SUCCESSFUL HANDOFF IMPLEMENTATION

September 6, 2017

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Intermountain Healthcare

Integrating Research into the system

HOSPITALS & CLINICS

22 Hospitals
(including pediatric and orthopedic)
2,700 Beds
185 Intermountain Clinics

OUR TEAM

5000 Affiliated Physicians
1,400 Medical Group doctors & advanced practice clinicians

36,000 Employees
3,000 Volunteers

CLINICAL PROGRAMS

Behavioral Health	Primary Care
Cardiovascular	Surgical Services
Intensive Medicine	Women & Newborns
Oncology	Musculoskeletal
Pediatrics	Neurosciences

FEE FOR VALUE

Transition from fee for service to fee for value —quality improvement, enhance patient experience, and lower cost.

HOMER WARNER CENTER

80 Current informatics projects

ENTERPRISE DATA WAREHOUSE

SYSTEM-WIDE data warehouse: financial, clinical, laboratory, pharmacy, and other departmental systems.

iCentra

Fully integrated electronic health record, practice management, and revenue cycle system.

OFFICE OF RESEARCH

Over **1600** Open clinical research studies

Patient Safety in the U.S.: Ongoing Problems

Institute of Medicine, 1999

- 44,000-98,000 deaths per year due to adverse events

Office of the Inspector General, 2010

- 180,000 deaths per year due to adverse events

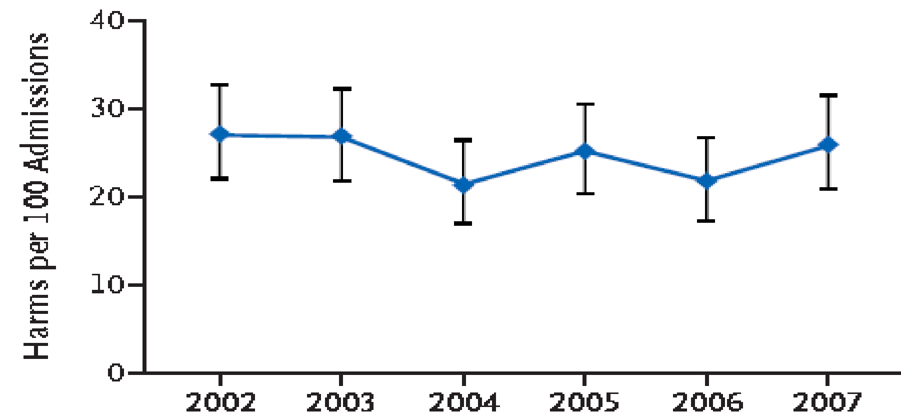
Makary et al, BMJ, 2016

- 251,000 U.S. deaths per year due to medical error
- **3rd leading cause of death**

