Learn best practices to better your healthcare organization through improved efficiency.
Take advantage of the opportunity to improve the quality, productivity and efficiency of your healthcare organization with the Society for Health Systems.

Corporate Partnership with SHS can include:

- 15-50% off on membership dues (and the new member application fee of $15 is also waived for corporate members!)
- 40% off the regular, nonmember price for conferences (save hundreds per registration)
- 40% off the regular nonmember price for training (save hundreds per course)
- *Industrial Engineer* magazine subscription
- 40% off job postings in the IIE online career center
- 40% off all *Industrial Engineer* and *Industrial Management* recruitment and display ads

Learn more online at www.iienet.org/shs/partnership.
Welcome to Orlando, Fla., where the Society for Health Systems is proud to present the 2015 Healthcare Systems Process Improvement Conference. As a healthcare professional, you know that health systems must focus on process improvement to ensure better quality, productivity and efficiency. Be inspired and challenged to improve your facilities during three keynote presentations and share best practices in dozens of sessions with peers from around the country. Highlights for this year’s conference include:

» Eight tracks of sessions covering topics like patient flow, IT, change management, lean Six Sigma and quality

» Networking receptions, lunches and dinners, including Dutch Treat dinners where you can engage with fellow attendees in an informal setting, breakfast with the exhibitors, and the annual SHS awards presentation celebrating the achievements of our colleagues

» Keynote speakers Kim Barnas, faculty of ThedaCare Center for Healthcare Value and author of Beyond Heroes, A Lean Management System for Healthcare, and Dr. Chuck Webster of EHR Workflow Inc. will provide valuable insights into process improvement solutions that work

» Four pre-conference workshops

» Expanded poster sessions to learn the latest applications and improvement methodologies from even more organizations

» Student activities and competitions, including a case study competition

» Exhibits from top healthcare service providers and health systems academic programs

We’re glad you joined us to learn the latest operational and quality improvement tools, methods and concepts as well as industry best practices in the healthcare field. We are sure you will return to work with countless ideas and solutions to address your most challenging issues!
KEYNOTE SPEAKERS

KIM BARNAS
Faculty, ThedaCare Center for Healthcare Value
Author, Beyond Heroes, A Lean Management System for Healthcare
Thursday, February 19 | 8 – 9 a.m. | Ballroom A

Kim Barnas has an M.S. in healthcare administration and served as a senior vice president of ThedaCare and president of Appleton Medical Center and Theda Clark Medical Center. Barnas has enjoyed the opportunities provided by ThedaCare as they have been on their lean journey for the past nine years. The ThedaCare Improvement System (LEAN) path started with value stream mapping followed by improvement events and projects. She was involved in leading two of the initial value streams for Obstetrics and Cancer Services. As the journey continued, a new challenge emerged – the need for a systematic method to sustain improvement, clarify daily continuous improvement opportunities and deliver on strategic deployment. To meet this need, Barnas and her team led the development of a lean management system designed to deliver improved performance through a predictable process that develops leaders, identifies defects, solves problems and develops people. In 2014, Barnas wrote the book Beyond Heroes, A Lean Management System for Healthcare based on this journey.

DR. CHUCK WEBSTER
EHR Workflow Inc.
Friday, February 20 | 3:30 – 4:30 p.m. | Ballroom A

Dr. Chuck Webster has degrees in accountancy, industrial engineering, intelligent systems and medicine. He earned his degree in medicine at the University of Chicago. Webster designed the first undergraduate program in medical informatics, was a software architect in a hospital MIS department and also was vice president and chief medical informatics officer for an EHR vendor for more than a decade. He has helped three healthcare organizations win the HIMSS Davies Award and is a judge for the annual Workflow Management Coalition Awards for Excellence in BPM and Workflow and Awards for Case Management. Webster is a ceaseless evangelist for process-aware technologies in healthcare, including workflow management systems, business process management and dynamic and adaptive case management. Webster tweets from @wareFLO and maintains numerous websites, including EHR Workflow Management Systems, Healthcare Business Process Management, and People and Organizations Improving Healthcare with Health Information Technology. Please join with Chuck to spread the message: Viva la workflow!
### WEDNESDAY, FEBRUARY 18

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
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<tr>
<td>8 a.m. – Noon</td>
<td>Pre-Conference Workshops</td>
</tr>
<tr>
<td>12:30 – 5 p.m.</td>
<td>Facility Tour – Nemours Children’s Hospital, Orlando – SOLD OUT</td>
</tr>
<tr>
<td>1 – 5 p.m.</td>
<td>Pre-Conference Workshops</td>
</tr>
<tr>
<td>4 – 5 p.m.</td>
<td>Student Welcome Reception (sponsored by the Healthcare Systems Engineering Institute, Northeastern University)</td>
</tr>
<tr>
<td>5 – 6 p.m.</td>
<td>Welcome Reception</td>
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### THURSDAY, FEBRUARY 19

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<tr>
<td>7 a.m. – 5 p.m.</td>
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</tr>
<tr>
<td>7:45 – 7:55 a.m.</td>
<td>Welcome</td>
</tr>
<tr>
<td>8 – 9 a.m.</td>
<td>Keynote Presentation – Kim Barnas, Faculty, ThedaCare Center for Healthcare Value</td>
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<tr>
<td>9:10 – 11 a.m.</td>
<td>Breakout Sessions</td>
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<tr>
<td>11 a.m. – Noon</td>
<td>Dedicated Exhibit Time</td>
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<td>11 a.m. – 6:15 p.m.</td>
<td>Exhibit Hall Open</td>
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<tr>
<td>Noon – 1:20 p.m.</td>
<td>Featured Panel Discussion – Healthcare Systems Engineering Report to the U.S. President: SHS President’s Panel Discussion and Lunch</td>
</tr>
<tr>
<td>1:30 – 4:20 p.m.</td>
<td>Breakout Sessions</td>
</tr>
<tr>
<td>3:30 – 5:15 p.m.</td>
<td>Presentations of Student Paper Competition Winner (sponsored by Ohio University) and Student Case Study Competition Finalists (sponsored by FlexSim)</td>
</tr>
<tr>
<td>4:20 – 5 p.m.</td>
<td>Poster Presentation Competition in the Exhibit Hall</td>
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<tr>
<td>5 – 6:15 p.m.</td>
<td>Networking Reception in the Exhibit Hall</td>
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<tr>
<td>6:30 p.m.</td>
<td>Dutch Treat Dinners – Sign-up sheets will be available on site</td>
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### FRIDAY, FEBRUARY 20

<table>
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<tr>
<td>7 a.m. – 5:30 p.m.</td>
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<tr>
<td>7 – 8 a.m.</td>
<td>Breakfast with the Exhibitors</td>
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<tr>
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<td>Keynote Presentation – Dr. Chuck Webster, EHR Workflow Inc.</td>
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<td>4:40 – 5:30 p.m.</td>
<td>Breakout Sessions</td>
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### EXHIBIT HALL HOURS | BALLROOM B

<table>
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<tr>
<td>Thursday, February 19</td>
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</tr>
<tr>
<td>Friday, February 20</td>
<td>7 a.m. – 3:30 p.m.</td>
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</tbody>
</table>
WEDNESDAY, FEBRUARY 18

Facility Tour
12:30 – 5 p.m. | Depart from the Rosen Plaza Hotel lobby
Nemours Children’s Hospital, Orlando, Fla.

Student Networking Reception, sponsored by the Healthcare Systems Engineering Institute at Northeastern University
4 – 5 p.m. | Salon 12
Meet other student attendees and get a jump-start on your conference networking.

Welcome Reception
5 – 6 p.m. | Ballroom D
Join your colleagues as we kick off the conference!

THURSDAY, FEBRUARY 19

Dedicated Exhibit Time
11 a.m. – Noon | Ballroom B
A visit to the exhibit hall is your chance to find new vendors or suppliers, see product demonstrations, and network with your peers. View the latest products and services and visit with the authors of cutting-edge posters.

Featured Panel Discussion
Noon – 1:20 p.m. | Ballroom A
Healthcare Systems Engineering Report to the U.S. President: SHS President’s Panel Discussion and Lunch

Poster Presentation Competition in the Exhibit Hall
4:20 – 5 p.m. | Ballroom B
New for 2015! All poster presenters will have the opportunity to speak about their work. After the facilitated session, attendees will have the opportunity to engage with the presenters, and judges will gather to discuss the projects. A first and second place prize will be awarded in both the Applied and Research tracks.

Networking Reception in the Exhibit Hall
5 – 6:15 p.m. | Ballroom B
Join your colleagues for networking and continue to interact with exhibit hall vendors as well as poster session presenters. Take in the latest products and services and discuss poster presentations that are on display.

Dutch Treat Dinners
6:30 p.m.
First come, first serve – sign up at the registration desk.

FRIDAY, FEBRUARY 20

Breakfast with Exhibitors
7 – 8 a.m. | Ballroom B

Dedicated Exhibit Time
11 a.m. – Noon | Ballroom B

Lunch and Learn followed by Award Ceremony
Noon – 1:20 p.m. | Ballroom A
All workshops will be held February 18.

8 a.m. – Noon

Jump-start Your Clinical Analytics Program to Accelerate Improvement Results | Salon 9
Presenters: Julie Bartels and Brian Veara, ThedaCare Center for Healthcare Value; Dr. Cort R. Garrison, Salem Hospital; and Christopher Elfner, Bellin Health Systems
The collection of data by itself does not drive improved organizational performance. Like other enterprise assets, healthcare data must be leveraged to produce value. A clinical business intelligence (CBI) program turns data into insight and supports improved decision making. A robust CBI strategy should be closely aligned with the overall strategy of the enterprise to assure appropriate initiative/project prioritization and resource assignment. Healthcare organizations need a “getting started toolbox” to kick-start or accelerate their CBI efforts. This program is designed to provide contextual, practical and actionable information to do just that.

Practical Advice and Real-World Examples for Improving Surgical Performance | Salon 10
Presenters: Keith Poole, khrusallis, and Joseph Swartz, Franciscan St. Francis Health
Review all aspects of improving surgical flow and overall performance as well as commonly associated metrics and specific considerations based on how they are really calculated. Significant improvement in surgical performance requires bringing together many skilled process improvement resources — lean principles, workflow analysis, labor and productivity, cost reduction, supply chain and clinical expertise — for results no one discipline can achieve on its own. Discuss examples of highly successful collaborations that resulted in tangible improvements in patient flow along with quantifiable cost reductions and take home practical advice for achieving similar results at your facility.

1 – 5 p.m.

Mastering Your EQ – Emotional Intelligence: The Key to Change Leadership Success | Salon 9
Presenter: Jean Ann Larson, Jean Ann Larson & Associates
Competency and behaviors will take us only so far in our professional and personal lives. Often the Achilles heel for change leaders is a deficit in emotional intelligence. For longer-term sustainable success, we must master our emotional intelligence skills. This session will introduce you to EQ fundamentals such as self-awareness, self-regulation, motivation, empathy and social skills. At the end of this session, you will have a better understanding of your own EQ, or emotional intelligence, and how it can be further developed. This in turn will help you use your best thinking, make the best decisions and be a more effective change leader.

Measuring and Managing Costs Using Time-Driven Activity-Based Costing | Salon 10
Presenter: Derek Haas, Harvard Business School
Learn how to use time-driven activity-based costing (TDABC) to measure and manage costs for a medical condition. Participants will engage in a case discussion of a hospital that applied TDABC, and see the range of ways TDABC is being used to improve performance in healthcare. TDABC is a two-step approach for measuring and managing costs that was first applied in healthcare in 2010 at MD Anderson. Since that time it has been used by more than 50 provider organizations. TDABC is most commonly used in performance improvement projects as well as preparing for bundled payments.

Volunteer and enter to win a 7” Samsung Galaxy Tab 4!
Would you like to join the corps of volunteers that keeps SHS moving ahead? Sign up at the SHS Membership Booth, and you’ll be entered into a drawing to win a 7” Samsung Galaxy Tab 4!

Everyone who has served on a committee in the past year or who signs up for the coming year is eligible for the drawing. We’ll do the drawing at the beginning of Dr. Chuck Webster’s keynote address on Friday at 3:30 p.m. You don't have to be present to win, but you won't want to miss this great keynote presentation!
**Society for Health Systems Student Paper Competition**

The Society for Health Systems is pleased to announce that Iakovos Toumazis of the University at Buffalo, SUNY won the 2015 Graduate Student Paper Competition, sponsored by Ohio University. Don’t miss the presentation of the winning paper, Thursday, February 19, from 3:30 – 3:45 p.m. in Salon 14.

The judging criteria was based on originality and soundness, applicability, methodology, organization and quality of the paper. The competition recognizes outstanding work that demonstrates the use of IE skills in improving healthcare-related products, processes or services.

**Student Simulation Competition**

Three finalist teams will present their solution to a real-world case study designed by competition sponsor FlexSim. Teams, which consist of a maximum of four students plus an advisor, were given approximately nine weeks to develop their solutions. Cash prizes will be awarded to the competitors based on their finishing position. You can hear the finalist presentations Thursday, February 19, from 3:45 - 5:15 p.m. in Salon 14.

**Society for Health Systems YouTube Video Contest**

Don’t miss the presentation of the winner of the inaugural SHS YouTube Video Contest! The winning submission was chosen for its ability to excite high school students to pursue a career as an industrial engineer in the healthcare field and will be unveiled during the conference.

**Society for Health Systems Scholarship**

The winner of the 2015 SHS Scholarship, sponsored by Parallon Workforce Solutions, will be presented Friday, February 20, during the SHS Awards Luncheon in Ballroom A. The amount of the scholarship is $1,000. The recipient also received complimentary registration to HSPIC 2015 and a travel stipend of $300.

**SHS YOUNG PROFESSIONALS**

Participants in the Healthcare Systems Process Improvement Conference Young Professionals Program are in years one to seven of their healthcare process improvement career and have a demonstrated interest in connecting with peers, senior industry professionals and advanced professional development.

**SHS Young Professionals Conference Events**

- Panel session presentation highlighting careers of four to six early-career program professionals
- Mentoring program to pair up each participant with a senior industry professional
- Meet-ups at welcome reception, conference meals and networking breaks
- Organized dinner outing or social event on free night, schedule permitting
### Program Participants for SHS Young Professionals

**Chair:** Mary Ellen Skeens, *Philips Healthcare*

<table>
<thead>
<tr>
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<th>Institution/University</th>
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<tr>
<td>Jordan Aronhalt</td>
<td>North Shore LIJ Health System</td>
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<tr>
<td>Samita Athawale</td>
<td>UT Southwestern Medical Center</td>
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<tr>
<td>Mark Biscone</td>
<td>Texas Hospital Association</td>
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<tr>
<td>Ali Bozorgi</td>
<td>Clemson University</td>
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<tr>
<td>Jordan Burns</td>
<td>Georgia Southern University</td>
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<tr>
<td>Sheena Butts</td>
<td>Lakeland Regional Medical Center</td>
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<tr>
<td>Nicholas Comeau</td>
<td>UMass Memorial Health Care</td>
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<td>Philip Cook</td>
<td>Vanderbilt University Medical Center</td>
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<td>Brent Costa</td>
<td>San Francisco General Hospital</td>
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<td>Ashley Crofton</td>
<td>Mayo Clinic</td>
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<td>Matthew D’Agostino</td>
<td>MedStar Franklin Square Medical Center</td>
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<td>Minh Dang</td>
<td>San Jose State University</td>
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<td>Haoliang Duan</td>
<td>Binghamton University</td>
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<td>Steve Escamilla</td>
<td>Bay Area PI Network</td>
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<td>Emily Forcke</td>
<td>Universal Health Services Inc.</td>
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<td>Tiffany Formby</td>
<td>Huron Healthcare</td>
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<td>Cristina Galloway</td>
<td>University of Florida Health</td>
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<tr>
<td>Elizabeth Gentry</td>
<td>Christus Healthcare</td>
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<tr>
<td>Rachel Goffman</td>
<td>VA Pittsburgh VERC</td>
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<td>Mona Haghighi</td>
<td>University of South Florida</td>
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<tr>
<td>Ying Han</td>
<td>Binghamton University</td>
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<tr>
<td>Justin Huff</td>
<td>St. Dominic–Jackson Memorial Hospital</td>
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<td>John Jackson</td>
<td>UF Health</td>
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<tr>
<td>Ajay Jayakumar</td>
<td>Mayo Clinic Health System</td>
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<td>Bart Johnson</td>
<td>Vancouver Island Health Authority</td>
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<td>Karl Kraebber</td>
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<td>Jarrod McDonald</td>
<td>MedStar Franklin Square Medical Center</td>
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<td>Rory Michelen</td>
<td>University of Florida</td>
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<td>Kelly Murray</td>
<td>Care Logistics</td>
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<td>Colleen Park</td>
<td>James A. Haley VA Hospital</td>
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<td>Eddie Perez-Ruberte</td>
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<td>Danielle Powell</td>
<td>Christus Healthcare</td>
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<td>Lavanavarjit Ragavan</td>
<td>Montefiore Medical Center</td>
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<td>Faisal Rahman</td>
<td>Boston University Medical Center</td>
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<td>Luis Reyes</td>
<td>University of Texas</td>
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<tr>
<td>Todd Schneider</td>
<td>OhioHealth</td>
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<tr>
<td>Scott Siegfried</td>
<td>St. Luke’s University Health Network</td>
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<tr>
<td>Laura Silvoy</td>
<td>Array Architects</td>
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<tr>
<td>Amy Slovacek</td>
<td>Lutheran Senior Services</td>
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<tr>
<td>Christine Tang</td>
<td>Worcester Polytechnic Institute</td>
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<td>Rob Thomas</td>
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<td>Noah Tolson</td>
<td>Array Architects</td>
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<tr>
<td>Whitney Wardlaw</td>
<td>Perkins+Will</td>
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<tr>
<td>Liyu Zheng</td>
<td>RTKL Associates Inc.</td>
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## PRE-CONFERENCE WORKSHOPS

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<td>8 a.m. – Noon</td>
<td><strong>Jump Start Your Clinical Analytics Program to Accelerate Improvement Results</strong></td>
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<td></td>
<td>Julie Bartels and Brian Veara, ThedaCare Center for Healthcare Value,</td>
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<td></td>
<td>Dan Exley, Memorial Care</td>
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<tr>
<td>Noon – 1 p.m.</td>
<td><strong>BREAK</strong></td>
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<tr>
<td>1 – 4 p.m.</td>
<td><strong>Mastering Your EQ – Emotional Intelligence: The Key to Change Leadership Success</strong></td>
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<td>Jean Ann Larson, BSIE, MBA, EDD, FACHE, FHIMSS, DSHE, Jean Ann Larson &amp; Associates</td>
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## WEDNESDAY, FEBRUARY 18

### PROCESS IMPROVEMENT

- **9:10 – 9:30 a.m.**
  - **Tailoring Model-Based System Engineering (MBSE) to Promote Privacy in Complex Healthcare Systems**
  - Russell Gilbertson, George Washington University

- **9:40 – 10 a.m.**
  - **Using Simulation to Show the Impact of Variability on Training Transplant Surgeons**
  - Roshun Sankaran, University of Michigan

### OPERATIONS RESEARCH AND ANALYTICS

- **9:10 – 10 a.m.**
  - **Optimizing and Transforming Clinic Workflow and Patient Care**
  - Eva K. Lee, Georgia Institute of Technology

### LEADERSHIP AND CHANGE MANAGEMENT

- **9:10 – 10 a.m.**
  - **Fewer Classrooms, More Walking: Building an Improvement Culture at MaineHealth**
  - Jordan Peck, Maine Health

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## THURSDAY, FEBRUARY 19

### Driving Value in Healthcare through Leadership and Education

- **7 a.m. – 5 p.m.**
  - Registration Desk Open – Registration Desk A/B

- **7 – 7:55 a.m.**
  - Continental Breakfast and Welcome Address | Ballroom A

- **8 – 9 a.m.**
  - Keynote Presentation – Kim Barnas, Faculty, ThedaCare Center for Healthcare Value | Ballroom A

### Track Names

- **Process Improvement**
- **Operations Research and Analytics**
- **Leadership and Change Management**

### Location

- **Salon 9**
- **Salon 10**
- **Salon 11**

### Sessions 9:10 – 10 a.m.

- **Increase Value of Care (Cost, Quality, Outcomes)**
- **Patient Flow in Outpatient Clinics**
- **Leading System Change and Culture**

- **9:10 – 9:30 a.m.**
  - **Tailoring Model-Based System Engineering (MBSE) to Promote Privacy in Complex Healthcare Systems**
  - Russell Gilbertson, George Washington University

- **9:40 – 10 a.m.**
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# PRE-CONFERENCE WORKSHOPS

## LOCATION

- **Salon 9**
- **Salon 10**

### 8 a.m. – Noon

**Jump Start Your Clinical Analytics Program to Accelerate Improvement Results**
Julie Bartels and Brian Veara, ThedaCare Center for Healthcare Value, Dan Exley, Memorial Care

