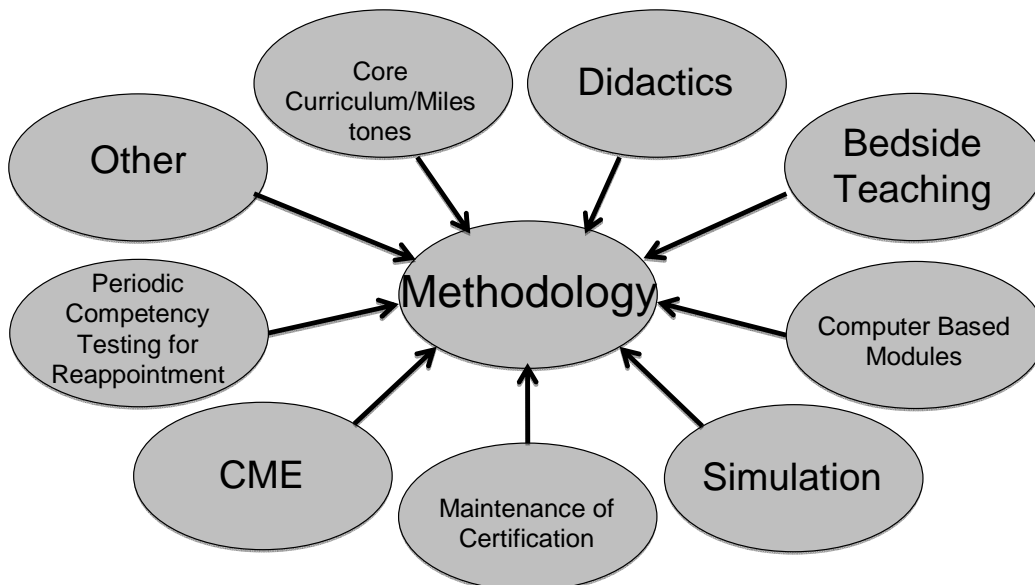
- Literature review of ED IP education content & methods
- Group discussion of education content
- Group discussion of education methods
- Vote to prioritize education content needs and methodologies to disseminate



## Proposed ED IP Education Interventions (Content)



## Proposed ED IP Education Interventions (Methodology)





## Research Priorities

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### **Aims / Objectives:**

- Develop a list of research agenda items for infection control issues in the ED
- Prioritize the list, considering: knowledge gaps, importance, feasibility

### **Timeline:**

- Small Breakout Groups (1 group for each of 4 domains)
- Facilitator summary
- Vote to prioritize



## RESEARCH DOMAINS

- **Device-Associated Infections**
  - CAUTI
  - CLABSI
  - VAP
  
- **Isolation & Transmission (Includes HH)**
  - Standard Precautions
    - Hand hygiene
    - Respiratory etiquette
  - Precautions (contact, droplet, airborne)
    - Syndrome-based precautions
      - ILI symptoms should be placed on droplet precautions
      - patients with diarrhea on contact precautions
  - Disease-based Precautions
    - MDRO
    - CDiff
  - Modes & Vectors of transmission
  
- **Screening (active surveillance testing)**
  - Rapid tests vs. traditional cultures
  - Screening for history of infection or colonization with antibiotic resistant organisms (MRSA, ESBL, KPC, etc.)
  - Screening for current colonization with antibiotic resistant organisms
  - Screening for infections with high transmission risk (influenza, TB, varicella, etc.)
  
- **Environment (includes ED Work Environment, Patient Flow/Crowding, and Environmental Cleaning)**
  - Utility of disinfection devices in the ED (UV lights, peroxide-based automated disinfection systems, etc.)
  - Correlation of ED crowding with infection transmission in ED
  - Impact of ED crowding reduction interventions on infection transmission
  - Impact of infection control interventions on ED crowding (e.g., does ER crowding get worse if we hold admitted patients in ED while awaiting results of MRSA screening)
  
- **Antimicrobial Resistance/Antibiotic Stewardship**
  - Impact of ED antimicrobial use on emergence of drug resistance
  - Interventions to reduce inappropriate antimicrobial use in ED
  - Applicability of hospital antibiograms to ED patients (i.e., do antibiograms really reflect resistance rates in ED patients?)