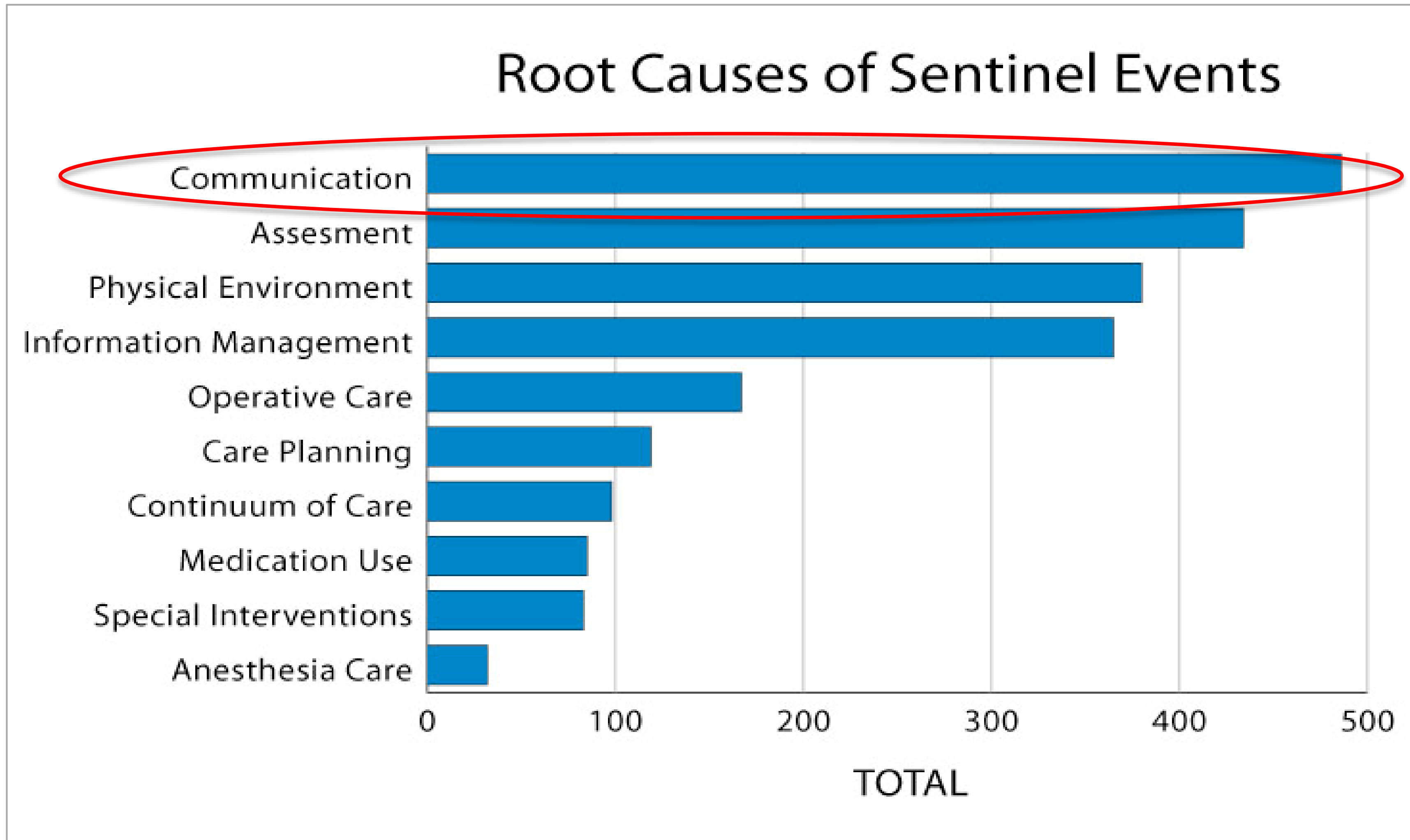
North Carolina Pt Safety Study

- 2341 randomly selected
  - admissions from ten randomly selected hospitals
  - statewide

Landrigan et al., NEJM 2010: 363:2124-34



Causes of Adverse Events



Joint Commission. (2011). Sentinel Event Statistics Data - Root Causes by Event Type (2004 - Third Quarter 2011)

Multisite study at 9 Children's Hospitals

Created I-PASS handoff *bundle* for change of shift

- High reliability communication methods
- Observation/Feedback/Performance improvement

Test whether implementation associated with:

- Reduced overall error and preventable adverse events (active surveillance)
- Improved verbal/written handoff communication
- Changes in resident workflow

[1]Starmer AJ, Acad Med. 2014 Jun; 89(6):876-84

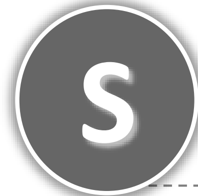
I-PASS Mnemonic

A Standardized Structure for Communication

Illness Severity
Stable, Watcher, Unstable

Patient Summary
Summary statement; events leading up to admission; hospital course; ongoing assessment; plan