### 12:30 p.m. - 5 p.m.

**Mastering Your EQ – Emotional Intelligence:** The Key to Change Leadership Success
Jean Ann Larson, BSIE, MBA, EDD, FACHE, FHIMSS, DSHS, Jean Ann Larson & Associates

**Measuring and Managing Costs Using Time-Driven Activity-Based Costing**
Derek Hass, Harvard Business School

### 4 – 5 p.m.

**Student Reception Sponsored by the Healthcare Systems Engineering Institute at Northeastern University** | Salon 12

### 5 – 6 p.m.

**Welcome Reception** | Ballroom D

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For more detailed information on each talk, please visit the online interactive schedule at [http://www.xcdsystem.com/shs/program](http://www.xcdsystem.com/shs/program)
### THURSDAY, FEBRUARY 19

**Driving Value in Healthcare through Leadership and Education**

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<th>Leadership and Change Management</th>
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<td>Sessions</td>
<td>Standardization of Care</td>
<td>Staff Scheduling</td>
<td>Leadership Skills for PI Practitioners</td>
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<tr>
<td><strong>10:10 – 11 a.m.</strong></td>
<td>Reducing Waste – Improving Communication – Increasing Census</td>
<td>Customization vs. Convenience When Developing Healthcare Scheduling Tools</td>
<td>Introduction to Applied Creativity for Leadership</td>
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<tr>
<td></td>
<td>Mary Hageman, Orlando Health</td>
<td>Amy Cohn, University of Michigan</td>
<td>Min Basadur, Ph.D., Basadur Applied Creativity</td>
</tr>
<tr>
<td><strong>10:40 – 11 a.m.</strong></td>
<td>Transforming and Standardizing Clinical Processes across a Six State Network</td>
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<td>Angela Park, Pharm.D., New England Veterans Engineering Resource Center (VERC)</td>
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<td>Dedicated Exhibit Time/Poster Presentations and Networking - Ballroom B</td>
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<tr>
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<td>Role of Executive Leadership in Process Improvement Efforts</td>
<td>Facility Planning</td>
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<tr>
<td><strong>1:30 – 2:20 p.m.</strong></td>
<td>The Missing Link: Connecting Process Improvement to Strategic Financial, Quality and Service Outcomes</td>
<td>Co-location of Clinical Services at UMass Memorial Hospital</td>
<td>Assessment of a Split-Flow Emergency Department Implementation: A Discrete Event Simulation Approach</td>
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<td></td>
<td>Johanna Thomas, Ph.D., Verity Partners</td>
<td>Natassia Taylor, University of Massachusetts Memorial Healthcare</td>
<td>Michael Gonfiantini, Binghamton University</td>
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<tr>
<td><strong>2 – 2:20 p.m.</strong></td>
<td>Integrating Lean Leadership with Executive Rounding at an Academic Medical Center</td>
<td>Using Simulation to Design an Emergency Department, Architecturally, Operationally and Clinically</td>
<td>Kaizen: Getting Everybody Engaged in Healthcare Improvement</td>
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<td></td>
<td>Ernest Byers, University of Massachusetts Memorial Healthcare</td>
<td>Robin Clark, QMT Group</td>
<td>Joseph Swartz, Franciscan St. Francis Health</td>
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<tr>
<td>Systems Engineering</td>
<td>Population Health Management</td>
<td>Bridging the Gap between Education, Research and Care Delivery</td>
<td>Quality and Safety</td>
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<tr>
<td>Salon 12</td>
<td>Salon 13</td>
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<td>Salon 17</td>
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<tr>
<td>Healthcare Systems Comparisons</td>
<td>Care Coordination and Access</td>
<td>Young Professionals Panel Discussion</td>
<td>Quality Lessons from Quality Collaborative</td>
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<tr>
<td>Lean Learnings, Successes Across Cultures: USA, India, Latina, Brazil and Caribbean</td>
<td>Lean Six Sigma to Improve the Quality of Dual Care for Veterans</td>
<td>Young Professionals Expert Panel Discussion</td>
<td>200 Thursdays: Lessons from EDDQA</td>
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<tr>
<td>Sameer Anand, GlaxoSmithKline</td>
<td>Dr. Preethy Nayar, University of Nebraska Medical Center</td>
<td>Mary Ellen Skeens, Philips Healthcare; Mark Biscone and Michael E. DeBakey, VA Medical Center; Lauren Cooper, Wake Forest Baptist Health; Emily Force, Universal Health Services Inc.; Bianca Garcia, Florida Hospital Performance Improvement; Jordan Hansen, New England VERC</td>
<td>Dr. David Adinaro, St. Joseph's Regional Medical Center</td>
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<tr>
<td>Increasing the Number of Thyroidectomies Performed in the OR</td>
<td>Beyond the Basics: Improving Primary Care Access in VHA</td>
<td>Development and Operation of a Regional Arthroplasty Quality Improvement Collaborative</td>
<td>Richard Hughes, Ph.D., University of Michigan</td>
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<tr>
<td>Nadia Lahrichi, Sir Mortimer B. Davis Jewish General Hospital</td>
<td>Coby Durham, New England Veterans Engineering Resource Center (VERC)</td>
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**Session Implications** - Heather M. Young, Ph.D., R.N., Moderator | Ballroom A

<table>
<thead>
<tr>
<th>Engineering the Mindset through Leadership</th>
<th>Technology for Population Health</th>
<th>Academia and Industry Panel Discussion</th>
<th>EMR/IT to improve Quality and Safety</th>
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<tr>
<td>Salon 9</td>
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<td>Salon 12</td>
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<tr>
<td>Launching an Organization-wide Process Improvement Culture</td>
<td>Making the Connection: Linking Patient Information for Better Patient Care and System Efficiency</td>
<td>Academic - Industry Partnering - Finding Synergy</td>
<td>Safety through Care Gap Identification via Your Electronic Medical Record</td>
</tr>
<tr>
<td>Cristina Galloway, University of Florida Health – Shands Hospital</td>
<td>Mark Biscone, Ph.D., Texas Hospital Association</td>
<td>David Cowan and Eva K. Lee, Georgia Institute of Technology; Any Cohn, University of Michigan; Sutart Paxton, Lehigh University; Srikanth (Sri) Poranki and Mohammad Khasawneh, State University of New York, Binghamton</td>
<td>Carmen Adams, Ph.D., Kaiser Permanente</td>
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<tr>
<td>Achieving a Change Resilient Culture: Catholic Health Initiatives Approach to Change Leadership</td>
<td>Using Social Media to Guide Population Health Management</td>
<td>Physician Disease Specific Orders to Improve Appropriate Care Scores</td>
<td>Tina Schoen, R.N., Carolinas Healthcare System</td>
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<td>Gary Altman, Catholic Health Initiatives</td>
<td>Sara Chapman, Georgia Institute of Technology</td>
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For more detailed information on each talk, please visit the online interactive schedule at [http://www.xcdsystem.com/shs/program](http://www.xcdsystem.com/shs/program)
# THURSDAY, FEBRUARY 19

**Driving Value in Healthcare through Leadership and Education**

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<thead>
<tr>
<th>Track Names</th>
<th>Process Improvement</th>
<th>Operations Research and Analytics</th>
<th>Leadership and Change Management</th>
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<tbody>
<tr>
<td><strong>Location</strong></td>
<td><strong>Salon 9</strong></td>
<td><strong>Salon 10</strong></td>
<td><strong>Salon 11</strong></td>
</tr>
<tr>
<td><strong>Sessions 2:30 – 3:20 p.m.</strong></td>
<td>Lean Six Sigma</td>
<td>Emergency Department Simulation</td>
<td>Transformation</td>
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<tr>
<td><strong>2:30 - 2:50 p.m.</strong></td>
<td>How a PBJ Sandwich Drove a Lean Six Sigma Journey</td>
<td>A Discrete-Event Simulation to Investigate the Impact of a Gender-Based Split Flow to Inpatient Units from the ED</td>
<td>Are We Transforming Healthcare, or Merely “Acting Our Way Into a New Way of Acting?”</td>
</tr>
<tr>
<td><strong>3 - 3:20 p.m.</strong></td>
<td>C. difficile Rate Reduction Lean Six Sigma Project</td>
<td>Modeling Process Changes in the Veterans Affairs Emergency Department</td>
<td>Mike Stoecklein, Thedacare Center for Healthcare Value</td>
</tr>
<tr>
<td><strong>Sessions 3:30 – 4:20 p.m.</strong></td>
<td>Doing Less is Better?</td>
<td>Prescriptive Analytics</td>
<td>Outcomes</td>
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<tr>
<td><strong>3:30 - 3:50 p.m.</strong></td>
<td>Bleeding Out - Unnecessary Labs</td>
<td>Workload Estimation and Staff Scheduling for Sterile Processing Services</td>
<td>Progressing Care for Optimal Outcomes</td>
</tr>
<tr>
<td><strong>4 - 4:20 p.m.</strong></td>
<td>Using Lean Tools to Enhance Non-Salary Value Analysis</td>
<td>Analysis and Prediction of Critical Care Bed Demand</td>
<td>Integrating Process Improvement, Project Management and Change Training</td>
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<tr>
<td><strong>4:20 – 5 p.m.</strong></td>
<td>Poster Presentation Competition: Mini Presentations</td>
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<td>Sarah Kadish and Deb Cote, Dana-Farber Cancer Institute</td>
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<tr>
<td><strong>5 – 6:15 p.m.</strong></td>
<td>Networking Reception</td>
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<td><strong>6:30 p.m.</strong></td>
<td>Dutch Treat Dinners – Various Restaurants</td>
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<td>Sign-up sheets will be available at the conference registration desk</td>
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<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>3:30 – 4:20 p.m.</td>
<td><strong>Doing Less is Better?</strong>&lt;br&gt;<strong>Prescriptive Analytics</strong>&lt;br&gt;<strong>Outcomes</strong>&lt;br&gt;<strong>Change Management for Transformation</strong>&lt;br&gt;<strong>Patient and Community Engagement</strong>&lt;br&gt;<strong>Student Competitions</strong>&lt;br&gt;<strong>Metrics/Dashboards/Scorecards</strong>&lt;br&gt;<strong>Integrated Scorecard for Quality, Safety and Productivity</strong>&lt;br&gt;<strong>Pass/Fail: A Case Study in Adapting to Measurement Changes</strong></td>
<td>Faisal Rahman, Boston University Medical Center  &lt;br&gt;Workload Estimation and Staff Scheduling for Sterile Processing Services&lt;br&gt;Bryan Norman, University of Pittsburg  &lt;br&gt;Embedding Systems Thinking&lt;br&gt;Laura Tibor, Mayo Clinic  &lt;br&gt;Project HELP: Shifting Nursing Time from Care Support to Care Delivery&lt;br&gt;Seth Hostetler, Geisinger Health System  &lt;br&gt;Partnership for a Healthy Community: Designed for Success&lt;br&gt;Bonnie Paris, Ph.D., Quality Quest for Illinois  &lt;br&gt;Patient-Centered Care via Integration of Mental Health and Chaplain Services&lt;br&gt;Laura Wright, Veterans Health Administration  &lt;br&gt;The Healthcare Systems Engineering Summer Internship Program&lt;br&gt;James Benneyan, Ph.D., Northeastern University  &lt;br&gt;Presentations of the Student Paper Competition Winner (sponsored by Ohio University) and the Student Case Study Competition Finalists (sponsored by FlexSim Software Products Inc.)&lt;br&gt;Anita Murthy, Garpsa Solutions LLC  &lt;br&gt;Integrated Scorecard for Quality, Safety and Productivity&lt;br&gt;Anita Murthy, Garpsa Solutions LLC  &lt;br&gt;Pass/Fail: A Case Study in Adapting to Measurement Changes&lt;br&gt;Alison Knight, Mayo Clinic</td>
</tr>
<tr>
<td>4:20 – 5 p.m.</td>
<td><strong>Using Lean Tools to Enhance Non-Salary Value Analysis</strong>&lt;br&gt;<strong>Analysis and Prediction of Critical Care Bed Demand</strong>&lt;br&gt;<strong>Integrating Process Improvement, Project Management and Change Training</strong>&lt;br&gt;<strong>The VHA Take on Reducing Missed Opportunities</strong>&lt;br&gt;<strong>Patient-Centered Care via Integration of Mental Health and Chaplain Services</strong>&lt;br&gt;<strong>The Challenge: Reduce Falls in a Geriatric Psychiatric Unit</strong>&lt;br&gt;<strong>Reducing Falls: From the Patient’s Perspective</strong>&lt;br&gt;<strong>The VHA Take on Reducing Missed Opportunities</strong>&lt;br&gt;<strong>Patient-Centered Care via Integration of Mental Health and Chaplain Services</strong>&lt;br&gt;<strong>The Challenge: Reduce Falls in a Geriatric Psychiatric Unit</strong>&lt;br&gt;<strong>Reducing Falls: From the Patient’s Perspective</strong></td>
<td>Paul Segovis, Ellis Medicine  &lt;br&gt;Analysis and Prediction of Critical Care Bed Demand&lt;br&gt;Denise White, Cincinnati Children’s Hospital Medical Center  &lt;br&gt;Integrating Process Improvement, Project Management and Change Training&lt;br&gt;Sarah Kadish and Deb Cote, Dana-Farber Cancer Institute  &lt;br&gt;The VHA Take on Reducing Missed Opportunities&lt;br&gt;Racheal Goffman, Veterans Health Administration  &lt;br&gt;Patient-Centered Care via Integration of Mental Health and Chaplain Services&lt;br&gt;Laura Wright, Veterans Health Administration  &lt;br&gt;The Challenge: Reduce Falls in a Geriatric Psychiatric Unit&lt;br&gt;Rick Terkowski, R.N., Penn Medicine - Chester County Hospital  &lt;br&gt;The VHA Take on Reducing Missed Opportunities&lt;br&gt;Racheal Goffman, Veterans Health Administration</td>
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**FRIDAY, FEBRUARY 20**

*Disruptive Innovation in Healthcare*

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<th>7 a.m. – 5 p.m.</th>
<th>Registration Desk Open – Registration Desk A/B</th>
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<tr>
<td>7 – 8 a.m.</td>
<td>Breakfast with the Exhibitors</td>
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<tr>
<td>Sessions</td>
<td>8:10 – 9 a.m.</td>
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<td></td>
<td>Value Stream Analysis</td>
<td>Developing Simulation-Based Decision Support Tool for Anesthesia Staffing Decisions</td>
<td>The Change Conundrum – Why do Some Organizations Get it Right While Others Crash and Burn?</td>
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<tr>
<td>8:10 – 8:30 a.m.</td>
<td>Transforming the Transplant Service Line Using a Value Stream Analysis Approach</td>
<td>Developing Simulation-Based Decision Support Tool for Anesthesia Staffing Decisions</td>
<td>The Change Conundrum – Why do Some Organizations Get it Right While Others Crash and Burn?</td>
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<td></td>
<td>Karl Kraebber, Indiana University Health</td>
<td>Rory Michelen, University of Florida Health</td>
<td>Jean Ann Larson, Jean Ann Larson &amp; Associates</td>
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<td>How a “Waste of Time” in VSM Actually Reduced Waste</td>
<td>Deterministic and Stochastic Retail Pharmacy Staffing Models</td>
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<td>Ashley Crofton, Mayo Clinic</td>
<td>Brock Bassetti, Banner Health</td>
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<tr>
<td>Sessions</td>
<td>9:10 – 10 a.m.</td>
<td>Surgical Services</td>
<td>Leading System Change</td>
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<td>Inpatient Process Improvement Studies using Lean</td>
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<td>Leading System-wide Change: Reducing Door-to-Provider Time for Emergency Department Patients</td>
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<td>Jarrod McDonald, MedStar Franklin Square Medical Center</td>
<td>Mohd Ragheb El-Sharo, Ph.D., Mayo Clinic</td>
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<td>The Case for Smarter Standardization in Healthcare</td>
<td>Dermatology – Developing a Standard Process to Transition Stable Patients</td>
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<td></td>
<td>Ajay Kumar, University of Wisconsin</td>
<td>Tony Piek, University of Wisconsin Health</td>
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<td>9:40 – 10 a.m.</td>
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<th>Future of PI Experts - Cross Industry Learnings</th>
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<tr>
<td><strong>Innovative Systems</strong></td>
<td><strong>Coordination using Technology</strong></td>
<td><strong>Successful Lean/Six Sigma Facilitators</strong></td>
<td><strong>Entertainment</strong></td>
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<tr>
<td>Beyond the Checklist-Systemwide Innovation in Surgical Services</td>
<td>Improving Coordination in Perioperative Services using Mobile Computing and Learning</td>
<td>36 Mistakes Six Sigma Green Belts Make and How to Avoid Them</td>
<td>A Method to the Magic: Analytics at Walt Disney World Parks and Resorts</td>
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<tr>
<td>Julie Bondurant, R.N., Premier Health</td>
<td>Kevin Taaffe, Clemson University</td>
<td>Richard Biehl, University of Central Florida</td>
<td>Dayana Cope, Ph.D., Walt Disney Parks</td>
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<tr>
<td><strong>Supply Chain Management</strong></td>
<td><strong>Technology Innovation</strong></td>
<td><strong>Change Management Tutorials</strong></td>
<td><strong>Transportation</strong></td>
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<tr>
<td>Health Systems Engineering at UW Health: Partnering to Redesign Care</td>
<td>VA Revenue Cycle – A Model for Improvement</td>
<td>Leveraging Lean Practices in Supply Management</td>
<td>From Building Applications to Overcoming Adoption Challenges: Relevant to Healthcare?</td>
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<tr>
<td>Nicole Domask, University of Wisconsin Health</td>
<td>Serge Lacerte, Office of Informatics and Analytics</td>
<td>Kevin Noonan, Johns Hopkins Applied Physics Lab</td>
<td>Zahir Balaporia, Schneider National</td>
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<td><strong>Tutorials</strong></td>
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<td><strong>Implementing Telemedicine Processes – Modeling and Analysis</strong></td>
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<td>David Ben-Arieh, Ph.D., Kansas State University</td>
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<td><strong>Facilitation Football: Managing Group Process to Its Best</strong></td>
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<td>Duke Rohe, MD Anderson Cancer Center</td>
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<td><strong>If You Build a Patient Portal, Why Won’t they Come?</strong></td>
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### FRIDAY, FEBRUARY 20

**Disruptive Innovation in Healthcare**

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<td>10:10 – 11 a.m.</td>
<td>Surgical Process Improvement</td>
<td>Capacity Planning</td>
<td>To Err is Human</td>
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<tr>
<td><strong>10:10– 10:30 a.m.</strong></td>
<td>Needle Localization and Operating Room Performance Improvement</td>
<td>Clinic Access Planning Tool (CAPT) – Impact of Capacity on Wait Time and Wait List</td>
<td>Improving Access to and Coordination of Multispecialty Pain Care</td>
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<td></td>
<td>Derek Murray, University of Florida Health - Shands Hospital</td>
<td>Qing Li, New England Veterans Engineering Resource Center (VERC)</td>
<td>David Garrison, VA-Center for Applied Systems Engineering</td>
</tr>
<tr>
<td>10:40 – 11 a.m.</td>
<td>Optimal Surgery Schedule Based on PICU Nurses Workload</td>
<td>Using Prescriptive Analytics to Maximize Generated Healthcare Value at the Sir Mortimer B. Davis Jewish General Hospital</td>
<td>Hand Hygiene Observation and Audit Dashboard</td>
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<td></td>
<td>David Ben-Arieh, Ph.D., Kansas State University</td>
<td>Philip Troy, Les Entreprises TROYWARE</td>
<td>John Jackson, University of Florida Health - Shands Hospital</td>
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<tr>
<td>11 a.m. – Noon</td>
<td>Exhibit Time/Poster Presentations and Networking - Ballroom B</td>
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<tr>
<td>Noon – 1:20 p.m.</td>
<td>Lunch and Learn followed by Award Ceremony</td>
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<tr>
<td>1:30 – 2:20 p.m.</td>
<td>Lean Six Sigma</td>
<td>Innovative Advanced Analytics Applications for Better Healthcare</td>
<td>Building the Culture</td>
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<tr>
<td>1:30 - 1:50 p.m.</td>
<td>Improving Patient Care Coordination through the Development of an ALS Clinic</td>
<td>Kernelized Probabilistic Principle Component Analysis Using CICOMP with Logistic Regression to Classify Colon Cancer Tissues</td>
<td>Radical Transformation of Culture at Stanford Hospitals and Clinics</td>
</tr>
<tr>
<td></td>
<td>Kristen M. Tingley, Department of Veteran Affairs – Center for Applied Systems Engineering (VERC)</td>
<td>Abdulaziz Alkabaa, University of Tennessee</td>
<td>James Hereford, Stanford Health Care</td>
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<tr>
<td>2 – 2:20 p.m.</td>
<td>Improving ED to Inpatient Care Handoffs Using Lean Six Sigma</td>
<td>Dynamic Analysis of High Dimensional Microarray Time Series Data Using Various Dimensional Reduction Techniques</td>
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<td>Shannon Harris, Greenville Health System</td>
<td>Aven Samareh, Northeastern University</td>
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### Systems Engineering