# Consensus Conference Speakers & Workgroup Leaders



**Jeremiah (Jay) Schuur, MD, MHS** is the Chief of the Division of Health Policy Translation and the Director of Quality, Patient Safety and Performance Improvement for the Department of Emergency Medicine of the Brigham and Women’s Hospital and an Assistant Professor of Medicine (Emergency) at Harvard Medical School. He completed an emergency medicine residency at Brown University in Providence, Rhode Island and then spent 2 years as a Robert Wood Johnson Clinical Scholar at Yale University. Dr. Schuur is recognized nationally as one of the top experts on quality, safety and performance measurement in emergency medicine. Dr. Schuur’s current research focuses on developing, implementing and evaluating measures of quality of care and patient safety in emergency medicine. Dr. Schuur is the PI of several funded research projects including a 3 year project to identify and disseminate best practices to prevent healthcare associated infections in EDs (AHRQ R18 HS020013-01).



**Connie Price, MD** is Chief of the Division of Infectious Diseases at Denver Health Medical Center and Assistant Professor of Medicine at the University of Colorado Denver. Dr. Price is the primary investigator on an Agency for Healthcare Research and Quality (AHRQ) initiative toward reducing healthcare-associated infections and a co-investigator on a CDC-funded project in biosurveillance. She chairs the Infection Control and Prevention Committee, Antimicrobial Subcommittee, and Emerging Infectious Diseases Committee and directs the musculoskeletal infection clinic at Denver Health. Her specific research and clinical interests include innovative programs in methicillin-resistant *Staphylococcus aureus* (MRSA) control; hand-hygiene; use of molecular typing for infection control investigations; new technologies for the rapid diagnosis of infectious diseases.



**Carolyn M. Clancy, M.D.** was appointed Director of the Agency for Healthcare Research and Quality (AHRQ) on February 5, 2003, and reappointed on October 9, 2009. Prior to her appointment, Dr. Clancy was Director of AHRQ’s Center for Outcomes and Effectiveness Research. Dr. Clancy, a general internist and health services researcher, is a graduate of Boston College and the University of Massachusetts Medical School. Following clinical training in internal medicine, Dr. Clancy was a Henry J. Kaiser Family Foundation Fellow at the University of Pennsylvania. Before joining AHRQ in 1990, she was also an assistant professor in the Department of Internal Medicine at the Medical College of Virginia. Dr. Clancy holds an academic appointment at the George Washington University School of Medicine (Clinical Associate Professor, Department of Medicine) and serves as Senior Associate Editor for the journal *Health Services Research*. Dr. Clancy’s major research interests include improving health care quality and patient safety and reducing disparities in care associated with patients’ race, ethnicity, gender, income, and education. As Director of AHRQ, she launched the first annual report to Congress on health care disparities and health care quality.



**David C. Classen, M.D., M.S.** is the CMIO at Pascal Metrics and an Associate Professor of Medicine at the University of Utah and an Active Consultant in Infectious Diseases at The University of Utah School of Medicine in Salt Lake City, Utah. He received his medical degree from the University Of Virginia and a Masters of Science degree in medical informatics from the University Of Utah. He was the chair of Intermountain Health Care’s Clinical Quality Committee for Drug Use and Evaluation and is currently a member of the Institute of Medicine Committee on Health Information Technology and Patient Safety. In addition Dr Classen is a developer of the “Trigger Tool Methodology” at IHI, used for the improved detection of adverse events, which is currently being used by more than 500 different healthcare organizations throughout the United States and Europe. He currently co-chairs the National Quality Forum’s Patient Safety Common Formats Committee and is an advisor to the Leapfrog Group.