Action List
To do list; timeline and ownership

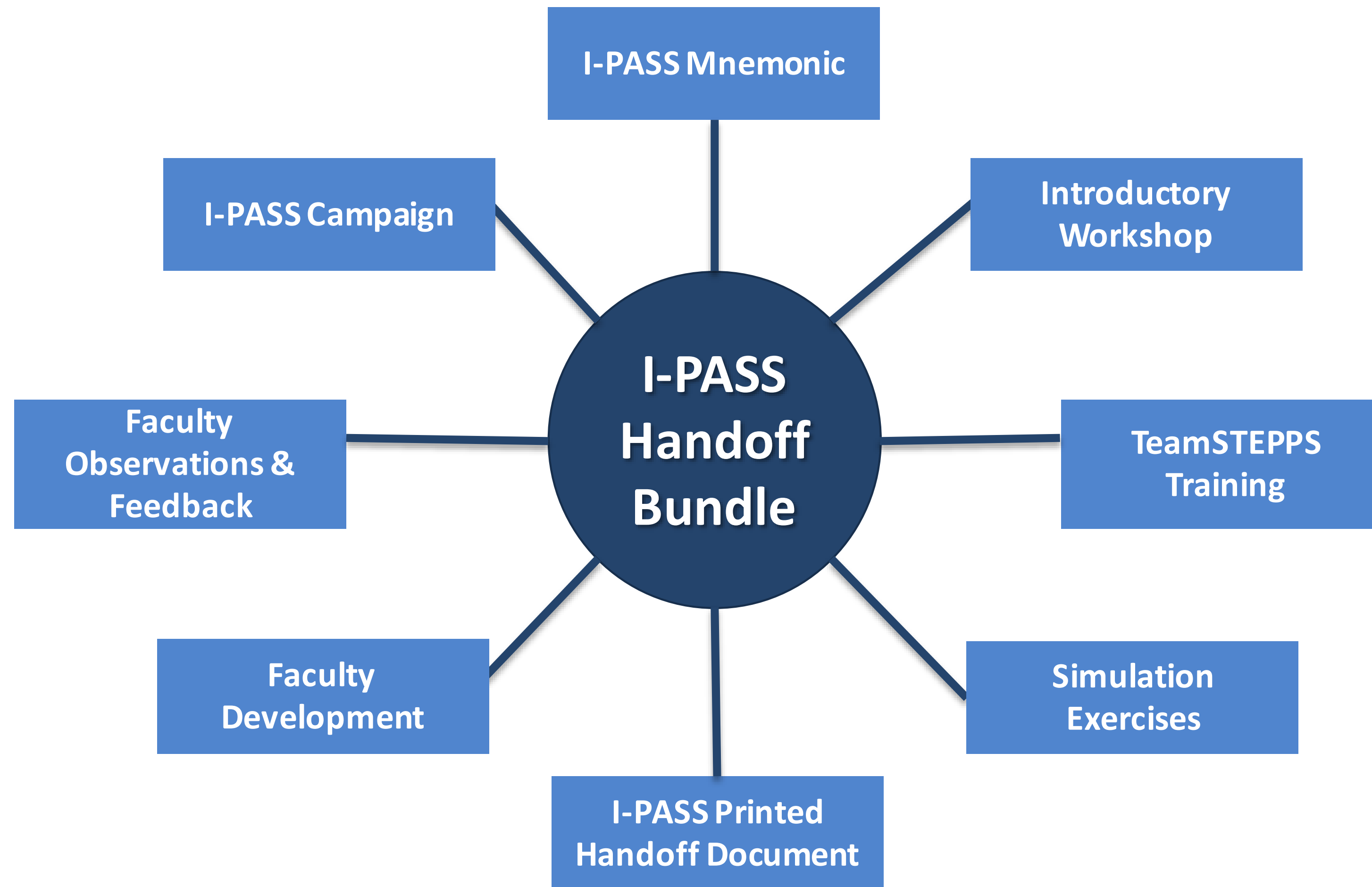


Situation Awareness & Contingency Planning
Know what's going on; plan for what might happen

Synthesis by Receiver
Receiver summarizes what was heard; asks questions; restates key action/to do items

Starmer AJ et al *Pediatrics* 2012

I-PASS: More Than Just A Mnemonic
Bundle Components



All Handoff Bundle Components Available at www.ipasshandoffstudy.com

Primary Outcomes of I-PASS Study

Significant Reduction in Medical Errors and Patient Harm, No Change in Workflow or Time for Handoffs

23% reduction

30% reduction

	Number of errors (rate per 100 patient admissions)		
	Pre (n=5516 admissions)	Post (n=5571 admissions)	P-value
Overall rate of medical errors	24.5	18.8	<0.001
Preventable adverse events	4.7	3.3	<0.001

Activity	Pre-Intervention N = 3510 hours	Post-Intervention N = 4618 hours	P-Value
Mean duration of verbal handoff per patient	2.4 min	2.5 min	0.55