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<td><strong>Track Names</strong></td>
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<tr>
<td>Improved Public Health Response to Measles Outbreak Using Discrete Event Simulation</td>
<td>10:10– 10:30 a.m.</td>
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<tr>
<td>Brenton Faber, Worcester Polytechnic Institute</td>
<td>Noon – 1:20 p.m.</td>
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<tr>
<td>We’re a Hospital not a High School: Quality, Literacy and Readmissions</td>
<td>1:30 – 2:20 p.m.</td>
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<tr>
<td>John Jackson, Binghamton University</td>
<td>1:30 - 1:50 p.m.</td>
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### Information Technology

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<tr>
<th>Salon 13</th>
<th>Bedside Patient Rescue</th>
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<tr>
<td>If You Build a Patient Portal, Why Won’t They Come?</td>
<td>10:10 – 11 a.m.</td>
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<tr>
<td>Lynn Alters, Floyd Medical Center</td>
<td>10:40 – 11 a.m.</td>
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<tr>
<td>Use of Bedside Data to Assist in Guiding Patient Care Management of Acutely Ill Patients</td>
<td>11 a.m. – Noon</td>
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<tr>
<td>John Zaleski, Nuvon</td>
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<tr>
<td>Post-Operative Nausea and Vomiting Reduction Project at UW Health</td>
<td>10:10– 10:30 a.m.</td>
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<tr>
<td>Ajay Jayakumar, University of Wisconsin</td>
<td>Noon – 1:20 p.m.</td>
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<tr>
<td>Isaac Mitchell, East Tennessee Children’s Hospital</td>
<td>1:30 - 1:50 p.m.</td>
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### Future of PI Experts - Cross Industry Learnings

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<tr>
<th>Salon 17</th>
<th>Management Engineering Departments of the Future: Panel Discussion</th>
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<tr>
<td><strong>Track Names</strong></td>
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<tr>
<td>Healthcare Analytics – How Today’s Management Engineering Leaders are Paving the Way</td>
<td>10:10– 10:30 a.m.</td>
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<tr>
<td>Thomas Roh and Tarun Mohan Lal, Mayo Clinic; Jean Ann Larson, Jean Ann Larson &amp; Associates</td>
<td>Noon – 1:20 p.m.</td>
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<td>1:30 – 2:20 p.m.</td>
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### Systems Engineering

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<th>Cost, Payment and Reimbursement: How Do We Measure in Healthcare?</th>
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<tr>
<td>From ‘Solution Shop’ Model To ‘Focused Factory’ In Hospital Surgery: Increasing Care Value And Predictability</td>
<td>10:10– 10:30 a.m.</td>
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<tr>
<td>David Cook, Mayo Clinic</td>
<td>Noon – 1:20 p.m.</td>
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<tr>
<td>Impact of EHR on Healthcare</td>
<td>1:30 – 2:20 p.m.</td>
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<tr>
<td>Anu Banerjee and Sal Agnihothri, Binghamton University</td>
<td>1:30 - 1:50 p.m.</td>
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<tr>
<td>Process Before Technology, The Commonly Overlooked Road to Success</td>
<td>10:10– 10:30 a.m.</td>
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<tr>
<td>Emily Forcke, Universal Health Services Inc.</td>
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### Potpourri

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<tr>
<td>Improving Reliability Through the Application of Human Factors Engineering</td>
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<tr>
<td>Dr. Brian Fillipo, Guthrie Health</td>
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<tr>
<td>Assessment of Bedside Blood Administration at an Urban Academic Hospital</td>
<td>1:30 – 2:20 p.m.</td>
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<tr>
<td>Ying Han, Binghamton University</td>
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# FRIDAY, FEBRUARY 20

*Disruptive Innovation in Healthcare*

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<th>Operations Research and Analytics</th>
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## Sessions

### 2:30 - 3:20 p.m.

**Location**: Salon 9, Salon 10, Salon 11

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<thead>
<tr>
<th>Track Names</th>
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</table>
| **2:30 – 2:50 p.m.** | Engineering a Lung Cancer Screening Program in the Veterans Healthcare Administration  
Robert Monte, Veterans Engineering Resource Center | Hospitalwide Thirty-Day Unplanned Readmission Prediction Models  
Benjavan Upatising, Ph.D., Purdue University | Error Proof Health Care – How to Accelerate Your LSS Efforts  
Kevin McManus, Great Systems |

**Location**: Salon 9, Salon 10, Salon 11

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| **3 - 3:20 p.m.** | Lowering Pressure Ulcer Incidence through Evidence and Process Improvement  
Daran Brown, University of Alabama at Birmingham Hospital | Predicting 30-Day Readmissions: A Data-Driven Approach  
Joseph Frandsen, Intermountain Healthcare |  |

**Location**: Salon 9, Salon 10, Salon 11

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<td><strong>3:30 - 4:30 p.m.</strong></td>
<td>Keynote Presentation – Chuck Webster, M.D., EHR Workflow Inc.</td>
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| **4:40 - 5:30 p.m.** | Regional Improvement for Behavioral Health: A Collaborative Approach  
Susan Seidensticker, University of Texas Medical Branch | Glean More Information from Your Data... Heat Map It!  
Paul O’Quinn, Carilion Clinic | Embedded Engineers – an Experiment to Achieve Sustainable Lean Transformation  
Gavin Richards, New England VERC |

**Location**: Salon 9, Salon 10, Salon 11

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</table>
| **5:10 – 5:30 p.m.** | Improving Mental Health Care Delivery through a Lean Approach  
Anne Kirchgassner, R.N., Department of Veteran Affairs Center for Applied Systems Engineering | Improving Surgical Scheduling Accuracy Using Tolerance Intervals  
Sheena Butts, Lakeland Regional Medical Center | TBA |

**Location**: Salon 9, Salon 10, Salon 11
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### Systems Engineering
- **Salon 12**
  - PI and Data: Data-Driven Operational Improvement at a Cardiac Catheterization Laboratory
    - Tinglong Dai, John Hopkins University
  - Smoothing out Scheduling in a Regional Chemotherapy Day Unit by Adding an Acuity Scale to Length of Treatment
    - Laura Martin, Ballarat Health Services

### Information Technology
- **Salon 13**
  - Business Intelligence: Using Business Intelligence and Lean Methodology to Accelerate Performance Improvement
    - Tinglong Dai, John Hopkins University
  - Data-Driven Operational Improvement at a Cardiac Catheterization Laboratory
    - Tinglong Dai, John Hopkins University
  - Smoothing out Scheduling in a Regional Chemotherapy Day Unit by Adding an Acuity Scale to Length of Treatment
    - Laura Martin, Ballarat Health Services

### Education
- **Salon 14**
  - Simulation 101: Simulation Studies - Changing the Business
    - Noah Tolson and Laura Silvoy, Array Architects
  - Engaging Stakeholders through Scenario Modeling
    - Sarah Kadish, Dana-Farber Cancer Institute

### Potpourri
- **Salon 17**
  - People and Process: Lean Approach to Scheduling Patients
    - Keith Leitner, University of Tennessee
  - Labor and Delivery Operating Room Traffic: Staff Perceptions and Reality
    - Brennan Ayres, University of Iowa

### International Perspective of Health Systems
- **Salon 12**
  - Prediction Models for Urinary Caculi Attacks in Taiwan
    - Huiten Chen, Chung-Yuan University

### Health Informatics
- **Salon 13**
  - Medical Software Quality: Ensuring Correctness in Clinical Environment
    - Ita Richardson, Lero - the Irish Software Engineering
  - Clinical Documentation Improvement Using ME-PI Tools
    - Anita Murthy, Garpsa Solutions LLC

### Forward Thinking/Tools to Use
- **Salon 14**
  - Co-Design Exception Care: The Patient and Family Centered Care Methodology and Practice
    - Pamela K. Greenhouse, PFCC Innovation Center of UPMC
  - Share Seamlessly and Steal Shamelessly
    - Leslie Doyle, Carolinas Healthcare System

### Reducing Risk
- **Salon 17**
  - Using Change Management to Redesign ED Encounter Coding Process
    - Roque Perez, P.E., University of Florida Health - Shands Hospital
  - Using FMEA and Fault Tree Analysis to Reduce Healthcare Risk
    - Paul Strange, Franciscan Alliance
9:10 – 9:30 a.m.

Using Simulation to Show the Impact of Variability on Training Transplant Surgeons
Location: Salon 10
Presenter: Roshun Sankaran, University of Michigan, Ann Arbor
Basic

In order to help the program director understand the impact of randomness on the ability of the program to provide adequate training opportunities to surgical residents in rare medical procedures, we have developed a graphical simulation-based tool. The tool focuses on the interaction between scheduled events (e.g., Q4 calls) and random events (e.g., heart and lung transplant opportunities). The tool has been useful not only in recognizing limitations in the current medical training environment and beginning to develop new alternatives, but also – more broadly – in providing an intuitive way to help providers without significant quantitative background in better understanding stochastic processes and their impact.

9:10 – 10 a.m.

Tailoring Model-Based System Engineering (MBSE) to Promote Privacy in Complex Healthcare Systems
Location: Salon 9
Presenter: Russell Gilbertson, George Washington University
Intermediate

Recent studies suggest patient concern about the lack of security for private health information (PHI) is actually reducing quality of healthcare provided as patients are unwilling to share information with physicians for fear it will not be kept private. This research demonstrates an understanding of the changing patient privacy frameworks, then develops a flexible, secure MBSE-based EHR architecture that addresses privacy in the CMS measurement of “meaningful use.” MBSE is used to describe the theory of model-based systems and provides potential application to real system design to address special architectural privacy requirements.

9:10 – 9:30 a.m.

Bundled Payments, Bundled Costs, Bundled Lean, Bundled Quality – The Future
Location: Salon 13
Presenter: Brian D. Gregory, ORTimes LLC
Advanced

The way to maximize the net income from the current consolidation of healthcare facilities is to optimize capital investment, quality and throughput. These consolidated mega-healthcare companies will be creating “centers of excellence” among their constituent hospitals and closing local departments – cutting costs by routing patients to the facility that has the best result for the least cost. At some level, systems engineers will expand their role from “helping” clinicians and others with their “focused” problems to supporting income-transportation-capital investment-quality trade-off decisions.

9:10 – 9:30 a.m.

Dealing with Systematic Errors in Clinical Laboratories
Location: Salon 17
Presenter: Chin Hon Tan, National University of Singapore
Basic

Analyzers in clinical laboratories are tested periodically to ensure that readings are within acceptable levels of accuracy. When a systematic error is detected in the analytical process, ideally, one seeks to retest only patient samples between the onset of the error and the time the error was detected. However, the onset of error is often unknown, and it is recommended that all patient samples after the last acceptable QC sample be retested. Our proposed approach is able to reduce significantly the number of samples retested, while ensuring the average number of spurious results observed under the proposed re-testing procedure was similar to or only marginally higher than the baseline number of spurious results when the assay was in control.

9:10 – 10 a.m.

Fewer Classrooms, More Walking: Building an Improvement Culture at MaineHealth
Location: Salon 11
Presenter: Jordan Peck, MaineHealth
Basic

Like many healthcare systems, the members of the Maine Health System have attempted to roll out lean, Six Sigma and clinical microsystems through training and “kaizen events” meant to build capability and empowerment among Maine Health employees. New leadership began a lean daily management system that both empowers and engages staff at one member hospital (Pen Bay Medical Center). Our presentation will provide a step by step recounting of how this daily management system was rolled out at Pen Bay and the key elements of the system.

9:10 – 10 a.m.

A Systems Approach to Healthcare
Location: Salon 12
Presenter: Kevin Nortrup, Sugar Creek Solutions
All Levels
Healthcare today is a system of systems operating within still larger systems. Not surprisingly, complex (and often unarticulated) interdependencies can lead to unintended consequences and unforeseen complications. This presentation explores how a systems approach to healthcare can manage such complexity toward desired objectives. Comprehensive systems thinking, intentional systems design and efficient systems troubleshooting are illustrated in a variety of common situations and scenarios. Thought-provoking examples suggest how a systems approach not only can help avoid problems of the past but also realize the promise of the future.

**Hammers Seeking Nails: Increasing the Impact of CMS’s Healthcare Systems Engineering Demonstration Project**

*Location: Salon 14*

*Presenter: James Benneyan, Northeastern University*

The Center for Medicare and Medicaid Innovation has funded a national demonstration project to create broad visibility and demand for healthcare systems engineering through a scalable extension center model. In its first two years, this grant has created a successful regional center in Boston and is starting satellite centers in Seattle, Charlotte, San Francisco and elsewhere. This presentation will provide an overview of progress and eight specific “triple aim” projects we are seeking to replicate in other health systems in the general areas of specialty referrals, overuse of imaging and diagnostics, bed demand prediction, staff scheduling, primary care and healthy starts, and patient safety.

9:40 – 10 a.m.

**Optimizing and Transforming Clinic Workflow and Patient Care**

*Location: Salon 10*

*Presenter: Eva K. Lee, Georgia Institute of Technology*

Improving timeliness of care, quality of care and operational efficiency in the emergency department (ED) while reducing avoidable readmissions is fraught with difficulties that arise from complexity and uncertainty. We describe an ED decision support system that couples machine learning, simulation and optimization to address these improvement goals. The system allows healthcare administrators to optimize workflow globally, taking into account the uncertainties of incoming patient injuries and diseases and their associated care, thereby significantly reducing patient length of stay.

**Tool to Drive Project Management, ROI, Accountability and Different Mindset**

*Location: Salon 13*

*Presenter: DeAnna Davis, DeAnna Davis Consulting and PEIT*

As hospitals continue to look for ways to become more efficient and deliver cost out/better results, lean engineers become increasingly important to help design new processes for better patient care and experience and lower cost. The presentation will review key tools as implemented at University Medical Center in New Orleans, which redesigned all hospital processes in less than one year, delivering significant growth and results. Shifting the mindset from lean tools “purist” to lean tools “project management” was critical to tracking ROI and holding process owners responsible for results.

**Manage and Reduce Patient Falls using Improved Fishbone Diagram**

*Location: Salon 17*

*Presenter: Ranganath Iyer, MD Anderson Cancer Center*

A fishbone diagram was created, and 13 variables with more than 80-plus elements were identified. Variables included assist or non-assist fall, fall reason, type of fall, etc. The fishbone elements were identified using a PSN database and QDA tool. Also, QDA provided counts for each element resulting in an improved diagram and a link to other variables on the fishbone. Other tools included control charts, brainstorming, run chart, etc. Awareness and implementation of fall strategy showed that falls per 1,000 visits dropped 40 percent from baseline.

10:10 – 10:30 a.m.

**Reducing Waste – Improving Communication – Increasing Census**

*Location: Salon 9*

*Presenter: Mary Hageman, Orlando Health*

The Orlando Health Rehabilitation Institute admission process was littered with waste leading to underutilization of the program. A structured improvement activity (kaizen) was chartered and facilitated with a focus on increasing the quantity of admissions by improving access to the rehabilitation unit through decreasing variation and increasing efficiency of the admission process.
Lean Learnings, Successes Across Cultures: USA, India, Latina, Brazil, Caribbean
Location: Salon 12
Presenter: Sameer Anand, GlaxoSmithKline
All Levels

Our group combines a unique trio of lean Six Sigma, organization development and project management to accelerate delivery and performance across the company. Over the last five years, we have compiled several global “lessons learned” around what engagements are likely to be successful. Our lean standard work includes strategy deployment, performance management and problem solving, along with key organization development mechanisms such as large group interventions, facilitation, change approaches and action Learning. We have formulated a description of a “role model leader” who leads through action, coaching, communication and rewards.

Lean Six Sigma to Improve the Quality of Dual Care for Veterans
Location: Salon 13
Presenter: Preethy Nayar, University of Nebraska Medica Center Intermediate

A significant proportion of veterans use dual care or healthcare services within and outside the Veterans Health Administration (VHA). Receiving care from two different systems has the potential for provision of uncoordinated care, and thus poorer health outcomes. In this study conducted at a Veterans Affairs Medical Center, we used lean Six Sigma principles to develop recommendations to eliminate wasteful processes and implement a more efficient and effective process to manage medications for dual-care veterans.

200 Thursdays: Lessons from EDQA
Location: Salon 17
Presenter: David Adinaro, St. Joseph's Regional Medical Center All Levels

Over the last five years one of the largest emergency departments in the country has been conducting weekly QA meetings. These multidisciplinary collaborative, open meetings have helped identify at-risk physicians and nurses; provided an innovative educational platform for the entire staff; and also led to significant improvements in the unwritten “systems” that make every department function. The goal of this presentation is to provide other healthcare organizations a tool that helps them succeed in meeting their safety goals while fostering robust collaboration between physicians, nurses and other healthcare providers.

Customization vs. Convenience When Developing Healthcare Scheduling Tools
Location: Salon 10
Presenter: Amy Cohn, University of Michigan Basic

Provider scheduling is an important challenge in almost any clinical environment. Decision support tools based on industrial engineering and operations research can be very valuable, not only in reducing the workload of producing these schedules, but in greatly enhancing their quality. We present our experience in developing several different scheduling tools across several different hospitals and healthcare systems, and our attempts to balance the benefits of customization with the convenience of generalization. We will cover not only the modeling and algorithmic issues, but the collaborative and educational opportunities posed by these projects as well.

Introduction to Applied Creativity for Leadership
Location: Salon 11
Presenter: Min Basadur, Basadur Applied Creativity All Levels

In a highly interactive workshop, participants experience personal and leadership skills in finding, defining and solving new problems and opportunities. Participants are engaged in how to ask the right questions and help others develop innovative answers with consensus and commitment. Participants will discover their own unique creative problem-solving style and learn how to appreciate the styles of others and contribute best to the problem-solving process as a whole.

Young Professionals Panel Session
Location: Salon 14
Presenters: Mary Ellen Skeens, Philips Healthcare; Mark Biscone, Michael E. DeBakey, VA Medical Center; Lauren Cooper, Wake Forest Baptist Health; Emily Forcke, Universal Health Services Inc.; Bianca Garcia, Florida Hospital Performance Improvement; Jordan Hansen, New England VERC Intermediate

This panel session will comprise three to four participants from the Early Career Professional Program. It will be an opportunity to have each panelist present a few minutes on their work experience and thoughts on how healthcare improvement professionals will change the face of healthcare in the coming decades. Mary Ellen Skeens will moderate the session.
10:40 – 11 a.m.

Transforming and Standardizing Clinical Processes across a Six State Network
Location: Salon 9
Presenter: Angela Park, Department of Veterans Affairs
Basic

A networkwide improvement effort was launched throughout the VA New England Healthcare System to optimize management of anticoagulation patients. Pharmacy operations, engineering and research collaborated to engage front-line staff in a multiyear quality improvement program to implement a facility-level centralized and network-level standardized anticoagulation care model to improve anticoagulation control, save money and improve patient and staff satisfaction. Improvement strategies were deployed at three levels – network, facility and provider. This presentation reviews strategies and success related to this approach.

Increasing the Number of Thyroidectomies Performed in the OR
Location: Salon 12
Presenter: Nadia Lahrichi, Sir Mortimer B. Davis Jewish General Hospital
Basic

As available time in the operating room is a primary resource constraint in the scheduling of patients, one may optimize time utilization in the OR by increasing the number of surgeries performed, within existing block schedule constraints. We study the operating room of the Sir Mortimer B. Davis Jewish General Hospital in Montreal. We undertook major projects to improve simultaneously the utilization rate of the OR and to face the backlog of thyroid surgeries. Besides mathematical models to better sequence cases and examine the impact of using two rooms for each surgeon, the nursing team responsible for thyroid surgeries took over the project. Number of cases per room went from five to seven, and even eight cases were done when an additional hour in the hour was allowed. The main two ingredients of this success are a great communication plan and teamwork. The same team was used to perform these surgeries, and each of them was assigned specific cases.

Beyond the Basics: Improving Primary Care Access in VHA
Location: Salon 13
Presenter: Coby Durham, New England Veterans Engineering Resource Center (VERC)
All Levels

Supply and demand, while often difficult to measure, only represents a part of the problem with clinic access based on current definitions. Both the private and public sectors struggle with accurately quantifying these two measures for a number of reasons. At the New England Veterans Engineering Resource Center (VERC), a team of engineers undertook a project with Boston VA Medical Center (VAMC) primary care. With the burning platform of the recent VA patient access crisis, the VERC was able to make positive changes in the Boston VAMC primary care clinics by accurately understanding and matching demand and supply.

Development and Operation of a Regional Arthroplasty Quality Improvement Collaborative
Location: Salon 17
Presenter: Richard Hughes, University of Michigan
Basic

The Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) is a statewide collaborative of hospitals and orthopaedic surgeons dedicated to improving the quality of care for hip and knee replacement patients. The collaborative meets quarterly at mandatory meetings to review the data analysis; discuss trends, outliers and opportunities for improvement; and develop quality improvement projects. The purpose of this presentation is to describe the development and operation of MARCQI and present it as a model for orthopedic quality improvement.