**Kerry O'Connell** is a Civil Construction Project Manager and a patient safety advocate following his own experiences as a patient. He has been involved in the Colorado Coalition for Patient Safety, APIC, Consumers Union, Colorado Citizens for Accountability, and the Colorado Consumer Health Initiative. He has disseminated a booklet he authored, "Waking Up Infected," to members of the Colorado Senate, and helped successfully pass HB-1045, a Colorado bill requiring hospital infection reporting.



**Eileen J. Carter, RN, BSN**, a Jonas Nurse Leaders Scholar, is a second year doctoral student at Columbia University School of Nursing. After graduating with her BSN from New York University, Eileen subsequently worked as an emergency department staff nurse at New York-Presbyterian/Weill-Cornell Medical Center and Brigham and Women's Hospital. Eileen's anticipated dissertation will pertain to infection prevention practices in the emergency department care setting and its relationship to crowding.



**Chris Fee, MD** is an Associate Professor of Clinical Emergency Medicine at the University of California, San Francisco (UCSF) and the Assistant Residency Director of the UCSF/San Francisco General Emergency Medicine Residency. Dr. Fee has an interest in ED quality improvement and infectious diseases. Dr. Fee's research interests include the impact of emergency department crowding, performance measure implementation and unintended consequences, and management of community acquired pneumonia and sepsis.



**Ella Franklin, RN, CRC, EDAC** is the Director of Research for the ER One Center for Building Science division of MedStar Institute for Innovation. She is also the project manager for the Bridge to ER One, a prototype building project at the Washington Hospital Center, serving as a test-bed for new technologies and innovative design concepts in emergency medicine. Through the lens of an infection preventionist, she studies the role of the built environment in the transmission or prevention of nosocomial infections. She earned her Bachelor of Science from Georgetown University and completed training at the National Institute for Nursing Research (NIH).

**Theresa Gregg, BSN, MHA** is the director of Emergency Services and the Clinical Decision Unit at Creighton University Medical center. She received her master's in Health Administration from Bellevue University.



**Erik P. Hess, MD** is an emergency medicine physician and health services researcher with an interest in emergency cardiovascular care. The long-term goal of Dr. Hess' research program is to improve the diagnosis, management efficiency and patient experience of care for acute cardiovascular conditions in the emergency setting.



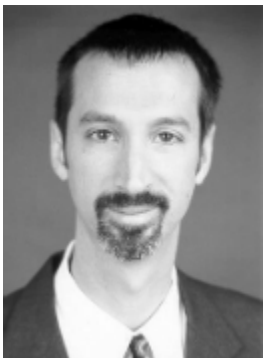
**Paula M Karnick Ph.D; ANP-BC; CPNP** is the Director of Education, Emergency Nurses Association. Diversified background in all aspects of healthcare. Ph.D. conferred by Loyola University Chicago. Board certified as an adult and pediatric nurse practitioner. Qualitative and quantitative researcher. Contributing editor for Nursing Science Quarterly. Assistant professor of nursing at Lewis University, Romeoville, Illinois. Practicing clinician.



**John J. Kelly, DO, FACEP, FAAEM, FCPP** is the Associate Chairman and Director of Emergency Department Quality Improvement and Patient Safety at Einstein Medical Center. He is Professor of Emergency Medicine, at Jefferson Medical College, Thomas Jefferson University. Dr. Kelly has published on Quality of Emergency Care, Patient Safety, and Emergency Airway Safety/Assessment. He holds the Einstein Physician Partnership Award, the Albert Einstein Society Physician Leadership Award, and the Einstein Leadership Excellence Award.