No More Time

The NEW ENGLAND JOURNAL of MEDICINE

Starmer AJ, et al. N Engl J Med. 2014 Nov 6; 371(19):1803-12

Dissemination and Adaptation of I-PASS

Nurses and Medical Students

Specialties beyond Pediatrics

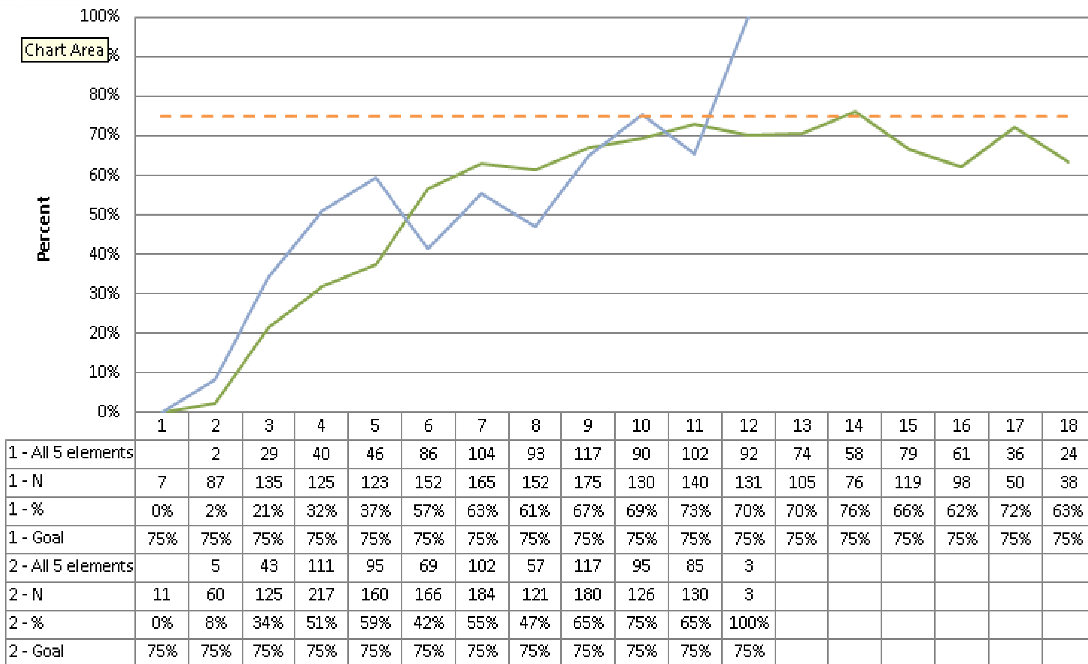
- Internal Medicine, Surgery, OB/GYN
- Implemented > 50 institutions
- Examples: MGH, CHOP, Johns Hopkins, Mayo, UCSF, Stanford

Patient and Family I-PASS Study

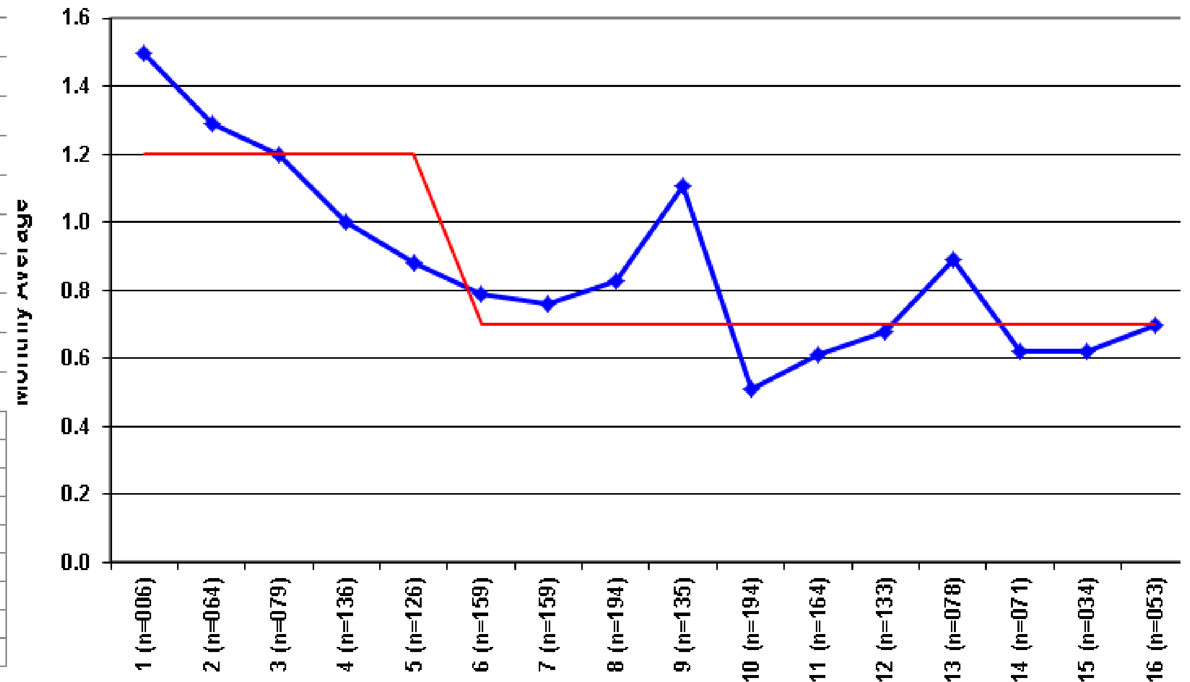
- Structured communication
- Shared mental model on rounds, MDs, Nurses, Patients/Families
- 38% reduction in harmful errors