1:30 – 1:50 p.m.

The Missing Link: Connecting Process Improvement to Strategic Financial, Quality and Service Outcomes
Location: Salon 9
Presenter: Johanna Thomas, Verity Partners LLC
All Levels

As hospitals focus on value-based purchasing, their performance improvement efforts must connect traditional process-based measures to organizational outcomes-based goals. This effort identified the missing measures and minimized or eliminated metrics that did not impact corporate outcomes. Redesigning the metrics and dashboard to provide relevant daily metrics and standards helped align staff decision-making and performance efforts to achieve overall corporate outcomes.

Co-location of Clinical Services at UMass Memorial Hospital
Location: Salon 10
Presenter: Natassia Taylor, UMass Memorial Health Care
Intermediate
Due to pressure faced by UMass Memorial Healthcare, including the need to improve utilization of its current footprint and changes in management structure, radical changes needed to be made to its operations and resource allocation. The system’s Memorial campus, located in Worcester, Mass., closed a 27-bed unit. At the same time changes in policies affected volumes of inpatients and observation patients. Due to the current and anticipated mismatch of supply (resources) and demand (patient volumes), as well as pressure to reduce operating cost, a creative solution that did not include major resource acquisition was needed.

Assessment of a Split-Flow Emergency Department Implementation: A Discrete-Event Simulation Approach
Location: Salon 11
Presenter: Michael Gonfiantini, Binghamton University
All Levels

Emergency department (ED) length of stay (LOS) and door-to-doctor time are two crucial drivers for patient satisfaction. Numerous workflow models have been proposed to improve these metrics including split-flow, which has recently emerged among best practice techniques. Mount Sinai Health System will soon be implementing split-flow across six different EDs. This study focuses on the first hospital in the system undergoing the transformation and explores the potential of discrete-event simulation (DES) to assist the implementation of split-flow ED.

Launching an Organizationwide Process Improvement Culture
Location: Salon 12
Presenter: Cristina Galloway, University of Florida Health - Shands Hospital
Basic

In order to see a lasting impact, the responsibility of undergoing continuous improvement had to be expanded from our small department to the whole of the organization. Gathering support from leadership, creating a training structure and a curriculum for each training level has been no easy task. This is a long-term commitment to change, and so temporary turbulence needs to be endured for the culture to be transformed.

Making the Connection: Linking Patient Information for Better Patient Care and System Efficiency
Location: Salon 13
Presenter: Mark Biscone, Texas Hospital Association
All Levels

In a recent CIO meeting, it became apparent that the majority was not versed in what a health information exchange was, let alone if their organization was a part of one. However, recent healthcare reimbursement changes have been made such that hospitals will no longer be reimbursed for duplicative or unnecessary testing. In a regional healthcare environment, it then becomes paramount to be able to query and exchange patient information with other entities operating in the area to maximize efficiency and revenue retention. We will discuss the concept of health information exchanges, their enactment and early challenges and successes.

Safety through Care Gap Identification via Your Electronic Medical Record
Location: Salon 17
Presenter: Carmen Adams, Kaiser Permanente
Basic

Identification of high-risk care gaps in patient care that potentially pose a risk to the patient represent major opportunities to enhance patient outcomes. The goal of this project was to capture instances of prioritized care gaps to allow timely remediation. A proactive electronic surveillance system was implemented to detect care gaps that can be corrected in real time. Real-time communication between the quality RN consultant on duty and the affected medical center will occur once a gap in care is identified from the electronic medical record. A four-month pilot involving four medical centers has produced positive results as evidenced by the data collected. As a result, our organization has decided to spread this best practice to include all 21 medical centers.

1:30 – 2:20 p.m.

Academic-Industry Partnering-Finding Synergy
Location: Salon 14
Presenters: David Cowan and Eva K. Lee, Georgia Institute of Technology; Amy Cohn, University of Michigan; Stuart Paxton, Lehigh University; Srikant (Sri) Poranki and Mohammad Khasawneh, State University of New York, Binghamton
Advanced

The panel of professors and their industry partners will offer success stories, challenges and guidelines to lead in the development of partnerships that bring great value to all parties. The panel will include professors who have many years of experience in using these partnerships to strengthen their teaching and supporting their research. Each professor will bring an industry partner. These partners will describe how the relationships with the university
has given them an edge in recruiting great staff, brought innovative approaches to projects and supplied a high quality temporary workforce.

2 – 2:20 p.m.

**Integrating Lean Leadership with Executive Rounding at an Academic Medical Center**
Location: Salon 9
Presenter: Ernest Byers, UMass Memorial Health Care Intermediate

The topic of this presentation and the corresponding program is executive rounding and executive coaching in the context of an academic healthcare organization implementing lean management and lean philosophies. In this program, coaching is carried out by internal process improvement specialists, who are experts in lean management, and occurs in and around interdisciplinary visits to departments and conversations with employees where and when work is happening. The processes, dynamics and outcomes of healthcare executive “front-line” rounding in hospital inpatient, outpatient and support function departments will be explored within an interdisciplinary framework of lean learning and lean leadership development.

**Using Simulation to Design an Emergency Department Architecturally, Operationally and Clinically**
Location: Salon 10
Presenter: Robin Clark, QMT Group Intermediate

The existing hospital system is struggling with the current volume of patients. The predicted increase in volume will push the existing system past its breaking point. Our team was tasked with designing a new emergency department with the appropriate capacity and seeing how various operational changes would affect the new system, while investigating clinical trends and the effect on the whole hospital system. In this presentation, we will discuss the clinical considerations and implications of the facility layout decisions, operational considerations and implications of the facility layout decisions, and obstacles and advantages in using real hospital data, among other aspects of the project.

**Kaizen: Getting Everybody Engaged in Healthcare Improvement**
Location: Salon 11
Presenter: Joseph Swartz, Franciscan St. Francis Health All Levels

Launching and growing a continuous improvement program at a healthcare facility is more complicated than one might think. Discover how Franciscan St. Francis Health created and grew their kaizen program to the point where they have had more than 20,000 kaizen improvement ideas implemented in the last seven years. If you already have a continuous improvement program but are struggling to get employees engaged, come learn some pointers to grow your program. Many examples from Franciscan and other healthcare organizations will be discussed. Also we will involve participants in a hands-on exercise that they can use in their facility.

**Achieving a Change Resilient Culture: Catholic Health Initiatives Approach to Change Leadership**
Location: Salon 12
Presenter: Gary Altman, Catholic Health Initiatives Basic

Change resilience is a competitive advantage given the rapidly accelerating pace of change in healthcare. This presentation makes the case for why change leadership is needed and important for success. It provides the basic framework of the change leadership methodology implemented by Catholic Health Initiatives to build the required competency of change leadership through the leadership team and equip the organization for the increasing rate of change. Information provided includes a methodology for initiating and sustaining change successfully and resources for continued learning on the subject.

**Using Social Media to Guide Population Health Management**
Location: Salon 13
Presenter: Sara Chapman, Georgia Institute of Technology All Levels

Population health management often requires accurate prevalence estimates at low-level geographic regions. These estimates can be expensive and time-consuming to obtain, especially in the field of mental health. With the rapid increase in the use of social media and its capacity to capture people’s thoughts and feelings, Twitter is a new frontier for mental health surveillance and prevalence estimation. In this research, we propose an algorithm to estimate the prevalence of serious psychological distress (SPD) at any geographic level using only information obtained from Tweets and from the Kessler 6 questionnaire.
Physician Disease Specific Orders to Improve Appropriate Care Scores  
Location: Salon 17  
Presenter: Tina Schoen, Carolinas Healthcare System  
Basic

The functional composition of the quality improvement team included leadership and physicians from the Hospitalist Group, a quality improvement nurse and an outcomes specialist. Using transparency of data, the Hospitalist Group believes the group moves together as one team regardless of physical/facility location. Key stakeholders such as physicians were involved from the very beginning of the launch of this initiative. The group worked to hardwire the structure and processes necessary to achieve and maintain the outcomes. Data is consistently shared with our physician providers and the system's IT and evidenced-based care partners. Lessons learned that we would share with other organizations interested in pursuing a similar project would include the development of a tool or compliance tracking mechanism to provide feedback.

2:30 – 2:50 p.m.

How a PB&J Sandwich Drove a Lean Six Sigma Journey  
Location: Salon 9  
Presenter: Jennifer Hooks, Medical University of South Carolina  
Basic

How do you begin a lean Six Sigma journey for a large academic hospital? Knowing first and foremost a cultural transformation has to occur within the organization. A cultural transformation begins by first obtaining leadership buy-in and then engaging staff and physicians in hands-on, results-oriented training. The performance improvement team found it important that learners are able to identify with a common scenario and then weave lean Six Sigma continuous improvement tools into learning concepts. In a lifetime, everyone has either made, eaten or seen someone else eating a peanut butter and jelly sandwich, so this was the team's go-to scenario for applying practical applications of lean Six Sigma tools.

A Discrete-Event Simulation to Investigate the Impact of a Gender-Based Split Flow to Inpatient Units from the ED  
Location: Salon 10  
Presenter: Srikanth Poranki, Binghamton University  
Basic

There is a growing trend at the national level for fewer inpatient beds, with the key drivers being patients delaying non-emergent procedures and hospitalizations and the need to reduce hospital costs. When the Inpatient Unit (IU) beds are not available for Emergency Department (ED) patients, these patients are termed as “ED hold” patients, and the amount of time spent in an ED hold status is referred to as “ED Hold Time.” These holds happen due to a mismatch in handling peak patient demands in the ED, OR patient demand and inpatient discharges. Therefore, hospitals attempt to optimize patient flow from EDs to IUs by having “OR smoothing” and early IU discharges, so that the flow could be timely and efficient. In this work, a case study at a community hospital in New York is presented. It is hypothesized that having different flows based on gender decreases the complexity in care delivery and reduces waiting times, thereby increasing productivity. Therefore, the objective of this work is to investigate the impact of gender-based split-flows to inpatient units on ED holds and hold times using discrete-event simulation.

Project HELP: Shifting Nursing Time from Care Support to Care Delivery  
Location: Salon 13  
Presenter: Seth Hostetler, Geisinger Health System  
Basic

Project HELP (Healthcare Enabled Logistics Program) aims to give back clinical time to nursing by engineering improved methods to support the delivery of care. A work sampling study found that inpatient nurses, on average, spend approximately 20 percent of their time with logistics-related tasks. This presentation describes the methods and initial results (14 percent increase in patient care), specifically focusing on the deployment of the information system and new staff role on the nursing units.

Reducing Falls: From the Patient’s Perspective  
Location: Salon 17  
Presenter: Rick Terkowski, Penn Medicine – Chester County Hospital  
Basic

An innovative safety trend patient-centered care focuses on the patient’s perceptions of an event, patient-assisted incident reporting (PAIR). Using DMAIC methodology, an interview tool comprising patient-specific questions and risk criteria was developed. Using the interview tool, the patient safety liaison interviewed the patient and completed the tool relative to their event. The data was compiled, analyzed and discussed at monthly Falls Task Force meetings. Together, the quality champion and Unit Council developed
strategies, education and heightened awareness to improve outcomes. Staff was empowered to have an active part in falls reduction.

2:30 – 3:20 p.m.

**Are We Transforming Healthcare or Merely “Acting Our Way Into A New Way of Acting?”**

Location: Salon 11  
Presenter: Mike Stoecklein, ThedaCare Center for Healthcare Value  
Intermediate

A common approach to introduce lean thinking to an organization is through the hands-on application of tools, methods and concepts in improvement events. The implied theory is that it is easier to act your way into a new way of thinking, rather than think your way into a new way of acting. It may be easier, but does this approach result in sustained improvement and an understanding of the principles and knowledge behind the tools and methods? What we often see in practice is more like “acting our way into a new way of acting.” This presentation points out the pitfalls of a tools-based approach and offers an alternate framework that is more likely to result in a true cultural transformation in the management of healthcare.

**Challenges for Healthcare Delivery in the Digital Era – A Panel Discussion**

Location: Salon 12  
Presenter: Presenters: Eva K. Lee, Georgia Institute of Technology, Victoria Jordan, UT MD Anderson Cancer Center, Diane Ridgway, Methodist Le Bonheur Germantown Hospital, Michael Schrage, MIT Center for Digital Business

**The Healthcare Systems Engineering Summer Internship Program**

Location: Salon 14  
Presenter: James Benneyan, Northeastern University  
Basic

As recommended by a PCAST (President's Council of Advisors on Science and Technology) report to President Obama in June of 2014, aggressive mechanisms should be developed to increase rapidly the visibility, application and workforce of systems engineering in healthcare. This presentation describes a new summer internship program to expose promising students to the application of industrial and systems engineering to important healthcare problems. The program includes spring preparation, a summer cohort experience working on several applied and research problems, and fall reflection and dissemination activities. Each student works in teams with faculty, medical and post-doc mentors on problems in several dozen Boston-area and national health systems.

3 – 3:20 p.m.

**C. difficile Rate Reduction Lean Six Sigma Project**

Location: Salon 9  
Presenter: Matthew D’Agostino, MedStar Franklin Square Medical Center  
Basic

A lean Six Sigma team with strong front-line participation aimed to reduce hospital-acquired C. difficile infections on a high-risk unit. Six months of data collection and analysis facilitated the development of various quick wins and robust solutions. Solutions included a revamped hand hygiene program, tactics to mistake-proof improper hygiene protocols, pre-assembled precaution supply bundles with 5S’d supply storage, strengthened visitor education around C. difficile, room cleaning audits, an antimicrobial stewardship initiative, and emerging germicidal UV technology to reduce the bio-burden of existing pathogens in the hospital. The portfolio of solutions were later replicated and communicated to all other hospital units, realizing a 31 percent hospitalwide reduction and building management buy-in for lean Six Sigma.

**Modeling Process Changes in the Veterans Affairs Emergency Department**

Location: Salon 10  
Presenter: Kelli Crosby, Veterans Engineering Resource Center  
Intermediate

The Veterans Healthcare Administration (VHA) is the largest healthcare system in the United States and the increase in veterans accessing emergency services has driven the need to improve patient flow in the emergency department (ED). This project addresses the development of a discrete-event simulation (DES) model of the ED at the Veterans Affairs Pittsburgh Healthcare System and the evaluation of simulated process changes on the average length of stay in the ED for patients admitted to the facility and discharged from the ED.

**Improving Coordination of Veteran Care via Team-based Multispecialty Care Approach**

Location: Salon 13  
Presenter: Balmatee Bidassie, Department of Veteran Affairs – Center for Applied Systems Engineering  
All Levels
Specialty Care Transformation (SCT) funded 10 proposals to coordinate care across specialties for veterans’ complex conditions. SCT collaborated with VA-CASE to develop a team-based multispecialty care platform using lean and A3 thinking via a three-day value stream analysis (VSA) to identify current problems/processes or a five-day rapid process improvement workshop (RPIW) for in-depth improvement methods to improve a process. RPIWs were conducted at each medical center with a VA-CASE engineer and faculty present to support the teams. The RPIW framework helped teams to test and implement improvements to their identified aims.

**The Challenge: Reduce Falls in a Geriatric Psychiatric Unit**

- **Location:** Salon 17
- **Presenter:** Rebecca Harper, Medical University of South Carolina
- **Basic**

Patient falls can cause significant complications and injuries while increasing hospital stays and risking reimbursement. Elderly psychiatric patients face unique issues that cause an unsteady gait, including dementia, medications and treatments. The project’s purpose was to reduce the patient fall rate in a geriatric psychiatric unit at the Medical University of South Carolina from an average of six to three per month. A team of unit staff and an improvement facilitator used problem-solving tools to determine the primary causes of falls to be improper bed alarm usage, staff location while performing daily tasks and staff presence during key times. The team implemented five solutions, and fall rates have improved from an average of six to an average of two per month for the last year.

3:30 – 3:50 p.m.

**Bleeding Out - Unnecessary Labs**

- **Location:** Salon 9
- **Presenter:** Faisal Rahman, Boston University Medical Center
- **All Levels**

Excessive laboratory testing contributes to the increasing cost of healthcare without enhancing patient care. Unnecessary tests may contribute to errors, lower patient satisfaction, patient debt burden, hospital-acquired anemia, physician information overload and ignorance of crucial data, and complications from further testing. We studied general medicine inpatient daily morning laboratory ordering at our tertiary center and introduced two interventions to reduce excessive testing. After the interventions, daily laboratory orders decreased by 11 percent in the one-time intervention group, and 22 percent in the daily intervention group, with no change noted in the control group. Our study demonstrates significant financial and clinical cost savings of a low-cost intervention to reduce unnecessary labs.

**Workload Estimation and Staff Scheduling for Sterile Processing Services**

- **Location:** Salon 10
- **Presenter:** Bryan Norman, University of Pittsburgh
- **All Levels**

Determining proper staffing levels for sterile processing services (SPS) is a very challenging problem. Most SPS areas have workloads that can vary significantly among the days within a week and can vary from week to week. In this presentation, we provide a workload model for estimating the number of SPS staff required based on the schedules of the operating rooms and clinics that send items to the SPS area. Using this workload data, a scheduling model is developed that determines the SPS staffing level that will minimize staffing costs taking into account overtime costs, limits on overtime and staff call-offs.

**Progressing Care for Optimal Outcomes**

- **Location:** Salon 11
- **Presenter:** Renee Jahn, Ellis Medicine
- **Intermediate**

In an effort to reduce length of stay significantly and improve efficiency of patient care, Ellis Medicine has taken an innovative approach to assessing the operational barriers and delays to the progression of care. Starting in the first quarter of 2014, a team of seven lean leaders mobilized the institution to evaluate creatively and develop corrective solutions to progress patient care. Participants will learn of the creative process the lean team used to facilitate the improvement in the progression of care. Attendees also will hear of the strategy the team used to address cultural and organizational barriers, sustainment and accountability.

**Embedding Systems Thinking**

- **Location:** Salon 12
- **Presenter:** Laura Tibor, Mayo Clinic
- **Intermediate**

The purpose of this initiative was to start to embed systems thinking and to improve patient flow in each radiology modality. To initiate this, each of the seven modalities identified a measurable patient flow metric in a key patient value stream. The teams developed project charters with measurable goal statements, followed the DMAIC methodology and created
current and future state value stream maps. Several other process improvement techniques and tools were used such as Pareto diagrams, observation, data analysis, PDSA cycles, pull systems and control plans. All eight projects showed improvements in their individual team project metrics and have collectively impacted the flow for 530 patients per day.

**Partnership for a Healthy Community: Designed for Success**  
Location: Salon 13  
Presenter: Bonnie Paris, Quality Quest for Health of Illinois  
All Levels

The Partnership for a Healthy Community Project in the Peoria and Tazewell counties of Illinois was a two-year collaboration designed and managed to deliver sustainable results. The project included 12 initiatives related to five strategic areas: tobacco-free living, healthy eating, active eating, clinical preventive services, and social and emotional wellness. More than 20 organizations partnered to address policy, system and environmental changes to reduce morbidity and mortality related to cardiovascular disease. Discussion included partnership building, internal and external communication, scope management, budget management, outcomes assessment, and project close-out. The relationship between population health improvement and healthcare system performance will be discussed, and three initiatives related to healthcare systems improvement will be highlighted: blood pressure management for patients with hypertension, use of decision support for appropriate screening per U.S. Preventive Services Task Force recommendations, and promotion of work site wellness programs.

**Integrated Scorecard for Quality, Safety and Productivity**  
Location: Salon 17  
Presenter: Anita Murthy, Garpsa Solutions LLC  
All Levels

Acos (accountable care organization), VBP (value-based purchasing) and P4P (pay for performance) are all attempts to provide quality and safe care at optimum cost. This presentation covers an Excel-based scorecard integrating safety, quality and productivity, the three legs of the healthcare delivery stool. The composite index used for all three indices is derived by multiplying individual indices and reporting them on the score card. It can be easily incorporated into a balanced score card with other areas of interest, if desired. Attendees will understand the basics, components, influencing factors, metrics, definitions and computations covering safety, quality and productivity.
Conference Sessions

THURSDAY, FEBRUARY 19

Ties of simulation modeling as a tool for predicting critical care bed needs with an ability to adapt to differing growth rates and patterns in demand. It uses modeling to quantify the costs savings of consolidation of differentiated critical care units offering insight into future planning and direction for a hospital.

Integrating Process Improvement, Project Management and Change Management Training
Location: Salon 11
Presenter: Sarah Kadish, Dana-Farber Cancer Institute Basic

Delivery of complex projects benefits from the application of project management. All improvement projects represent change for staff. Our Projects in Practice program teaches students these disciplines while applying newly acquired knowledge and skills to active projects. Teams of two to three participate in six days of classroom lecture over six months while implementing their projects. Each team is assigned coaches to facilitate project work. We trained 27 nominated staff during the first two rounds.