**Vicki Lewis, PhD** is Scientific Director and Usability Chief at Med Star's National Center for Human Factors Engineering in Healthcare. In her role as Director of the Usability Division, Dr. Lewis leads a team in the usability evaluation of medical devices in all stages of the development process, for manufacturer, hospital, and other clients in the healthcare industry. Dr. Lewis received her Ph.D. in Industrial and Systems Engineering/Human Factors Engineering from Virginia Tech in Blacksburg, VA, and holds Bachelors and Masters degrees in Psychology from the University of Idaho.



**Gregory Moran, MD** is a Clinical Professor of Medicine at the UCLA School of Medicine. He is Director of Research in the Dept. of Emergency Medicine, as well as faculty in the Division of Infectious Diseases at Olive View-UCLA Medical Center. Research interests include community-associated MRSA, pneumonia, skin and soft tissue infections, bite wound infections, rabies prophylaxis, pyelonephritis, and infection control. Dr. Moran is a co-investigator for *EMERGENCY ID NET*, a nationwide network of emergency departments developed in collaboration with the CDC for the study of emerging infectious diseases.



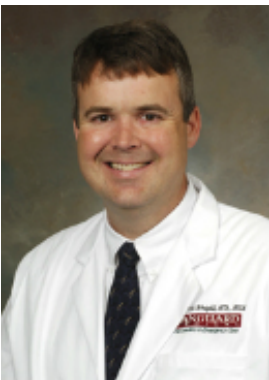
**Patricia Stone, PhD, MPH** is Professor of Nursing and the Director of the Center for Health Policy at Columbia University. Her area of research is aimed at understanding cost and quality outcomes, particularly healthcare associated infections.



**Arjun Venkatesh, MD, MBA** is currently a Robert Wood Johnson Foundation Clinical Scholar at Yale University. Dr. Venkatesh serves on the ACEP Quality and Performance committee and recently served on the Agency for Healthcare Research and Quality's Healthcare Associated Infection measure evaluation technical expert panel. Dr. Venkatesh completed his Emergency Medicine residency at Brigham and Women's and Massachusetts General Hospitals. He earned his MD from the Feinberg School of Medicine at Northwestern University and an MBA from The Ohio State University.



**Robert Wears, MD** is Professor in the Department of Emergency Medicine at the University of Florida, and visiting professor in the clinical safety research unit at Imperial College London. He serves on the board of directors of the Emergency Medicine Patient Safety Foundation and is Associate Editor of *Annals of Emergency Medicine*. His interests are in technical work studies in complex socio-technical systems, joint and distributed cognitive systems, and particularly the impact of information technology on safety and resilient performance.



**Stewart Wright, MD** is a graduate of the University of Illinois with a degree in biochemistry and of the Washington University School of Medicine. He completed his emergency medicine residency at the University of Cincinnati Emergency Medicine residency program. Dr. Wright then served four years in the United States Air Force at Wright-Patterson Air Force base, achieving the rank of Major. He rejoined the University of Cincinnati faculty as an assistant Professor in October of 2001. Dr. Wright directs the Committee for Procedural Quality and Evidence Based Practice. CPQE develops evidence based guidelines for emergency care and then studies the impact of these knowledge translation tools on patient outcomes. These tools are published on CPQE.com.



**John Younger, MD, MS** is Professor and Associate Chair for Research in Emergency Medicine at the University of Michigan. His research lab focuses on several facets of life-threatening infection, in particular the biophysical and biochemical features of the host pathogen interface, especially in the setting of infected intravascular devices. He attended undergraduate and medical school at the University of Missouri-Kansas City and completed a residency in Emergency Medicine in 1994 at Orlando Regional Medical Center.

## CME Statement

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## Nothing to Disclose

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John Younger

## Speaker Resolutions

David Classen, MD	Pascal Metrics (Salary)
Greg Moran, MD	Forest, Cubist, Trius (Consulting Fees, Speakers' Bureaus, Contracted Research)
Kerry O'Connell	Consumers Union (Consulting Fees)
Connie Price, MD	Accelr8 Corp., Cubist, Quintiles, Sanofi Pasteur, MedImmune (Contracted Research)