Administration and other hospital operations

I-PASS Mentored Implementation (32 Hospitals): Effects on Communication and Patient Safety



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 - All 5 elements		2	29	40	46	86	104	93	117	90	102	92	74	58	79	61	36	24
1 - N	7	87	135	125	123	152	165	152	175	130	140	131	105	76	119	98	50	38
1 - %	0%	2%	21%	32%	37%	57%	63%	61%	67%	69%	73%	70%	70%	76%	66%	62%	72%	63%
1 - Goal	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
2 - All 5 elements		5	43	111	95	69	102	57	117	95	85	3						
2 - N	11	60	125	217	160	166	184	121	180	126	130	3						
2 - %	0%	8%	34%	51%	59%	42%	55%	47%	65%	75%	65%	100%						
2 - Goal	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%						



% adherence to all 5 elements I-PASS mnemonic

Provider-reported adverse event rate

Patient and Family Centered I-PASS Study

Adverse Event Rates Pre- and Post- Intervention

Type of Adverse Event (Number/1000 patient-days)	Pre	Post	p-value
All Types	**33.7**	**18.3**	**.002**
Preventable (Harmful Errors)	20.7	12.9	**.01**
Non preventable	12.4	5.0	**.003**

38% Reduction

Harvard Business School / Medical School Health Acceleration Challenge

Question: How do we continue to spread?

Selected as finalist

- Healthcare business community input
- Identified CEO / Business Team

Formed I-PASS Institute

- Patient Safety Improvement Company
- Comprehensive Hospital-Wide Handoff Solutions

Full-Scale Adoption Challenges:

Sustaining change requires re-enforcement and feedback

“Scale” required to train thousands of providers

Needs integration and alignment with hospital systems (e.g. EHR)

Requires change in workflow and adaptation to culture

Requires experience and mentoring

I-PASS
PATIENT SAFETY INSTITUTE

HARVARD | BUSINESS | SCHOOL

N9-915-409
FEBRUARY 17, 2015

ROBERT S. HUCKMAN
MICHAEL NORRIS

The I-PASS Patient Handoff System

As Dr. Amy Starmer of Boston Children's Hospital dialed into the regularly scheduled conference call of the I-PASS Executive Council—of which she was one of six members—she realized that this small group had to address an increasingly large range of issues. Of the other five members of the Executive Council, two—Drs. Christopher Landrigan and Theodore Sectish—were pediatricians and colleagues of Starmer's at Boston Children's; the other three, Drs. Nancy Spector, Raj Srivastava, and Daniel West, were pediatricians at St. Christopher's Hospital for Children in Philadelphia, Pennsylvania; Primary Children's Hospital of Intermountain Healthcare in Salt Lake City, Utah; and the Benioff Children's Hospital at the University of California at San Francisco (UCSF), respectively.