The VHA Take on Reducing Missed Opportunities
Location: Salon 12
Presenter: Rachel Goffman, Veterans Health Administration All Levels

Missed opportunities (MO) is a national problem that wastes clinical resources and impacts the ability of the Veterans Health Administration (VHA) to provide veterans with timely healthcare. The National Initiative to Reduce Missed Opportunities (NIRMO) aims to understand and analyze factors that predict MO and to develop and deploy strategies for improvement. Overall, NIRMO helps teams across the VHA target factors that contribute to MO in their respective areas. Throughout the lifecycle of the project, NIRMO has deployed a national voice of the customer (VOC) and voice of the process (VOP) to understand the reasons patients do not show for their appointments and what strategies were being implemented across 150 VA medical centers. Based on the results of the VOC and VOP, strategies for improvement were developed and deployed across the VHA.

Patient-Centered Care via Integration of Mental Health and Chaplain Services
Location: Salon 13
Presenter: Laura Wright, Veterans Health Administration All Levels

The Department of Defense (DoD) and the Department of Veterans Affairs (VA) jointly participated in an initiative to integrate mental health and chaplain services based on studies suggesting service members and veterans suffering from mental health problems frequently turn to chaplains. The goal of this initiative was to achieve timely, reliable and bidirectional access between the mental health and chaplain services to improve patient-centered care. This bidirectional process was evaluated through a learning collaborative approach in which seven DoD and seven VA teams were selected to participate. The key success factor to virtual process improvement facilitation was the structure of communication with weekly team calls and biweekly reports of team successes and barriers to the collaborative executive group to allow timely decision-making.

Pass/Fail: A Case Study in Adapting to Measurement Changes
Location: Salon 17
Presenter: Alison Knight, Mayo Clinic All Levels

The Centers for Medicare and Medicaid Services, the Joint Commission and the Affordable Care Act mandate reporting of institutional quality measures that drive reimbursement and hospital rankings. As quality measures change with new research, best practices and electronic medical record capability, the clinical care, process and system infrastructure must also change. To address the metric change, a multidisciplinary team from surgery, endocrinology and system engineering was formed. The team evaluated the new measure’s performance criteria, predicted compliance based on past performance, defined weaknesses in the current clinical care process and recognized necessary clinical and system infrastructure changes. Since the change, the team categorizes failures into two groups: system failures and clinical failures that then enable root cause analysis and expert review for continued improvement.
8:10 – 8:30 a.m.

**Transforming the Transplant Service Line Using a Value Stream Analysis Approach**
Location: Salon 9
Presenter: Karl Kraebber, Indiana University Health
All Levels

Indiana University Health - Adult Abdominal Transplant is nationally recognized, has excellent outcomes and is consistently ranked in the top five U.S. programs by volume. However, opportunities exist in all four phases of transplantation (referral, evaluation, listing and transplant) to improve capacity, overall market share and stakeholder engagement. Improvements to the transplant value stream were made through the elimination of waste in process cycle time, patient throughput, resource utilization, staff turnover and care coordination. This presentation will discuss the value stream analysis process and outcome; highlight the first 5 RIEs; and take a deep dive into the successes and challenges of implementation of the discharge planning and process event.

**Developing Simulation-Based Decision Support Tool for Anesthesia Staffing Decisions**
Location: Salon 10
Presenter: Rory Michelen, University of Florida Health Basic

Making effective staffing decisions is of utmost importance to UF Health's Department of Anesthesiology. Yet there are currently no tools available that allow administrators to compare the quality of potential staffing solutions. In order to facilitate the decision-making process, the Management Engineering Consulting Services (MECS) team at UF Health aims to develop a simulation-based decision support tool that will forecast and quantify the effects of staffing decisions. This tool, which is being developed using Visual Basic with Applications in Excel, calls on methods of simulation and mathematical modeling to determine the optimal level of staffing in different areas of the hospital. Although the tool is a work-in-progress, the elements that the MECS team has successfully developed provide an unprecedented amount of detail for department administrators.

**Beyond the Checklist: Systemwide Innovation in Surgical Services**
Location: Salon 12
Presenter: Julie Bondurant, Premier Health Intermediate

Surgical services is at the front door to our Premier Health hospitals and is focused on providing safe, quality and efficient care to patients in need of surgical or other procedural interventions. A systemwide team was formed and tasked with changes focused on the improvement of services. Over a short period of time, the team was able to develop a comprehensive design plan with a detailed implementation schedule that included strategic communication components. Due to the success of this team, operational leaders at each of the hospitals have been able to carry out the ongoing implementation efforts without difficulty. As a part of the future direction to maintain accountability, several initiatives are in development stages to bring the SGB boards together across the system.

**Improving Coordination in Perioperative Services Using Mobile Computing and Learning**
Location: Salon 13
Presenter: Kevin Taaffe, Clemson University
All Levels

This research focuses on developing learning systems with mobile technology to improve coordination in perioperative services (periop) at three large hospitals in South Carolina. The main objectives are to enhance coordination and increase collaboration among periop staff; improve individual workflows by analyzing workflow data and intuitive displays of real-time information gathered by smart-app; and induce behavioral and cultural change in healthcare systems through training and education. Periop is a major contributor to hospital revenue, as well as being a major cost center.

**36 Mistakes Six Sigma Green Belts Make and How to Avoid Them**
Location: Salon 14
Presenter: Richard Biehl, University of Central Florida Intermediate

Inadequate or incomplete use of common Six Sigma tools does not result in projects that can be described as a form of industrial engineering. Taking loose projects and turning them into engineering initiatives requires extensive rigor to be put back into the use of the common Six Sigma tools. This presentation outlines 36 common mistakes that novice green belt candidates tend to make on their initial projects, sometimes because of inadequate training, and other times because of a lack of support and resources needed for proper implementation. The list is derived from two decades of mentoring teams and individual candidates, as a black belt and master black belt, as they pursued their certification projects after initial training.
8:10 – 9 a.m.

The Change Conundrum: Why Do Some Organizations Get It Right While Others Crash and Burn?
Location: Salon 11
Presenters: Jean Ann Larson, Jean Ann Larson & Associates; Dean Athanassiades, Philips Healthcare; Steve Escamilla, John Muir Health; Marci Jackson, Premier Inc.; Amanda Mewborn, Perkins+Will; Duke Rohe, MD Anderson Cancer Center; David Cowan, Georgia Institute of Technology

Healthcare is in the midst of unprecedented change and most organizations are engaged in strategic, transformational change. So why are only 30 percent of change initiatives successful? This highly interactive panel discussion will feature some of the top healthcare leaders exploring several current topics.

A Method to the Magic: Analytics at Walt Disney World Parks and Resorts
Location: Salon 17
Presenter: Dayana Cope, Walt Disney World

There are many similarities between the theme parks industry and the healthcare industry, at least as far as analytics are concerned. This presentation will highlight some of those similarities and focus on “barriers of adoption” for analytics in both industries. The presentation will then focus on how we have addressed those barriers at Disney, as well as highlight some project examples of analytics applications that could be applicable to the healthcare industry.

8:40 – 9 a.m.

How a ‘Waste of Time’ in VSM Actually Reduced Waste
Location: Salon 9
Presenter: Ashley Crofton, Mayo Clinic

Have you ever had push-back from members of a team regarding the use of lean Six Sigma tools? Have you ever heard the phrase “this is a waste of time” in the beginning stages of an improvement project? How about someone on the team already knowing what the solution to a problem is? This presentation will walk through the steps taken in a project to show how the use of the value stream mapping tool would help with a positive change of perception of the use of the lean and process mapping tool. It will help a team realize how a “waste of time” value stream map can actually reduce waste.

Deterministic and Stochastic Discharge Pharmacy Staffing Models
Location: Salon 10
Presenter: Brock Bassetti, Banner Health

The process engineering team evaluated the workflow process of technicians and pharmacists at the retail pharmacy locations. Time and motion studies were conducted to identify the processing time required of both the pharmacist and the technician to fill a single script. Both a deterministic and stochastic approach was used in creating staffing models for the retail pharmacies. The deterministic model used the expected value of a time to fill a script as the input, with the output being the number of pharmacists and technicians required per hour to cover demand. The stochastic model was also created using simulation software to account for variability in processing times, as well as the occurrence of costly issues and errors. Using the data provided by the models, the Banner Family Pharmacy senior management team was able to plan staffing appropriately at the various locations of the in-hospital retail pharmacies.

Health Systems Engineering at UW Health: Partnering to Redesign Care
Location: Salon 12
Presenter: Nicole Domask, University of Wisconsin Health

The current era of healthcare reform demands rapid improvements and redesign efforts to improve the quality of care and decrease costs. Industrial and systems engineering can provide significant value in healthcare redesign efforts. University of Wisconsin (UW) Health leverages the skills of industrial engineers by partnering with the UW-Madison Department of Industrial and Systems Engineering to promote innovation and facilitate improvement in the healthcare setting. UW Health offers real-world project opportunities to students. Some students spend up to three years working on projects through research assistantships or internships. Additional students have the opportunity to gain exposure to healthcare through semester-long projects associated with specific UW-Madison courses. Engineering students value the real-world experience, and faculty appreciate the opportunity to make scholarly contributions in their field.
VA Revenue Cycle - A Model for Improvement
Location: Salon 13
Presentation: Serge Lacerte, Office of Informatics and Analytics
All Levels

It is vital that Centralized Patient Accounting Centers (CPAC), Veterans Integrated Services Network (VISN) and VA medical centers (VAMC) work together to maximize third-party revenue capture and allow for the greatest possible enhancement of resources to support the VHA healthcare mission. Together lean and Six Sigma work through process mapping to develop efficient workflows that are of high quality while eliminating waste and reducing errors. Fold in the principles of project management, and we have a complete systems approach to understanding the problem, devising a plan and carrying it out, and including a complete retrospective review. The objective of this presentation is to describe the system and how the structure is developed for transportability to any other VISN.

Making It Stick: An Approach to Project Closing and Transitioning
Location: Salon 14
Presenter: Melanie Lowther, Texas Children's Hospital
Intermediate

Historically, lean Six Sigma projects experience the challenges of abandonment and failure in the final stages of closing and transitioning. To prevent this, a project lead may be unable to hand-off his or her role as facilitator or leading unplanned follow-up projects. The business process transformation department at Texas Children's Hospital has developed a model to provide project facilitators with a toolkit to better transition projects and give stakeholders the confidence and strategies needed to continue pursuing process improvement and follow-through on solution implementation and sustainability.

9:10 – 9:30 a.m.

Patient Throughput: Reducing Observation Patient Length of Stay
Location: Salon 9
Presenter: Jarrod McDonald, MedStar Franklin Square Medical Center
All Levels

This project used the lean Six Sigma DMAIC process to reduce the mean, housewide observation patient length of stay by more than 16 percent, resulting in an annual cost savings of $413,000. Through robust data measurement/analysis, graphical summaries and in-depth process/value stream mapping, the multidisciplinary lean Six Sigma team proved that patients were experiencing overnight/weekend waits for test/procedures, inconsistent lab draws and delays in order-initiation leading to inefficient patient throughput and unnecessarily extended lengths of stay. The team identified solutions to overcome the vital few root causes, including the installment of a specialized observation unit for low risk, low complexity observation patients, a unit-based care team model, outpatient testing that was completed after discharge and standardization for specific lab draws to deliver the exceptional results mentioned above.

Decision Support System for Staffing Surgical Teams Using Simulation
Location: Salon 10
Presenter: Mohd Ragheb El-Sharo, Mayo Clinic
Intermediate

Full-time equivalent (FTE) availability and paid time off (PTO) create plenty of variation in the schedules of surgical team members, registered nurses (RNs) and surgical assistants (SAs). Cross-trained professionals and surgical procedure standardization were proven as beneficial strategies to overcome this scheduling variation issue. However, deciding the number of healthcare professionals to be staffed or trained across multiple specialties is a challenging task. In an outpatient surgical suite used by 26 surgeons of six specialties, primary team members (two RNs and two SAs) were selected based on members’ competencies, preferences and familiarity with each surgeon’s technique. Discrete-event simulation is proposed to model the surgical teams that include their FTEs and PTOs. The model will replicate the actual system to help determine the number of healthcare professionals to be cross-trained to substitute during any primary surgical team member’s absence. In addition to the assistance with the cross-training, the model will be used as a staffing model specific for operation rooms. This will assist in planning for staff allocation and reallocation. System performance will include the stability of each team measured by the frequencies of members’ substitutions.

Leveraging Lean Practices in Supply Management
Location: Salon 12
Presenter: Kevin Noonan, Johns Hopkins Applied Physics Lab
All levels

The traditional approach to supply management is to decentralize the ordering and management of supplies to ensure control. There is a general distrust of the supply chain processes to deliver the right supplies effectively at the right time to the
right place. This leads to overstock and hoarding, which in turn occupies valuable space and leads to expired medical supplies throughout the hospital. Often, the responsibility to track and order supplies is left to clinical staff. This presentation will focus on the primary levers to manage supply inventory effectively within a military-run hospital. It will provide key lessons learned and how sustainment is being achieved through a data-driven and collaborative approach between materials management and clinical personnel.

Implementing Telemedicine Processes - Modeling and Analysis
Location: Salon 13
Presenter: David Ben-Arieh, Kansas State University
Intermediate

Modern medical services face at least two challenges: high cost and low availability of providers. In order to improve both factors, more medical organizations are turning toward using telemedicine. This approach allows a specialist located at a central facility (hub) to provide services to patients located at remote sites (spokes) improving accessibility and reducing cost at the same time. However, using telemedicine is complicated by the need to use additional technology and by coping with more complex processes. This presentation will explore various modalities of providing telemedicine services. Such modalities include services to individuals or groups using synchronous (real-time) as well as asynchronous (“store and forward”) approaches. We will discuss the processes, performance and limitations of each approach considering domains such as telepsychology, which could be suitable for more than one modality. The presentation will focus on analyzing the various approaches showing typical data collected at such processes along with the corresponding performance metrics.

9:10 – 10 a.m.

Leading System-wide Change: Reducing Door-to-Provider Time for Emergency Department Patients
Location: Salon 11
Presenter: Rudolph Santacroce, CHRISTUS Health
All Levels

The emergency department (ED) has long been an important and vital part of acute-care hospitals. However, if these hospitals are to be successful in the age of healthcare reform, many changes will be necessary, and the ED will become an even more significant part of acute-care delivery and service to our communities. To rise to meet this challenge, a “no-wait” ED initiative has been instituted across CHRISTUS Health, an international health system consisting of 60 hospitals throughout the United States and Central and South America. The challenge was to align goals for ED performance at the system level while identifying lean champions within each region. Over a four-month period, the multidisciplinary team was charged with reducing door-to-provider time to 30 minutes with 85 percent reliability. This initiative was budget-neutral; it relied solely on process improvements, no additional head counts or resources. The main effort was accomplished by using the A3 methodology to describe current states, define objectives, identify/analyze the root causes of problems, propose solutions and develop sustainment plans.

Facilitation Football: Managing Group Process to Its Best
Location: Salon 14
Presenter: Duke Rohe, MD Anderson Cancer Center
Basic

Meeting facilitation is an essential skill for every improvement professional. We all may know pieces of it, but do we know what we don’t know? This session provides tips, tricks and traps of facilitating group process in a most engaging manner. Every participant will receive a facilitation football placemat to scribe the important aspects of facilitation. They will determine what’s on the playing field (during the meeting) and what’s out of bounds. Distinctions between leading and facilitating a meeting will be shared. Sixteen attributes of an effective team, roles/goals/secrets/tools/weapon of facilitation, great ground rules, ten popular traps you can fall into, a universal agenda that works when there is no agenda, and how to keep from getting sucked into the content of a meeting. There also are pointers and rules on how to facilitate meetings with 10 or more members.

From Building Applications to Overcoming Adoption Challenges: Relevant to Healthcare?
Location: Salon 17
Presenter: Zahir Balaporia, Schneider National
Basic

This talk will cover a broad survey of applications and focus on potentially transferable concepts across two very different application domains. The field of transportation and logistics has invested in research, technology and process innovation for many years, and there is conceptual overlap in many areas across our systems despite the significant operational differences. Could the differences in the application domains be abstracted away and provide transferable concepts? Could lessons learned in commercial transportation systems be adopted in the healthcare systems leading to breakthrough ideas
for improved quality, productivity and satisfaction for patients and service providers? We will explore concepts together that hopefully will provide the seed for process improvement and innovation in healthcare operations.

9:40 – 10 a.m.

**The Case for Smarter Standardization in Healthcare**
Location: Salon 9
Presenter: Ajay Jayakumar, University of Wisconsin
Intermediate

Improvement concepts within healthcare strive for standardization and clinical protocols. Compared to other industries, there is a high level of variation within healthcare, but to ensure sustainability of a majority of the improvement initiatives, the process might need to be redesigned to incorporate strategic variability/variation. Using a case study, evaluating the implementation of the Advanced Care Planning program within UW Health as a robust example, the presentation explores the nuances with process improvement and dispersion of innovative ideas. The implementation of the program was evaluated using a SEIPS model (Systems Engineering Initiative for Patient Safety) and using the work-system concept to understand the impact on outcomes through the interaction of the various elements and the resulting processes.

**Dermatology - Developing a Standard Process to Transition Stable Patients**
Location: Salon 10
Presenter: Tony Piek, University of Wisconsin Health
Basic

The University of Wisconsin Health Dermatology has 50,000 patient visits annually and is faced with overwhelming demand for appointments. Adding providers has not improved access. Many patients return after being deemed “stable,” limiting access for new and urgent patients. To understand transitioning barriers, a current state analysis and pilot study was performed in the dermatology department over 10 months. Benchmarking revealed other organizations had similar issues and no solutions. A comprehensive process was developed for transitioning patients in a systematic, standard way. The process was tested during a three-week pilot with successful results. Currently, the process is being refined to capture best practices for discharge conversations with patients, clarify the purpose of specialty care and continue dialogue with primary care. The process is being implemented across Dermatology locations at UW Health along with tracking results to determine the impact on access for new and urgent patients over time.

**Redesigning Processes to Manage Drug Inventory in a Hospital Pharmacy**
Location: Salon 12
Presenter: Steve Novak, Mayo Clinic
All Levels

Over the years we speculated why we sometimes did not have enough drug in stock or had too much drug that expired before being used. In the fall of 2012, our hospital pharmacy installed new technology to assist with inventory management. However, we were never able to make any kind of a positive impact in these two areas despite much effort and resolve by many people. Using lean processes, we were able to address our problems. Learn how lean concepts and methodologies helped this team at Mayo Clinic redesign and improve processes that resulted in reduced waste, increased staff satisfaction and continued delivery of quality patient care.

**If You Build a Patient Portal, Why Won’t They Come?**
Location: Salon 13
Presenter: Lynn Alters, Floyd Medical Center
Intermediate

One of the most challenging tasks for meeting Meaningful Use (MU) Stage 2 requirements rests in the hands of our patients. Patient portals are standard functionality for Stage 2 certification, and they are the only path to meeting MU objectives for patient electronic access. Standard implementation plans embed the technology into our EHR and then the challenging part begins. This presentation explores the challenges, the obvious workflows, and the not-so-expected slow climb to meeting the five percent measure for patients logging onto their inpatient portal. From patient registration to volunteers at the bedside to marketing email reminders, patient portal adoption continues to require all hands on deck at many hospitals nationwide.

10:10 – 10:30 a.m.

**Needle Localization and Operating Room Performance Improvement**
Location: Salon 9
Presenter: Derek Murray, University of Florida Health – Shands Hospital
Intermediate

Management engineering and the quality department were requested to study the patient flow and analyze elements of intervention inherent in the process of needle localization patient surgeries. The goal of the project was to improve patient...
throughput, align and optimize department schedules, and establish a single point of contact for the patient. A process improvement team was assembled to work on this issue. Initially the current state was documented to determine gaps in the process. Data analysis was then performed to baseline the current state. Multiple rapid improvement events were then conducted with a multidiscipline group to perform root cause analysis (RCA) of issues contributing to the long wait times. This was the first time an actual patient was included to assist the process improvement team. The team then brainstormed solutions to the major root causes and ranked them by their highest impact to reduction of wait times. Once this was complete, the group developed a new process that centered around the patient's surgery appointment. The process was then piloted over a three-month period. The results were a consistent and predictable 30 percent reduction in overall wait time for surgery.

**Clinic Access Planning Tool (CAPT) — Impact of Capacity on Wait Time and Wait List**

*Location: Salon 10*

*Presenter: Qing Li, New England Veterans Engineering Resource Center (VERC)*

*Intermediate*

While there are many simulation tools and packages designed to help clinicians and managers plan the appropriate level of supply (e.g., physicians, beds, assistants) needed to match demand, the task is still very difficult and daunting. This struggle can be perceived through the extended wait times and waiting lists at many healthcare clinics. Barriers to appropriate planning include a mismatch between simulation and reality, misuse of models, lack of understanding of statistical nuances, and oversimplification of reality. The Clinic Access Planning Tool (CAPT), based on a G/G/N queuing model (general interarrival times, general service times and N servers), is designed to take into consideration some of these barriers and provide a simple user interface for easy planning. This presentation explores the trade-off between “simple” simulation models and more advanced models, statistical considerations, practical implications of using queuing theory in healthcare, and stories of implementation within the Veterans Affairs Healthcare System.

**Improving Access to and Coordination of Multispecialty Pain Care?**

*Location: Salon 11*

*Presenter: David Garrison, VA Center for Applied Systems Engineering*

*All Levels*

Chronic musculoskeletal pain is a widely prevalent condition among veterans, with up to 50 percent suffering from chronic pain. As a result, the VA developed the VA Stepped Care Model of Pain. Ongoing issues with the model have resulted in a significant number of cancelled/discontinued specialty care consults leading to a lack of coordinated care and limited access to specialty care resources. This typically results in frequent urgent care visits, ED visits and utilization of community healthcare resources that increase the financial burden on the veteran and VA. The Veteran Affairs Medical Center (VAMC) conducted a rapid process improvement workshop (RPIW) in February 2014 to address access to care for its pain management patients. The RPIW used the VA-TAMMCS methodology, which incorporated the completion of a nine-box A3. Ten PD-SAs were developed during the weeklong RPIW. The VAMC noted several lessons learned including the importance of standardizing processes, identifying gaps and collaborating on solutions. This project was sponsored by the Office of Specialty Care Transformation.

**Improved Public Health Response to Measles Outbreak Using Discrete-Event Simulation**

*Location: Salon 12*

*Presenter: Chait Renduchintala, University of Central Florida*

*Basic*

Disease outbreaks place an infrequent but severe burden on resources that are available to public health systems. Epidemiological departments are unable to deploy human resources rapidly and efficiently due to high attrition rates and infrequency of the outbreaks. A conceptual framework for an Integrated Training, Assessment and Management (ITAM) system was developed to address the deficiencies in outbreak response. A discrete-event simulation model was then constructed to test the proposed system by analyzing delay and wait times of infected and potentially infected patients and analyze the demand rates and service times for each patient class (visitor, resident, school student) in the various stages of the outbreak process. The ITAM’s simulated performance was compared with utilization and demands reported in the literature and has provided a method to test and analyze various responses to disease outbreaks. The simulation results have provided the basis for the development of a phone app to improve the response rates to future epidemics.

**Post-Operative Nausea and Vomiting Reduction Project at UW Health**

*Location: Salon 13*

*Presenter: Ajay Jayakumar, University of Wisconsin*

*Intermediate*
In November 2013, as part of the Academic Advancement Agreement (AAA) within UW Health System, the anesthesiology department chose to improve the post-operative nausea/vomiting (PONV) rate as one of the two measures. The variation (24.2 percent to 35.2 percent) extended from month to month for the time period (39 months from October 2010 to December 2014) used to measure baseline rate. A multidisciplinary team was formed to follow the FOCUS-PDCA methodology to reduce the PONV rate to an average rate of 20 percent (AAA goal) from an average of 27 percent and reduce the variation. The team mapped out the current process for addressing PONV using an affinity diagram to understand different type of causes and classify the causes under broad categories. Regression analysis was done to validate the root causes. An implementation plan was developed to address the root causes (provider variation in adhering to guidelines and lack of proper identification of patients at risk for PONV), which included using APFEL scoring for risk stratification. The results for post-implementation (five months from January to May 2014) with an average rate of 22.1 percent with a range of 3.1 percent; p-charts were used to monitor the results.

10:10 – 11 a.m.

Healthcare Analytics: How Today’s Management Engineering Leaders are Paving the Way
Location: Salon 17
Facilitator: Tarun Mohan Lal, Mayo Clinic
Intermediate

The role of management engineers in healthcare is predicted to evolve significantly in the next few years due to changes in the payment, structure and delivery of healthcare in the United States. With the HITECH act and other efforts to spread EMR’s nationwide, healthcare providers are now being inundated with data that covers everything from process to practice. Most of the organizations that have traditionally employed people with a wealth of knowledge in change management, lean Six Sigma and project management, etc., are starting to integrate analytics such as big data and operations research into their process and quality improvement work this year. This panel discussion will be among four to five leaders of management engineering or similar departments from some of the key healthcare provider organizations covering the impact of big data and analytics buzz on healthcare management engineering.

10:40 – 11 a.m.

Optimal Surgery Schedule Based on PICU Nurses’ Workload
Location: Salon 9
Presenter: David Ben-Arieh, Kansas State University
Intermediate

Pediatric surgery usually consists of scheduled and unscheduled surgeries. Occasionally, the most complex surgeries, which are scheduled, have to be cancelled causing potential harm to the patients and loss to the hospital. These cancellations are due to bottlenecks in patient flow — specifically an overcrowded PICU (Pediatric Intensive Care Unit). This predominantly controllable cause of cancellations is attributed to an unpredictable fluctuation in nursing demand at the PICU. This presentation covers a new surgery scheduling design aimed at leveling the load on the PICU nurses. This approach, based on an estimated patient length of stay and nursing profiles, minimizes the day-by-day nursing level variation at the PICU. This surgery scheduling approach shows a more stable nurse workload and a reduction in cancelled surgeries. This approach results in additional benefits including higher nurse satisfaction and a more stable schedule of surgeries with improved productivity compared to the traditional block scheduling approach.

Using Prescriptive Analytics to Maximize Generated Healthcare Value at the Sir Mortimer B. Davis Jewish General Hospital
Location: Salon 10
Presenter: Philip Troy, Les Entreprises TROYWARE

To maximize the healthcare value it generates, the Sir Mortimer B. Davis Jewish General Hospital investigated the appropriateness of using a mixed-integer optimization prescriptive analytics model to make decisions about patient inflow into its Emergency Department, its oncology case mix and the activity levels of its major programs. We start the presentation with a description of the hospital and its needs. We discuss how we translated the abstract goal of maximizing the healthcare value the hospital generates into a specific objective function. To illustrate the implementation process, we discuss the granularity used to model patient inflow to the ED and patient admissions to the hospital. We also review the data needed for the model, and how we collected that data. Finally, we discuss the potential and realized benefits of this modeling, both at the hospital and community levels, in both government-funded and nongovernment-funded healthcare environments. We also present a provocative vision for the use of prescriptive analytics for strategic planning in the healthcare provider industry.
Hand Hygiene Observation and Audit Dashboard
Location: Salon 11
Presenter: John Jackson, University of Florida Health - Shands Hospital
All Levels

In order to evaluate hand-washing performance of hospital personnel and increase compliance, Management Engineering Consulting Services and the Quality Department at UF Health Shands Hospital worked together to develop an in-house system for submitting hand hygiene audit observations and monitoring the outcomes of hand hygiene compliance. Our system is based on the Joint Commission’s Targeted Solutions Tool for Hand Hygiene and allows for paperless tracking of audits throughout the institution. The system allows leadership to review barriers to appropriate hand hygiene and identify risk factors for noncompliance. This allows for a consistent review process and quickly identifies opportunities to improve hand hygiene compliance. Results to date include successful build of the system and completed dashboard and reports. It is pending final approval from leadership.

We’re a Hospital Not a High School: Quality, Literacy and Readmissions
Location: Salon 12
Presentation: Brenton Faber, Worcester Polytechnic Institute
Intermediate

This study correlates hospital quality measures (“timely and effective care,” “complications and deaths”) as reported by the Center for Medicare and Medicaid Services (CMS) with community literacy rates and hospital readmissions rates. Preliminary findings based on a pilot study in six counties in six states (Alabama, Florida, Oregon, South Carolina, Texas, and Wisconsin) suggest that all other factors being equal (hospital type, size), population literacy is a greater determinant of readmissions than hospital quality. In other words, hospitals in communities with lower literacy can score in the top percentiles for quality but still have higher readmissions rates. This presentation will discuss the results of our full study, which compares quality measures, literacy rates and readmissions among hospitals nationwide. Early results continue to support the pilot study suggesting that population literacy is a greater determinant of readmission than quality scores.

Use of Bedside Data to Assist in Guiding Patient Care Management of Acutely Ill Patients
Location: Salon 13
Presenter: John Zaleski, Nuvon
All Levels

Managing patients effectively to head off the onset of adverse events is necessary to prevent deterioration of patient condition, cost reduction due to the adverse event and the accompanying increase in care acuity, and it is consistent with evidence-based approaches to patient care management, specifically implied through the HITECH act and ACA. In this presentation, the author will demonstrate several key areas of patient deterioration that, if left unchecked, can result in complications, lengthened stay or death. Specific examples will include monitoring patients for onset of sepsis, pain management and respiratory depression.

Teach ‘The Why’ Before ‘The How’
Location: Salon 14
Presenter: Isaac Mitchell, East Tennessee Children’s Hospital
All Levels

East Tennessee Children’s Hospital has been on its lean journey for more than five years. During this time we have continued to improve how we deliver and teach our lean training. We started training with an eight-hour in-depth class focused on lean basics, direct observation, value stream mapping, and A3 problem solving. We found that although lean tools and terminology are important, they really weren’t encouraging or engaging people in improvements. Over time we have redesigned levels of training to spark the interest of our audience to get involved with changes. From new employee orientation to an introduction to ideal patient care basics to voluntary problem-solving workshops, each course is designed to focus primarily on: “The Why” and interests employees on learning and “The How” through the next level of training while practicing the tools on their unit with real-world projects. All of this is supported by a mentor who has attended problem-solving coach training, and then interns ask the mentee to coach a team on their next project. By modifying our training and focusing on “The Why,” we have increased staff engagement and ownership of problem solving toward ideal patient care.

1:30 – 1:50 p.m.

Improving Patient Care Coordination through the Development of an ALS Clinic
Location: Salon 9
Presenter: Kristen M. Tingley, Department of Veteran Affairs Center for Applied Systems Engineering (VA-CASE)
All Levels

Successful patient care coordination, particularly in multispecialty care, is a common barrier in healthcare. The Neurology
team at the VAMC recognized that opportunities were missed and patients made multiple trips to the facility for a single diagnosis. Therefore, they participated in a Rapid Process Improvement Workshop (RPIW) to improve care coordination and streamline the process for its amyotrophic lateral sclerosis (ALS) patients. The Office of Specialty Care Services (OSCS) sponsored the RPIW. The VA Neurology team aimed to reduce missed opportunities by 4 percent and reduce the number of patient visits for diagnosis and treatment by 25 percent. The team followed the VA-TAMMCS (Vision, Analysis, Team, Aim, Map, Measure, Change, Sustain/Spread) model, along with the completion of a nine-box A3 to serve as a guide for the weeklong RPIW. Lean tools used included process flow maps with swim lanes, gemba walks, communication webs, SWOT analysis and spaghetti diagrams. Results to date were achieved by implementing 16 PDSA cycles and four “just-do-its,” including the creation of a consult, note templates and SOPs. As part of their sustainment and spread plan, the team entered into service agreements and hired an ALS nurse and patient navigator.

**Kernelized Probabilistic Principle Component Analysis Using CICOMP with Logistic Regression to Classify Colon Cancer Tissues**

Location: Salon 10  
Presenter: Abdulaziz Alkabaa, University of Tennessee  
Intermediate

Genes science has become one of the most important areas that researchers in many fields are interested in highlighting and focusing on the relationship between genes and cancer causes. One goal of genetic research is to understand and discover better the mechanisms of disease so that new treatment approaches and preventive measures can be proposed. This research presents the probabilistic principle component analysis (PPCA) in the estimated kernel density using the asymptotic mean integrated squared error (AMISE) with optimality criterion used to select bandwidth, for smoothing purposes, in a 2,000-gene data set for colon cancer tissues that have been collected for 62 patients classified as 22 normal and 40 tumor, using the constant information complexity (ICOMP) to select the best number of principle components and compare those with the traditional way of PPC. Finally, we are going to fit a logistic regression framework with the inverse of the Sigmoidal logistic function Logit as link function on the first 200 genes after applying PCA and choose the best PCs through a stepwise subset selection method as our new predictors to build the logistic regression model and eventually addressing which genes are responsible to the tissue types.

**Impact of EHR on Healthcare**

Location: Salon 13  
Presenter: Anu Banerjee, Binghamton University  
All Levels

An electronic health record (EHR) is a systematic collection of health information in digital format to capture a patient health status. It allows patient history to be viewed and shared across different healthcare settings. Implementing EHR systems could reduce costs and increase quality of care. Recently, the U.S. government provided incentives to drive adoption of EHRs. The objective of this presentation is to examine EHR and its impact on healthcare operations in general and patient health in particular.

**Impact of LEAN Group Training in Academic Radiology Department**

Location: Salon 14  
Presenter: James Rawson, Georgia Regents University  
Intermediate

We trained 18 faculty, staff and residents in lean principles over a four day off-campus workshop. Multiple projects were developed by the newly trained individuals. The multiple simultaneous projects became overwhelming to coordinate. In the absence of project management of the projects, many simply never got started. Projects were prioritized based on operational need and potential impact. We report both the attrition of projects as well as the impact of the successful projects.

**Improving Reliability through the Application of Human Factors Engineering**

Location: Salon 17  
Presenter: Brian Fillipo, Guthrie Health  
Basic

Systems, equipment and processes in healthcare need to be designed to help providers, patients and care givers “do the right thing.” Many of the approaches that could help providers achieve high reliability in healthcare have already been introduced in other high risk industries, such as aviation. One of the most successful of these approaches is the application of human factors engineering (HFE). HFE is a science that studies how we interact with our environment and with each other. It looks at ways to use the environment to help us do the right thing by optimizing the design of equipment, care processes, and communication tools and the way teams function. The cornerstone of human factors engineering includes the concepts of making things visible, providing appropriate cues and “feedback” and creating constraints that guide the provider in
making the right choices in patient situations. These concepts will be explored and clinical examples of their use in healthcare will be included.

1:30 – 2:20 p.m.

Radical Transformation of Culture at Stanford Hospitals and Clinics
Location: Salon 11
Presenter: James Hereford, Stanford Health Care
Basic

This presentation will provide an overview of how Stanford hospitals and clinics are successfully creating ownership of processes by the front-line and how this has radically transformed their culture. Employees of an organization need to be engaged, and by owning their processes, they can be successful. Active daily management pushes responsibility down into the organization where action can happen – to people who are at the point of value.

From ‘Solution Shop’ Model To ‘Focused Factory’ In Hospital Surgery: Increasing Care Value and Predictability
Location: Salon 12
Presentation: David Cook, Mayo Clinic
Intermediate

The full-service U.S. hospital has been described organizationally as a “solution shop,” in which medical problems are assumed to be unstructured and to require expert physicians to determine each course of care. If universally applied, this model contributes to unwarranted variation in care, which leads to lower quality and higher costs. We purposely disrupted the adult cardiac surgical practice that we led at Mayo Clinic, in Rochester, Minn., by creating a “focused factory” model (characterized by a uniform approach to delivering a limited set of high-quality products) within the practice’s solution shop. Key elements of implementing the new model were mapping the care process, segmenting the patient population, using information technology to communicate clearly defined expectations, and empowering nonphysician providers at the bedside. Using a set of criteria, we determined that the focused-factory model was appropriate for 67 percent of cardiac surgical patients. We found that implementation of the model reduced resource use, length-of-stay, and cost. Variation was markedly reduced, and outcomes were improved. Assigning patients to different care models increases care value and the predictability of care process, outcomes and costs while preserving (in a lesser clinical footprint) the strengths of the solution shop. We conclude that creating a focused-factory model within a solution shop, by applying industrial engineering principles and health information technology tools and changing the model of work, is very effective in both improving quality and reducing costs.

2 – 2:20 p.m.

Improving ED to Inpatient Care Handoffs Using Lean Six Sigma
Location: Salon 9
Presenter: Shannon Harris, Greenville Health System
All Levels

Through front-line staff response to an annual culture of safety survey and communications event reporting, GHS recognized an opportunity to improve the handoffs and transitions in care. Pareto analysis was used to define the scope as patients who begin care in the 85,000-plus visit, level 1 emergency trauma center and are admitted to adult medical and surgical inpatient units. A multidisciplinary team was launched using the Six Sigma DMAIC methodology. Cause-and-effect diagramming, flowcharting, observations, interviews, data collection, and lean time-value-add analysis were among the tools used to determine baseline performance and identify root causes for poor handoffs. Literature review identified best practices, like including the patient/family as fail-safes and face-to-face handoffs with two-way verbal and written communication. Solution strategies were refined using the Pugh matrix, brainstorming and force-field analysis. The lean concept of pulling the patient rather than pushing from the ED to the unit was used, and a process that maximized best practices and minimized waste was developed and piloted. The pilot demonstrated a greater than 10 times improvement in utilization of handoff best practices and statistically significant improvement in cycle time. The process has been successfully implemented with ongoing performance monitoring via control plans.

Dynamic Analysis of High-Dimensional Microarray Time Series Data Using Various Dimensional Reduction Techniques
Location: Salon 10
Presenter: Aven Samareh, Northeastern University
Intermediate

This research focuses on dynamic analysis of reduced dimension models of two microarray time series data sets. The research methodology includes two research tasks. First, applying several dimension reduction methods on two microarray data sets, and modeling comparisons based on accuracy and computation cost. Second, applying the sparse vector autore-
gressive (SVAR) model to estimate gene regulatory network based on gene expression profile from time series microarray experiment on two data sets, and the autoregressive coefficients estimation were calculated using several penalized regression methods, and then performing comparisons among various regression methods for each dimension reduction model. Study results show that the dimension reduction methods producing orthogonal independent variables are performing better because orthogonality leads to reasonable coefficient estimation with low standard errors. On the other hand, it could be seen that factor analysis (FA) outperformed the rest of dimension reduction methods with regards to goodness of fit.

Process Before Technology, The Commonly Overlooked Road to Success
Location: Salon 13
Presenter: Emily Forcke, Universal Health Services Inc. Intermediate

The use of technology to augment lean and Six Sigma projects in the healthcare industry is a hot topic, but the implementation of such technologies has gone awry. Implementing technological solutions on top of broken processes will not improve efficiencies but effectively will act as a spotlight emphasizing the lack of efficiencies. This presentation follows a process improvement team through a dual-phase project to implement the TeleTracking Capacity Management computer system throughout the 319-bed, acute-care hospital.

Workgroup Characteristics that Influence Adoption of Systems Improvement in Hospitals
Location: Salon 14
Presenter: Valerie Maier-Speredelozzi, University of Rhode Island Basic

This study presents the assessment of possible characteristics within workgroups that might be influencing the adoption of systems improvement initiatives at a hospital. With the collection of data from a survey, hypotheses were elaborated in order to investigate the relationships between two work group characteristics (size and leadership-involvement) and the work group's readiness to adopt systems improvement initiatives. The ANOVA (analysis of variance) statistical procedure was used for testing these hypotheses. Based on the results, there was a significant difference between the small and large work group size categories. These results signified that large work groups are more involved in systems improvement initiatives and have more confidence when it comes to participating or continuing to participate in systems improvement initiatives compared to small work groups. As for the results of the leadership-involvement characteristic, results showed that work groups with involved leadership are more knowledgeable, involved and confident in the systems improvement initiatives compared to the work groups with uninvolved leadership. Reflections on the findings and recommendations on how to develop systems improvement initiatives further based on work group characteristics were made.

Assessment of Bedside Blood Administration at an Urban Academic Hospital
Location: Salon 17
Presenter: Ying Han, Binghamton University All Levels

Blood administration is a resource-intensive task and may place patients at risk. Blood component transfusions to the wrong recipients happens once in every 10,000 transfused units. Two-thirds of these errors are associated with misidentification of the blood recipient at bedside. To address patient safety and quality of care, various technology-based solutions are becoming increasingly available to improve the safety of blood administration at bedside. However, the effectiveness of technology implementation largely depends on the integration with the existing workflows and information systems. This study proposes a systematic framework to investigate the safety and robustness of bedside blood administration processes at a large urban academic hospital, where wireless, barcode patient identification technology was implemented in March 2013. A comprehensive assessment was conducted from three perspectives: 1) gap analysis on hospital blood administration policy and procedure documents, 2) system issues of technology implementation, and 3) human and environmental factors analysis. This study will assist hospital administrative leadership in understanding the current performance of bedside blood administration, as well as the limitations of the barcode identification technology.

2:30 – 2:50 p.m.

Engineering a Lung Cancer Screening Program in the Veterans Healthcare Administration
Location: Salon 9
Presenter: Robert Monte, Veterans Engineering Resource Center All Levels

Lung cancer screening is a complex healthcare process involving the detection, diagnosis and treatment of malignant pulmonary nodules. The process involves multiple handoffs among healthcare professionals and is prone to patients being
lost to follow-up. This project describes an innovative method to develop a standardized workflow, templates to create data along the process, data extraction routines to retrieve the data, and the development of a graphical user interface with decision support to assist cancer care coordinators in the tracking of patients with abnormal radiologic findings. The purpose of the project is to evaluate the feasibility of implementing a system-wide lung cancer screening program in the Veterans Healthcare Administration. The screening program has been implemented in eight sites across that VA, and 1,000 patients have been screened. The evaluation of the program feasibility and clinical outcomes is currently underway.