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Pediatric Research in Inpatient Settings

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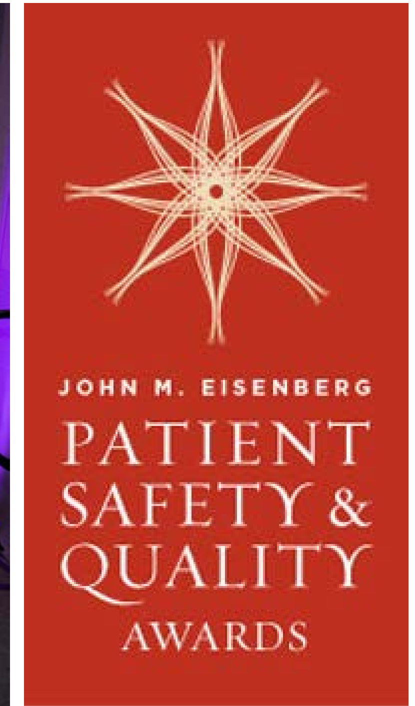
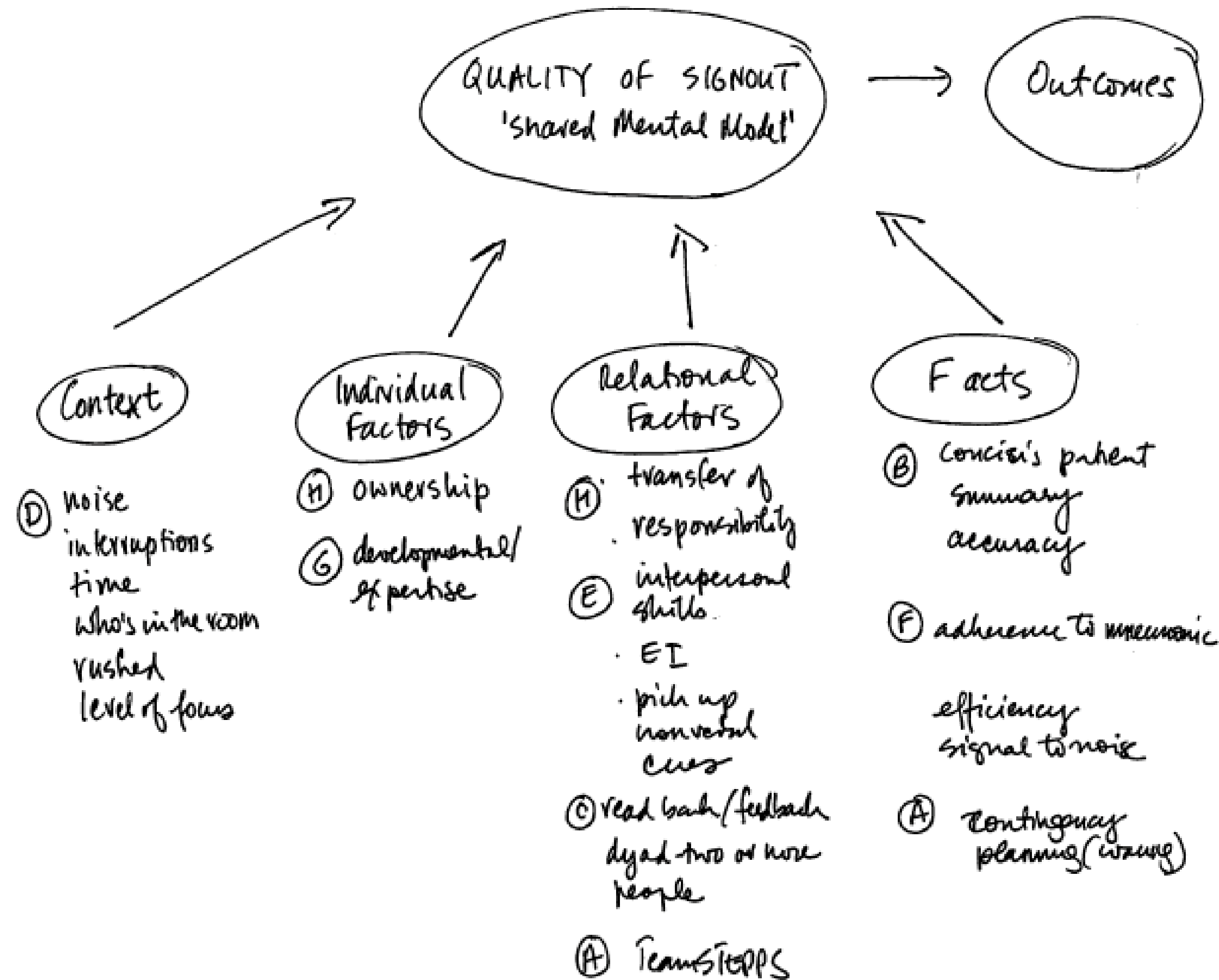
I-PASS Study Group wins Eisenberg Award for National Innovation in Patient Safety

The I-PASS Study Group was awarded the 2017 John M. Eisenberg Award for Innovation In Patient Safety and Quality at the National Level. The award is presented annually by the National Quality Forum and the Joint Commission



Original Conceptual Model



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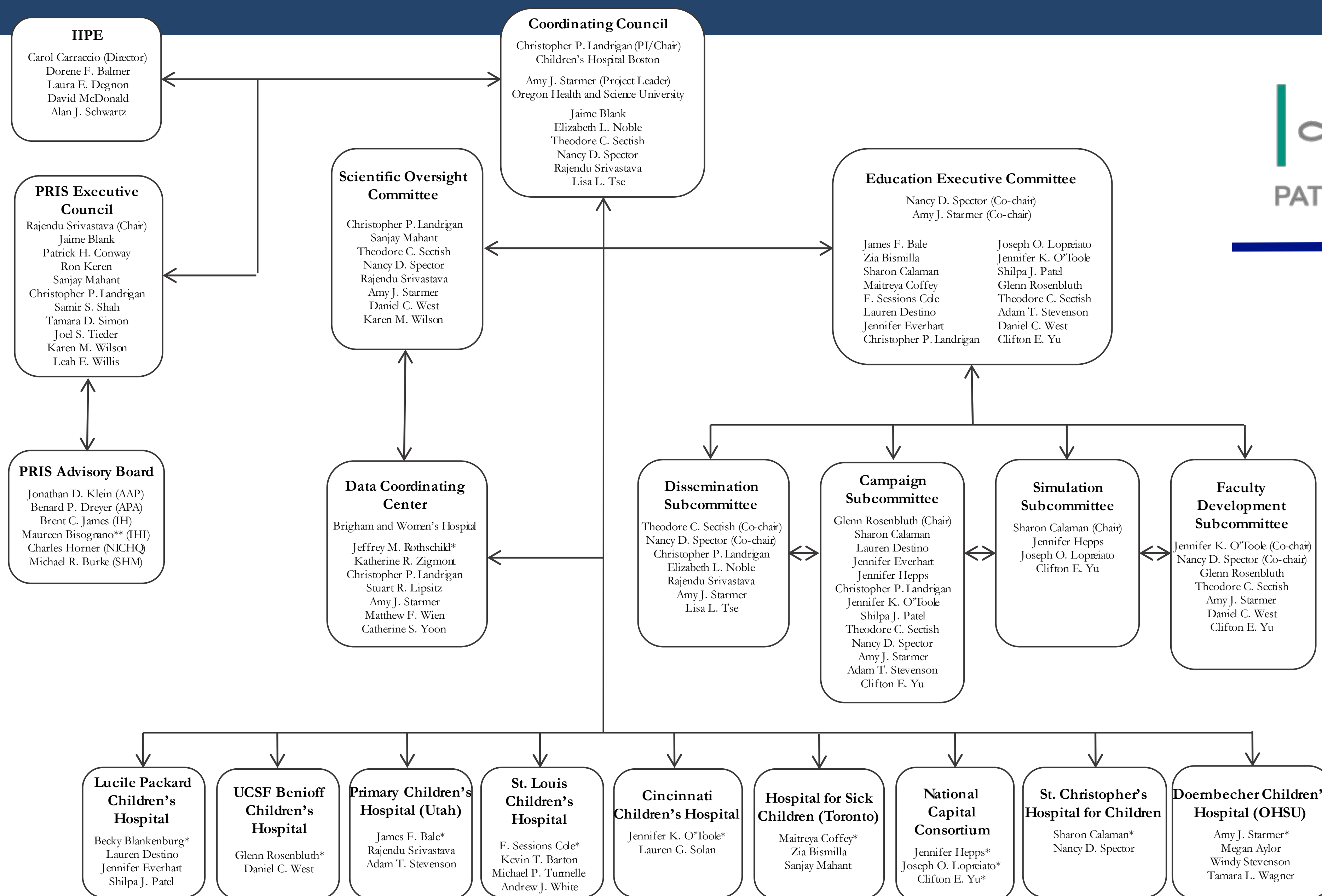

I-PASS
PATIENT SAFETY INSTITUTE

Acknowledgments: I-PASS Study Group

I-PASS Study Leadership:

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I-PASS Education Executive Committee:

Co-chairs: Nancy D. Spector MD, Amy J. Starmer MD, MPH

James F. Bale Jr. MD, Zia Bismilla MD, Sharon Calaman MD, Maitreya Coffey MD, F. Sessions Cole MD, Lauren A. Destino MD, Jennifer L. Everhart MD, Jennifer H. Hepps MD, Christopher P. Landrigan MD, MPH, Joseph O. Lopreiato MD, MPH, Elizabeth L. Noble BA, Jennifer K. O'Toole MD, MEd, Shilpa J. Patel MD, Glenn Rosenbluth MD, Theodore C. Sectish MD, Rajendu Srivastava MD, MPH, Adam T. Stevenson MD, Lisa L. Tse BA, Daniel C. West MD, Clifton E. Yu MD

I-PASS Study Group:

Members of the I-PASS Study Group include individuals from the institutions listed below as follows: Boston Children's Hospital/Harvard Medical School (primary site): April D. Allen, MPA, MA (currently at Heller School for Social Policy and Management, Brandeis University), Angela M. Feraco, MD, Christopher P. Landrigan, MD, MPH, Elizabeth L. Noble, BA, Theodore C. Sectish, MD, Lisa L. Tse, BA; Brigham and Women's Hospital (data coordinating center): Anuj K. Dalal, MD, Carol A. Keohane, BSN, RN, Stuart Lipsitz, PhD, Jeffrey M. Rothschild, MD, MPH, Matt F. Wien, BS, Catherine S. Yoon, MS, Katherine R. Zigmont, BSN, RN; Cincinnati Children's Hospital Medical Center/University of Cincinnati College of Medicine: Javier Gonzalez del Rey,MD, MEd, Jennifer K. O'Toole, MD, MEd, Lauren G. Solan, MD; Doernbecher Children's Hospital/Oregon Health and Science University: Megan E. Aylor, MD, Amy J. Starmer, MD, MPH, Windy Stevenson, MD, Tamara Wagner, MD; Hospital for Sick Children/University of Toronto: Zia Bismilla, MD, Maitreya Coffey, MD, Sanjay Mahant, MD, MSc; Lucile Packard Children's Hospital/Stanford University: Rebecca L. Blankenburg, MD, MPH, Lauren A. Destino, MD, Jennifer L. Everhart, MD, Madelyn Kahana, MD, Shilpa J. Patel, MD (currently at Kapi'olani Children's Hospital/University of Hawai'i School of Medicine); National Capital Consortium: Jennifer H. Hepps, MD, Joseph O. Lopreiato, MD, MPH, Clifton E. Yu, MD; Primary Children's Medical Center/University of Utah: James F. Bale, Jr., MD, Jaime Blank Spackman, MSHS, CCRP, Rajendu Srivastava, MD, MPH, Adam Stevenson, MD; St. Louis Children's Hospital/Washington University: Kevin Barton, MD, Kathleen Berchelmann, MD, F. Sessions Cole, MD, Christine Hrach, MD, Kyle S. Schultz, MD, Michael P. Turmelle, MD, Andrew J. White, MD; St. Christopher's Hospital for Children/Drexel University: Sharon Calaman, MD, Bronwyn D. Carlson, MD, Robert S. McGregor, MD (currently at Akron Children's Hospital/Northeast Ohio Medical University), Vahideh Nilforoshan, MD, Nancy D. Spector, MD; and Benioff Children's Hospital/University of California San Francisco School of Medicine: Glenn Rosenbluth, MD, Daniel C. West, MD. Dorene Balmer, PhD, RD, Carol L. Carraccio, MD, MA, Laura Degnon, CAE, and David McDonald, and Alan Schwartz PhD serve the I-PASS Study Group as part of the IIPE. Karen M. Wilson, MD, MPH serves the I-PASS Study Group as part of the advisory board from the PRIS Executive Council. John Webster served the I-PASS Study Group and Education Executive Committee as a representative from *TeamSTEPPSTM*

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Lessons Learned

- Institution leadership for standardized training, local implementation
- Workplace based assessment (assessments help drive the quality)
- Campaign for culture change
- Mechanisms of sustainment
- Barriers (logistics of training and tracking, having sufficient institutional buy-in)
- Business model for hospital leadership to consider, beyond academic medicine approach

Thank you - Questions