**Hospitalwide Thirty-Day Unplanned Readmission Prediction Models**

Location: Salon 10  
Presenter: Benjavan Upatising, Regenstrief Center for Healthcare Engineering, Purdue University  
All Levels

Research on reduction of 30-day hospital readmissions greatly increased after Congress enacted the Hospital Readmission Reduction Program (HRRP) under which Medicare will penalize hospitals for having higher-than-expected rates of readmission in 2013. As expected, most of the research focused on Medicare population (ages 65 and older), specific diagnosis, and/or both planned and unplanned readmissions. We developed four unplanned 30-day readmission prediction models for adult patients aged 21 or over and all diagnosis based on patients’ administrative data from nine Cleveland Clinic hospitals in Northeast Ohio. The resulting logistic regression and multilevel logistic regression models had relatively high predictive accuracy (C-statistics ranged from 0.75 to 0.78).

**Data-Driven Operational Improvement at a Cardiac Catheterization Laboratory**

Location: Salon 12  
Presenter: Tinglong Dai, Johns Hopkins University  
All Levels

One major source of operational uncertainty facing cardiac catheterization laboratories is emergent add-on cases arriving between the elective cases. This study seeks to analyze the scheduling system of cardiac catheterization procedures at Frederick Memorial Hospital. The team studied 167 patients, out of which 112 (67.06 percent) were scheduled cases and 55 (32.93 percent) were add-ons. Among 95 diagnostic cauterization procedures, 67 (70.52 percent) are scheduled cases and 25 (26.31 percent) are inpatient add-ons. Among 43 PCI procedures, 21 (48.83 percent) are scheduled cases and 15 (34.88 percent) are inpatient add-ons. The mean case duration is 60.94 minutes, and specifically, 38.33 minutes for diagnostic catheterizations, 92.23 minutes for PCIs, and 82 minutes for electrophysiology studies. The coefficient of variability was found to be higher for scheduled cases (67.2) as compared to add-ons (62.8). The average wait time for outpatients was found to be almost twice that of add-ons. Conclusions indicated the arrival pattern of add-ons plays a significant role of the design of the scheduling system. Scheduled cases are more likely to require diagnostic catheterizations only, while add-on cases are more likely to require both diagnostic catheterizations and PCIs; therefore, the latter often takes longer but is less variable.

**Using Business Intelligence and Lean Methodology to Accelerate Performance Improvement**

Location: Salon 13  
Presenter: Nancy Dunn, Salem Health  
Intermediate

Salem Health presents their lean story with an initial focus on the organization’s mission and vision, and the decision to implement the lean system to improve processes. Participants will learn of Salem Health’s successes and challenges with the lean transformation and the integration of business intelligence with lean to accelerate improvement in patient outcomes. This session will provide an overview of strategy deployment, A3 thinking, specifically related to quality and safety, and how lean principles coupled with analytics help drive decision making to the front line and positively impact patient care.

**Simulation Studies - Changing the Business**

Location: Salon 14  
Presenter: Noah Tolson and Laura Silvoy, Array Architects  
Basic

With a significant growth plan, an outpatient spinal surgery institution needed to reconsider its operational model to fulfill its business goals. The staffers wanted to enhance the patient and family experience and increase staff efficiency—two sometimes conflicting goals. As room sizes grew and amenities were added to provide added privacy and comfort, nurse travel time was increasing. Revised departmental flow was mapped, simulation studies proved a reduction of recovery positions was possible, and consensus was reached around the new approach. The simulation model, built with Arena software, was developed using process time data from the headquarters facility as a baseline. Then the model was used to see when and where the operations would “break,” and additionally to test new staffing scenarios not considered by the client, but potentially providing for additional revenue.
Since the mid-1900s, healthcare organizations have realized that patient waiting is a key source of patient dissatisfaction. Prior to 1950, “pure block scheduling” was the accepted practice and was used by virtually all healthcare organizations (and is still in practice to a small degree today). This scheduling philosophy led to huge amounts of patient waiting in all highly used practices. However, while healthcare has been moving to scheduled systems to reduce this dissatisfaction, and numerous systems and philosophies have emerged, there is still no widely accepted best practice, and most healthcare systems still struggle with this issue today.

The reason is painfully simple. The variation inherent to service industries like healthcare cause the two key determinants of such (resource utilization and patient waiting) to be at odds with each other. As resource utilization is increased, patient waiting will also increase. Therefore, past attempts to reduce patient waiting have usually resulted in lesser utilization of key resources with huge financial implications. This session will clearly illustrate the root cause of this trade-off while showing a very practical and applicable “lean approach to healthcare scheduling.”

Error Proof Healthcare – How to Accelerate Your LSS Efforts
Location: Salon 11
Presenter: Kevin McManus, Great Systems

Six Sigma levels of quality cannot be achieved by simply asking people to be careful. This presentation will give you the details on several best practices you can use to better error-proof the different processes in your healthcare system. Significant examples of success – where error and incident rates are very low – do exist. The Blue Angels excel at process planning and review. Pal’s quick-serve restaurant chain has a superior training and certification system. Oil field workers consistently achieve miniscule safety incident levels that many organizations would often consider as being unobtainable. How do these groups of people find ways to standardize their work practices while also improving their work systems? This presentation will give you the system details used by these organizations and others and show you how to put them to work in a healthcare setting.

Predicting 30-Day Readmissions: A Data-Driven Approach
Location: Salon 10
Presenter: Joseph Frandsen, Intermountain Healthcare

We’ve all shopped on Amazon.com and browsed the “recommended for you” suggestions or created a Pandora station with customized music. Some of the world’s most successful companies – like Facebook, Netflix and Chase Bank – customize their services using predictive analytics (PA). PA analyzes historical customer data to identify trends in how specific populations behave. The healthcare industry can learn from these examples by finding innovative ways to use our data to learn from the past and improve care in the future. Intermountain Healthcare’s Logan Regional Hospital has developed a predictive model to identify patients who are at high risk for 30-day readmission. We’ve identified populations significantly above average risk, allowing us to direct resources toward providing care, instruction and follow-up in an attempt to prevent a readmission. In early validation, our model has increased the probability of identifying a potential readmission by more than 140 percent while reducing the high risk population pool by nearly 90 percent.
Smoothing out Scheduling in a Regional Chemotherapy Day Unit by Adding an Acuity Scale to Length of Treatment

Location: Salon 12
Presenter: Laura Martin, Ballarat Health Services

Basic

This work was undertaken at the Chemotherapy Day Unit of Ballarat Health Services in Victoria, Australia, by a team composed of the redesign lead, unit team leader and clerical staff. The need for improved scheduling was highlighted in the Victorian Chemotherapy Service Redesign Project (VCSRP). During baseline data collection it was determined that 50 percent of patients were experiencing non-value-added chair time. The intervention was composed of using the Model for Improvement (IHI) to determine measures around baseline, benchmark and sustainability. Expected length of treatment (time in chair) vs. actual length of treatment data was collected for 30 days. Variances were investigated and assessed against benchmark. Direct care time during treatment was identified as the greatest influence to variation. Changes resulted in a reduction of non-value-added chair time for the patients, improved on-time scheduling and a reduction in overtime for unit staff. The improved matrix was used to establish electronic scheduling plans.

Engaging Stakeholders through Scenario Modeling

Location: Salon 14
Presenter: Sarah Kadish, Dana-Farber Cancer Institute
Intermediate

Ensuring buy-in for improvement requires that stakeholders are confident the future system will remain beneficial under a variety of scenarios. We created three models to improve patient flow in an ambulatory cancer center: tabletop, spreadsheet and discrete-event simulation. Each method was selected to engage stakeholders in addressing “what-if” scenarios. Modeling systems accurately is complex and requires skilled staff to develop. Engaging stakeholders requires that the model allows each stakeholder to be an active participant in the formulation of the inputs and the interpretation of results.

Labor and Delivery Operating Room Traffic: Staff Perceptions and Reality

Location: Salon 17
Presenter: Brennan Ayres, University of Iowa
Basic

Door openings (DO) in the operating room may increase the risk of surgical site infections by disrupting air flow and the surgical procedure. To understand healthcare providers’ perceptions of DO during CS, we observed 14 CS and electronically surveyed providers at a teaching hospital. Ninety-nine providers responded: 43 labor and delivery staff (OBS), 35 pediatrics staff (PS) and 21 anesthesia providers (AP). Answers to 13 scale of agreement questions indicated that respondents understood the significance of DO. Among respondents, 46.5 percent of OBS, 57.1 percent of AP and 25.7 percent of PS thought doors opened 11 to 20 times/CS. Doors actually opened 40.4 times/CS, indicating a discrepancy between team perceptions and reality. Respondents suggested that automatic doors and procedural changes for checking into a CS could reduce DO. To reduce DO, we must understand how different provider groups think about DO as an issue, the number of DO during a procedure, consequences of DO and possible interventions to decrease DO.

Regional Improvement for Behavioral Health: A Collaborative Approach

Location: Salon 9
Presenter: Susan Seidensticker, University of Texas Medical Branch (UTMB)
Basic

To support the efforts of the HHSC/CMS-approved Delivery System Reform Incentive Payment (DSRIP) projects in Region 2, a collaborative model is being used to impact behavioral healthcare delivery. This strengthens existing relationships, as well as builds new ones, between providers and other interested stakeholders. Representatives from 20 hospitals, mental health authorities, federally qualified health centers, county officials/judiciary, hospital districts, law enforcement and academia have come together to form a working partnership designed to improve the quality and consistency of behavioral health services in this 16-county region. Four topics of focus were identified to support the behavioral health efforts (integration of primary care and behavioral health, crisis services, substance abuse, and peer support services). Participants have routine phone calls and emails, as well as semi-annual in-person sessions to discuss successes and opportunities. Participants are all testing various new ideas and sharing their results. This multipronged PDSA process allows for multiple tests of change to be done in similar patient populations rapidly.
Glean More Information from Your Data … Heat Map It!
Location: Salon 10
Presenter: Paul O’Quinn, Carilion Clinic
All Levels

Data is used to identify and prioritize where opportunities exist for improving operating margin. To distinguish points of interest and/or trends, graphing data can be helpful. Other times we need to see the data values to better assess the magnitude of the opportunity. A data table can provide the ability to see several data values in a condensed format. Data values provide magnitude, but when the values are clumped together in a table, readily detecting trends or directional changes can be difficult. There is an analysis technique that combines the benefits of a data table with the benefits of a graph to assess trends, points of interest, direction and magnitude quickly. Thermal imaging, or heat mapping, is a technique used to provide a quick visualization of relative changes in the temperature of something and has been in existence for over 100 years. Shifting hues in color provide immediate insight on hot and cold areas as well as temperature gradients in between. This presentation explains how Carilion Clinic used the same concept to create heat maps from data tables to assess opportunities in labor expense, demand leveling and capacity constraints.

Embedded Engineers – An Experiment to Achieve Sustainable Lean Transformation
Location: Salon 11
Presenter: Gavin Richards, New England VERC
All Levels

The Veterans Affairs (VA) Healthcare System of New England, like many large healthcare networks, has had mixed success with its lean transformation effort. While many measures show success — growing numbers of lean trainees increased safety and access to care, etc. — leaders felt that the effort was not generating the desired impact. Many individual projects suffered from slow starts and scope-creep; mid-level managers complained of difficulties activating newly lean-trained staff; network leaders sought more strategic alignment and sustained solutions. So VA New England decided to embed industrial engineers in key value streams. This was a radical departure from the previous “internal consulting firm” organizational structure for advanced engineering support. Embedding engineers allows clinicians to see engineers as partners in long-term improvement, rather than as outside experts to be called only in times of crisis. Daily interaction with staff, shared responsibility for both tactical and strategic goals and matrix management all serve to bridge the “cultural” divide between the two disciplines. We also found embedded engineers are more effective change-agents; greater understanding of context and more trusting relationships lead to faster project planning, smoother implementation and greater likelihood of sustaining improvements.

Prediction Models for Urinary Caculi Attacks in Taiwan
Location: Salon 12
Presenter: Huifen Chen, Chung-Yuan University, Department of Industrial and Systems Engineering
Intermediate

The semitropical area is often a high-risk environment for urinary stone diseases. A study showed that the incidence rate of urinary calculi (UC) in Taiwan is around 9.6 percent. Many studies showed that the climate has an effect on the seasonal variation in the incidence of UC attacks, higher in summer and lower in winter. We investigate the seasonal variation of the monthly UC clinic visits and establish a prediction model for the number of the monthly UC visits. We built a multivariate regression model, where the error term follows an ARIMA model, and the UC visits are categorized based on the gender, age and region. In the regression model, the dependent variables are the numbers of monthly UC visits (for different genders, age groups and regions) and the independent variables include climate factors (ambient temperature, atmosphere pressure, relative humidity, hours of sunshine and rainfall) and other related variables. The multicollinearity problem is considered. Using the regression model, we can construct prediction intervals for the number of monthly UC visits. Our numerical results show that the prediction model is valid.

Medical Software Quality: Ensuring Correctness in the Clinical Environment
Location: Salon 13
Presenter: Ita Richardson, Lero - the Irish Software Engineering Research Centre
Intermediate

We have been carrying out research on software quality for more than 20 years and health-based software quality for five years. From our research on a variety of projects, which includes observation within hospitals and clinical situations, we now ask questions regarding the clinical situation, and recommend that, in the situation where clinicians are using software as a medical device, they ensure that this software is certified for use. In addition, clinicians should be aware of the “intention of use” for each device and ensure that they are using the
device in this manner. This is particularly important in the case of data output from devices.

Co-Design Exception Care: The Patient and Family Centered Care Methodology and Practice
Location: Salon 14
Presenter: Pamela K. Greenhouse, PFCC Innovation Center of UPMC
Basic

The PFCC methodology is the new operating system for healthcare. With the singular goal of providing ideal care experiences for patients and families, implementation of the PFCC M/P also results in improved patient safety, better patient outcomes, identification of waste and reduced cost. A simple six-step approach to seeing all care as experienced through the eyes of patients and families, the PFCC M/P provides the tools to improve all facets of care delivery in any setting by refocusing existing resources. The PFCC M/P is an experience-based design methodology, grounded in the design sciences, for which the goal is always to make things better for the end-user: patients and families. Building on the more traditional evidence-based clinical and process improvement methods used in healthcare, the PFCC M/P allows patients, families and caregivers to co-design ideal care experiences together – creating services, interactions and environments – with intention and focus on the needs and desires of patients and families. Designed specifically for healthcare, the PFCC M/P can provide the critical boost, building on quality improvement methods to bring about more rapid improvement culture change, and widespread care delivery transformation.

Using Change Management to Redesign ED Encounter Coding Process
Location: Salon 17
Presenter: Roque Perez-Velez, University of Florida Health - Shands Hospital
Intermediate

Specialization of duties, increased communication and training will positively impact the output of accurate codes. Accurate codes ensure that a greater number of encounters receive an appropriate level classification. Management engineering shifted into a project management role as the planning and implementation of recommendations required dynamic support. From technical work experience and education in lean and Six Sigma methods, MECS has the tools to help both coders and providers become invested in improving their work and encourage ongoing evaluation and enhancement.

Improving Mental Healthcare Delivery through a Lean Approach
Location: Salon 9
Presenter: Anne Kirchgassner, Department of Veteran Affairs, Center for Applied Systems Engineering
All Levels

In February 2013, the Mental Health Service conducted a value stream analysis. With the recent growth of mandated Mental Health Programs and FTEE to implement these programs, we need to look at how we are using our resources. The service needs to balance quality outcomes for patients along with patient satisfaction. By using the TAMMCS model and working through an A3, the VSA team identified 12 RPIWs, six projects and two “just-do-its” (JDIs) to work on. The projects were prioritized by the team to start with those that would have the biggest impact on providing mental health services to the patients in a timely manner. Throughout 2013, RPIWs occurred at a rate of one to two per month. One success is that the patient can access care and get to the assigned provider for therapy in fewer steps. We have implemented Saturday hours to allow flexibility in scheduling for patients. We have decreased the steps from a process that took days to being admitted the same day the patient is referred. And these are just a few of the improvements.

Improving Surgical Scheduling Accuracy Using Tolerance Intervals
Location: Salon 10
Presenter: Sheena Butts, Lakeland Regional Medical Center
Intermediate

Use tolerance intervals in order to improve scheduling accuracy of surgery duration times. Surgery procedure types were analyzed to see if there are any statistical outliers and to see if any differences between surgeons’ duration types existed. Then an upper-bound tolerance interval was calculated for each procedure type and each surgeon. A sample of analysis in progress is provided for review, but final analysis is in progress.

FRIDAY, FEBRUARY 20

5:10 – 5:30 p.m.
Do Lean Principles Apply to the Delivery of Healthcare? Lessons from the UK National Health Service
Location: Salon 12
Presenter: George Danner, Business Laboratory LLC
Basic

Lean principles play a role in transformations of organizations in all kinds of industries. Lean thinking creates a focus on value addition across a process chain. But the delivery of healthcare is different, isn’t it? The time/resource efficiency of a process like a patient examination is not always meaningful. Lean’s focus on value addition surely is out of step with healthcare delivery. Not so fast. Healthcare delivery suffers from inefficiencies; however, the unique duality of healthcare as both business and mission can cause us to ignore a solution lying somewhere between lean principles as we know it today versus healthcare delivery that clearly could do better. Thoughtful application of lean principles is useful tools in the improvement of healthcare delivery and medical outcomes. The solution is simulation modeling, which recreates healthcare delivery in a computer model, where many stakeholders can see firsthand how some of these principles are applied and their direct and indirect effects.

Clinical Documentation Improvement Using ME-PI Tools
Location: Salon 13
Presenter: Anita Murthy, Garpsa Solutions LLC
All Levels

Clinical documentation improvement (CDI) is gaining attention as hospitals are implementing EMRs and switching from ICD 9 to ICD 10 coding standards. With these changes come increasing claim denials by third-party payers. The ME’s role is expanding to meet changing needs of hospitals. This presentation covers the application of process improvement (PI) tools to CDI to ensure the clinical documentation is accurate, complete, concise, clear, patient-centric and prompt. Attendees will understand CD process steps, CDI’s importance, the CDI team and different current states of documentation. The attendees also will learn the six Rs of documentation, impact of coding, different coding systems, challenges of ICD9 to ICD10 conversion including use of CAC (computer-assisted coding), AIM (assess, implement, maintain) approach to CDI and variations per different current states, roles of CDI physician champion and specialist, measures of success, quality measures, and CD queries.

Share Seamlessly and Steal Shamelessly
Location: Salon 14
Presenter: Leslie Doyle, Carolinas Healthcare System
Basic

This session will describe and share quality improvement tools, templates and techniques that, when used, will define and narrow the focus of your improvement work. Participants will obtain a skill set that will allow them to develop an organized plan for performing interventions. The team’s improvement work will become strategized and prioritized. By showing examples from different quality improvement projects, participants will see “the good, the better and the best” ways of developing structure. Creating or changing a process needs to be measured and data-driven. A “measurement family” approach will be discussed, where teams develop outcome, process and balancing measures. Establishing a data management plan with clear operational definitions will be invaluable as teams collect and analyze data. None of us have the time or energy to re-create the wheel constantly. This session will share lessons learned and pitfalls to avoid from various projects. Structure plus process equals outcomes, and each of us can benefit from “sharing seamlessly and stealing shamelessly.”

Using FMEA and Fault Tree Analysis to Reduce Healthcare Risk
Location: Salon 17
Presenter: Paul Strange, Franciscan Alliance
Intermediate

Failure mode and effects analysis (FMEA) and fault tree analysis (FTA) are the two primary workhorses of high reliability organizations. Our organization, a 12-hospital organization called Franciscan Alliance, has recently investigated the applicability of these tools to mitigate the risk associated with certain healthcare delivery processes. The presentation will use the insulin delivery process at one of our hospitals to show how the use of an FMEA and FTA has lessened the risk of administering insulin and has been made more reliable and thus safer.
Poster #1005
Kanban Equipment Supermarket
Sheena Butts, Lakeland Regional Medical Center

Poster #1006
Time Is On Our Side
Sheena Butts, Lakeland Regional Medical Center

Poster #1007
Spring A Palooza
Sheena Butts, Derek Butts and Charles “Chuck” Winters, Lakeland Regional Medical Center

Poster #1012
How a PBJ Sandwich Drove a Lean Six Sigma Journey
Jennifer Hooks, Medical University of South Carolina

Poster #1026
Performance Measurements for Surgeons and Anesthesiology
Brian D. Gregory, ORTimes LLC

Poster #1036
Clinic Visiting and Privacy Protection System for Outpatient in Taipei Tzu Chi Hospital
Yan Ting Lin, Taipei Tzu Chi Hospital

Poster #1048
Dynamic Analysis of High Dimensional Microarray Time Series Data Using Various Dimensional Reduction Methods
Aven Samareh, Northeastern University

Poster #1049
Co-location of Clinical Services at UMass Memorial Hospital
Natassia Taylor, University of Massachusetts Memorial Healthcare

Poster #1059
Redesigning Processes to Manage Drug Inventory in a Hospital Pharmacy
Steve Novak and Heather Walton, Mayo Clinic

Poster #1060
Streamlining Language Interpreter Dispatching through Intelligent Tool Design
Carla Rodríguez, University of Florida Health - Shands Hospital
Andrew Daw, Management Engineering Consulting Services

Poster #1069
The Challenge: Reduce Falls in a Geriatric Psychiatric Unit
Rebecca Harper, Medical University of South Carolina

Poster #1074
Healthcare System Utilization: Monitoring Operational Failures
Luis Reyes, University of Texas – El Paso

Poster #1077
Beyond the Checklist – Systemwide Innovation in Surgical Services
Julie Bondurant, Premier Health

Poster #1079
Transforming and Standardizing Clinical Processes across a Six-State Network
Angela Park, Department of Veterans Affairs, New England Veterans Engineering Resource Center
Ashley Benedict, Department of Veterans Affairs

Poster #1084
Regional Improvement for Behavioral Health: A Collaborative Approach
Susan Seidensticker and Craig Kovacevich, University of Texas Medical Branch (UTMB)

Poster #1088
We’re a Hospital not a High School: Quality, Literacy and Readmissions
Brenton Faber, Worcester Polytechnic Institute

Poster #1092
Labor and Delivery Operating Room Traffic: Staff Perceptions and Reality
Brennan Ayres, Salvador Rojas Murillo, Farzaneh Dolati, Loren Herwaldt and Priyadarshini Pennathur, University of Iowa

Poster #1093
Reducing Hospital-Acquired Pressure Ulcers in Medical Intensive Care Unit
Elaine Cohen and Linda Madaris, James A. Haley VA Hospital

Poster #1095
Making It Stick: An Approach to Project Closing and Transitioning
Melinda Carter, Maryam El-Bakry and Melanie Lowther, Texas Children’s Hospital
Poster #1096
Improving ED Throughput in the Little Apple
Coty Sandfort, Via Christi Health

Poster #1097
Using Simulation to Design an Emergency Department, Architecturally, Operationally and Clinically
Robin Clark, QMT Group
Susan O'Hara, O'Hara Healthcare Consultants
Steve Langston, RLF Architects

Poster #1099
36 Mistakes Six Sigma Green Belts Make and How to Avoid Them
Richard Biehl, University of Central Florida

Poster #1100
Patient Journey Modeling using Various Mapping Techniques to Improve Quality between Clinical Settings
Saira Aaima Sukhera and Jennifer Percival, University of Ontario Institute of Technology
Silvano Mior, Canadian Memorial Chiropractic College

Poster #1103
Numerical Comparisons of Alternative Inventory Policies in Healthcare
Nazanin Esmaili, Bryan Norman and Jayant Rajgopal, University of Pittsburgh

Poster #1105
Workload Estimation and Staff Scheduling for Sterile Processing Services
Bryan Norman, Bopaya Bidanda and Ya-Tang Chuang, University of Pittsburgh

Poster #1107
Analysis and Prediction of Critical Care Bed Demand
Denise White and Amy Anneken, Cincinnati Children's Hospital Medical Center

Poster #1108
Improving Prosthetics Ordering Consult Process: Veterans Health Administration Case Study
TeChieh Chen, Debra Warner and Eric Shirley, Veterans Health Administration

Poster #1115
Partnership for a Healthy Community: Designed for Success
Bonnie Paris, Quality Quest for Health of Illinois
Carl Asche, University of Illinois College of Medicine at Peoria

Poster #1116
Gathering the Voice of the Community: Challenges and Survey Design
Bonnie Paris, Quality Quest for Health of Illinois

Poster #1117
PFCC Meets LEAN: Putting the Patient at the Center of Performance Improvement
Pamela K. Greenhouse and Michelle Giarrusso, PFCC Innovation Center of UPMC

Poster #1119
GoShadow+TDABC: Improve Experiences and Outcomes while Reducing Costs
Pamela K. Greenhouse and Michelle Giarrusso, PFCC Innovation Center of UPMC

Poster #1120
Applying Case-Based Reasoning Technique for Individualizing Diabetes Treatment
Niloo Far Jalali and Sagar Kamarthi, Northeastern University

Poster #1122
C. difficile Rate Reduction Lean Six Sigma Project
Matthew D'Agostino, MedStar Franklin Square Medical Center

Poster #1124
Predictive Operating Room Schedules
Smriti Neogi, Denise White and Brooke Mullett, Cincinnati Children's Hospital Medical Center

Poster #1125
Huddle Boards at Orlando VA - Strategic Alignment of Daily Improvements
Chadd Canode, Orlando VA Medical Center
Ashley Benedict, Department of Veterans Affairs

Poster #1128
A Texas Solution to a National Healthcare Dilemma
Craig Kovacevich and Katrina Lambrecht, University of Texas Medical Branch (UTMB)
Poster #1130
Modeling and Optimization of Closed-Loop Healthcare Systems with General Distribution Service Times
Mohammdadsadegh Mobin, S. Hossein Cheraghi, Zhaojun (Steven) Li and Afshan Roshani, Western New England University
Morteza Assadi, TransSolutions LLC

Poster #1132
A Multistage Ensemble Data Mining Model to Predict Ferritin Serum Levels
Mohammad A. Abedini, Iran University of Science and Technology
Kamran Heidari, Loghman Hospital
Mohammadadsadegh Mobin and Afshan Roshani, Western New England University

Poster #1133
Using Prescriptive Analytics to Maximize Generated Healthcare Value at the Sir Mortimer B. Davis Jewish General Hospital
Philip Troy, Les Entreprises

Poster #1134
Investigating the Critical Factors Affected Patient Waiting Time Using Six Sigma Method
Afshan Roshani and Mohammadadsadegh Mobin, Western New England University
Wanying Shi
Mohammad A. Abedini, Iran University of Science and Technology

Poster #1137
The Late Arrival Policy with Consideration of Outpatients Waiting Experience
I-Hsuan Hong, National Taiwan University

Poster #1139
Engineering a Lung Cancer Screening Program in the Veterans Healthcare Administration
Robert Monte, Nicholas Katich, Howard Bachtel and Lanxi Tang, Veterans Engineering Resource Center

Poster #1144
Cost-effective Enrichment Strategies for Alzheimer’s Clinical Trial Screening by Data Mining
Mona Haghighi, University of South Florida

Poster #1151
Lean Learnings, Successes across Cultures: USA, India, Latina, Brazil, Caribbean
Sameer Anand, GlaxoSmithKline

Poster #1152
Modeling Process Changes in the Veterans Affairs Emergency Department
Kelli Crosby, Robert Monte and Lanxi Tang, Veterans Engineering Resource Center

Poster #1160
Safety through Care Gap Identification via Your Electronic Medical Record
Elizabeth Scruth, Carmen Adams, John Ranallo and Melinda Skeath, Kaiser Permanente

Poster #1161
Ready for Takeoff: Soaring through Healthcare Language and Culture
Marti Jordan, East Tennessee Children’s Hospital

Poster #1163
Smoothing out Scheduling in a Regional Chemotherapy Day Unit by Adding an Acuity Scale to Length of Treatment
Laura Martin, Ballarat Health Services

Poster #1166
Enhanced Access for Veteran CBOC Patients at Integrated Pain Clinics
Tamara Harris, VA Medical Center
Rano Mosodeen, Balmatee Bidassie, Marissa A. Vallette, Joanne Hackman and Susan Kirsh, Department of Veterans Affairs

Poster #1167
Streamlining an Organ Procurement Organization through Lean Practices
Benjamin Schleich, Mohammad Khasawneh and Sang Won Yoon, State University of New York at Binghamton

Poster #1170
Beyond the Basics: Improving Primary Care Access in VHA
Coby Durham, New England Veterans Engineering Resource Center (VERC)
Poster #1171
Developing a Quality Performance Measurement System for a Radiology Department
Martha Lotter, University Hospital of Limerick
Ita Richardson and Louise Reid, Lero - The Irish Software Engineering Research Centre

Poster #1172
Improving Mental Health Care Delivery through a Lean Approach
Anne Kirchgassner and Dominique Kizer, Veteran Affairs Center for Applied Systems Engineering

Poster #1174
Improving Sepsis Bundle Compliance through Lean Methodology
Bethany Ferguson and Alicia Turoff, Baylor Scott and White Health

Poster #1177
Robert Shapiro and Robert Weerts, Process Analytica

Poster #1179
Improving Coordination of Veteran Care via Team-Based Multispecialty Care Approach
Balmatee Bidassie, Joanne Hackman, Susan Kirsh, Glenn Graham and Marissa A. Vallette, Department of Veterans Affairs Center for Applied Systems Engineering (VA-CASE)

Poster #1183
The VHA Take on Reducing Missed Opportunities
Rachel Goffman, Veterans Health Administration

Poster #1184
Improving Multisystem Care Coordination between Surgical and Medical Oncology Patients
Steven Sanchez, Marissa A. Vallette, Balmatee Bidassie, Joanne Hackman and Susan Kirsh, Department of Veteran Affairs Center for Applied Systems Engineering (VA-CASE)

Poster #1185
Glean More Information from Your Data … Heat Map It!
Paul O’Quinn and Emily Gannon, Carilion Clinic

Poster #1187
Improving Veteran Access to Lung Cancer Care (IVALuCancerCare)
Marissa A. Vallette, Balmatee Bidassie, Joanne Hackman, Susan Kirsh and Glenn Graham, Department of Veterans Affairs Center for Applied Systems Engineering (VA-CASE)

Poster #1192
Optimizing Location and Quantity of Hospital KRONOS Time Clock Terminals
Elizabeth Gentry, CHRISTUS Health

Poster #1200
The Missing Link: Connecting Process Improvement to Strategic Financial, Quality and Service Outcomes
Johanna Thomas and Tom Fee, Verity Partners LLC

Poster #1202
Developing Change Makers by Educating Leadership
Johanna Thomas, Verity Partners LLC

Poster #1203
Integrating Leadership – Operations, Medical, Clinical and Engineering
Johanna Thomas, Verity Partners LLC

Poster #1205
Make It Stick: Using a Behavioral Model to Assess, Analyze and Sustain Long Term Performance Impact
Johanna Thomas, Verity Partners LLC

Poster #1207
Post Transplant Coordinated Care-VISN 12 VA Great Lakes Healthcare System
Angela Howard, Balmatee Bidassie, Marissa A. Vallette, Susan Kirsh, Glenn Graham and Joanne Hackman, Department of Veteran Affairs Center for Applied Systems Engineering (VA-CASE)

Poster #1208
Disease Management of Stage IV and V CKD Veterans
Ryan Dendinger, Angela Howard, Balmatee Bidassie, Marissa A. Vallette, Joanne Hackman, Susan Kirsh and Glenn Graham, Department of Veteran Affairs Center for Applied Systems Engineering (VA-CASE)

Poster #1209
The Evolution of Palliative Care Services within the VA
Theadora James, Balmatee Bidassie, Marissa A. Vallette, Joanne Hackman, Susan Kirsh and Glenn Graham, Department of Veteran Affairs Center for Applied Systems Engineering (VA-CASE)
Poster #1211
Using Lean Tools to Enhance Nonsalary Value Analysis
Paul Segovis and Kristin May, Ellis Medicine

Poster #1217
Becoming Lean vs. Doing Lean, Where are You?
Varang Parikh, Lori Pelletier, Bill Schmiedeknecht, Paulette Goeden and Robert Jenal, UMass Memorial Medical Center

Poster #1218
Tele-Facilitated Allergy Specialty Neighborhood
Rano Mosodeen, Samantha Sissel and the Boston VA Tele-Facilitated Allergy Team

Poster #1223
Increasing the Number of Thyroidectomies Performed in the OR
Nadia Lahrichi, Fabienne Cloutier, Claire Deland and Anna Pevreal, Sir Mortimer B Davis Jewish General Hospital Lawrence Rosenberg, McGill University

Poster #1225
Tool to Drive Project Management, ROI, Accountability and Different Mindset
DeAnna Davis, DeAnna Davis Consulting and PEIT Deborah Harkins, Blue Cottage Consulting Jay Buras, University Medical Center

Poster #1228
Improving Patient Care Coordination through the Development of an ALS Clinic
Kristen M. Tingley, Sandra Serrano, Christine L. Corum, Balmatee Bidassie, Michael C. Levin and Mark Ferrante, Department of Veteran Affairs Center for Applied Systems Engineering (VA-CASE)

Poster #1229
Lowering Pressure Ulcer Incidence through Evidence and Process Improvement
J. Mickey Trimm, University of Alabama at Birmingham

Poster #1232
Designing a Compact Scheduling System for Destination Medical Centers: A Simulation-Based Optimization Study
Haoliang Duan, Sura Alqudah and Mohammad Khasawneh, State University of New York at Binghamton

Poster #1233
Improved Public Health Response to Measles Outbreak Using Discrete-Event Simulation
Allyson Robbins and Michelle Boyd, Analytical Decision Services LLC

Poster #1239
Improving Patient Experiences in an Outpatient Chemotherapy Infusion Center
Amy Cohn and Pamela Martinez, University of Michigan

Poster #1240
Patient Flow in Pediatric Asthma
Amy Cohn and Mark Grum, University of Michigan

Poster #1241
Patient Scheduling and Capacity Assessment for an Endocrinology Clinic
Amy Cohn and Jared Kott, University of Michigan

Poster #1245
Population Health Management Framework A1c
Mohammad Khasawneh, Binghamton University

Poster #1246
A Discrete-Event Simulation Study to Validate the Redesign of a Testing Laboratory Layout in a Community Hospital
Mohammad Khasawneh and Srikanth Poranki, State University of New York at Binghamton

Poster #1247
A Discrete-Event Simulation to Investigate the Impact of a Gender-Based Split Flow to Inpatient Units from the ED
Mohammad Khasawneh and Srikanth Poranki, State University of New York at Binghamton

Poster #1248
Implementing a Robust Quality and Process Improvement Transformation Program
Jarvis Gray, Piedmont Healthcare

Poster #1252
Applying Clinical Process Analysis in Patient Access
Duke Rohe, MD Anderson Cancer Center
Poster #1276
New England VERC Health Systems Engineering Fellowship
TeChieh Chen, Brian Shiner and Bradley Watts, New England Veterans Engineering Resource Center
Ashley Benedict, Department of Veterans Affairs

Poster #1277
Physical Therapy in Primary Care
Colleen Park and Gregory Krautner, Department of Veterans Affairs

Poster #1280
The U.S. Military Health System Initiative: Simulation Adoption Systemwide
David Morgareidge, Page/

Poster #1281
Hospitalist Staffing and Process Improvement
Matthew Pierce, Franciscan St. Francis Health

Poster #1282
Franciscan St Francis Health Patient Flow Journey
Matthew Pierce, Franciscan St. Francis Health

Poster #1283
Emergency Center Pharmacy Staffing Model
Mohamed Ait Aiss and Laura Burke, MD Anderson Cancer Center

Poster #1284
Workplace Organization in a Pediatric ASU
Brian Belpanno, Cohen Children's Medical Center

Poster #1289
Using Kanban at the Point of Care in an ED Setting
Brandon Melton, North Shore LIJ Health System

Poster #1290
Case Kitting for ORs: Speeding up Turnaround by Improving Preparation
Jordan Aronhalt, North Shore LIJ Health System

Poster #1293
Use of Huddle Boards/ScoreCards for Continuous Daily Improvement
Chadd Canode, Orlando VA Medical Center

Poster #1294
Echocardiogram Utilization: Developing a Toolkit to Maximize Throughput and Efficiencies
James Rudy and Jessica Goldbeck, North Shore LIJ Health System

Poster #1295
Integrating Noninvasive Ordinal Lab Tests in Home-Based Healthcare Solutions
Gouri Prakash, CitiusTech Inc.

Poster #1296
No-Show Data Analysis and Policy Recommendations: Case Studies at Four Health Care Facilities
John Kros, Evelyn Brown and Jason Foltz, East Carolina University

Poster #1297
Improving On-Time Starts in the Operating Room
Acelyn-Marie Barlaan and Gila Kimmelman, Jackson Health System

Poster #1298
Intra-Facility Patient Transfer Process Improvement at VA Boston
Jordan Hansen, New England VERC

Poster #1299
Culture Change through A3 Thinking across a Family Medicine Department
Nicholas Comeau, Daniel Lasser and Melissa McLaughlin, UMass Medical School

Poster #1300
Improving Identification and Documentation of Malnutrition in Hospitalized Patients
Maria Browning, Indiana University Health

Poster #1301
Using OR Simulation Modeling to Optimize the OR Block Schedule
TJ Plyler, BJC Healthcare

Poster #1304
Care Coordination Rounds: Cultural Transformation using A3 Lean Problem Solving
Allyson St. Amand, Daniel O'Leary, Scott Ostriker and Nancy Seskes, UMass Memorial Medical System
Please join us in the Exhibit Hall, Thursday and Friday, Feb. 19-20, from 11 a.m. to noon for a book signing!

Jean Ann Larson will be signing her book

John Kros will be signing his books
Health Care Operations and Supply Chain Management: Strategy, Operations, Planning, and Control
and

Stop by and get your signed copy before they are gone!
**EXHIBIT HALL**

**EXHIBIT BOOTH LOCATIONS**

- **100**: North Carolina State University ISE
- **101**: FlexSim Healthcare
- **102**: Simio LLC
- **103**: FormFast
- **104**: McKesson
- **105**: Truven Health Analytics
- **106**: SIMUL8 Healthcare
- **107**: The Quality Group Inc.
- **108**: Lehigh University
- **109**: Binghamton University
- **110**: khrusallis
- **111**: Minitab
- **200**: CreateASoft
- **201**: Healthcare Systems Engineering Institute
- **202**: Parallon
- **203**: U.S. News Hospital Data Insights
- **204**: Nebraska Methodist College
- **205**: Performance Logic
- **206**: Society of Cardiovascular Patient Care
- **207**: Ohio University
- **208**: Wolters Kluwer-Lippincott Solutions
- **209**: Comindware
- **210**: University of Tennessee (UT) Graduate & Executive Education
- **211**: Cardinal Health
- **Foyer**: Society for Health Systems (SHS)

**Exhibit Hall Schedule**

**THURSDAY, FEBRUARY 19**

- 11 a.m. – Noon: Dedicated exhibit time
- 11 a.m. – 6:15 p.m.: Exhibit Hall open
- Noon – 1:20 p.m.: Exhibit Hall closed for lunch
- 5 – 6:15 p.m.: Networking Reception in Exhibit Hall

**FRIDAY, FEBRUARY 20**

- 7 – 8 a.m.: Breakfast with the Exhibitors
- 7 a.m. – 3:30 p.m.: Exhibit Hall open
- 11 a.m. – Noon: Dedicated exhibit time
- Noon – 1:20 p.m.: Exhibit Hall closed for lunch

**IMPORTANT – Please read**

It is preferable that your booth be staffed at all times, but not mandatory. It is mandatory that all booths be adequately staffed during dedicated exhibit time. Please be in your booth and ready to go at least 15 minutes prior to dedicated exhibit time. Exhibitors may NOT dismantle their booths prior to the official closing of the Exhibit Hall.
Comindware | Booth #209
Comindware Tracker® provides a highly scalable and easily configurable healthcare software solution for management of operations in healthcare businesses and ensures better process coordination and collaboration. Comindware Tracker allows for design and setup of the healthcare solution matching workflow specifics such as business rules, status transition conditions and security levels.

Binghamton University | Booth #109
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Healthcare Systems Engineering Institute | Booth #201
HSyE’s mission is to broadly impact healthcare improvement through education, research, and application in systems engineering methods. This is defined by undergraduate and graduate academic programs, national experiential co-op education and summer internship programs, three federally awarded healthcare IE centers, and competitive scholarships. We rely on industry-university partnerships to advance the shared missions of healthcare improvement and workforce development.

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khrusallis | Booth #110
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Wolters Kluwer-Lippincott Solutions | Booth #208
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The Society for Health Systems is a professional association that focuses on the needs and resources of health systems professionals and leaders who are charged with improving healthcare processes. SHS offers the latest in process analytics, tools, techniques and methodologies for performance improvement.

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Society of Cardiovascular Patient Care | Booth #206
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U.S. News Hospital Data Insights | Booth #203

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☐ Newsletter

☐ Seminars and/or Webinars (presenting or organizing)

☐ Student Programs (student chapter, paper competition, conferences, etc.)

☐ Tools, Methods and Content (find, create and share professional tools)

☐ Other ____________________________________________

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