Children's Hospitals'
Solutions for
Patient Safety
Every patient. Every day.

The Road to Eliminating Pediatric Harm:

Update on Best Practices 2018

Developed by: Children's Hospital's Solutions for Patient Safety

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HOW TO USE THIS CHANGE PACKAGE

The Reducing All-Cause Harm Change Package was created for leaders, managers, and clinicians at hospitals who care for pediatric Medicare beneficiaries, particularly those who work at hospitals that predominantly serve adult populations. Reducing harm among pediatric patients requires an approach that differs from that used to reduce harm among adult patients. Quality and safety leaders, as well as clinicians and other health care professionals, may lack experience with the specific needs of pediatric populations and may depend on approaches developed for older patients out of necessity.

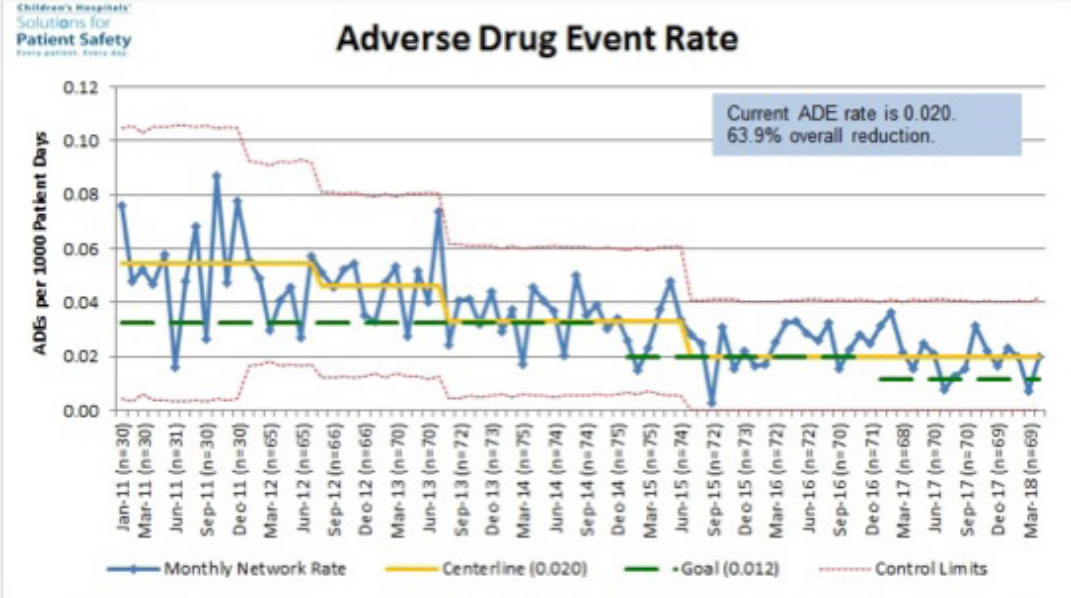
The purpose of this change package is to provide health care professionals with a high-level roadmap for reducing all-cause harm when caring for pediatric patients and a toolkit of resources to support this work. It is based on the experience of hospitals in the Solutions for Patient Safety network that have demonstrated expertise in this area. This change package presents their guidance, best practices, practical tools, and "pearls of wisdom" in a condensed, easy-to-use format. It contains a variety of strategies, change concepts, action steps, and tools and resources that can be used by leaders, managers, and clinicians to reduce all-cause harm when caring for pediatric populations in the inpatient setting.

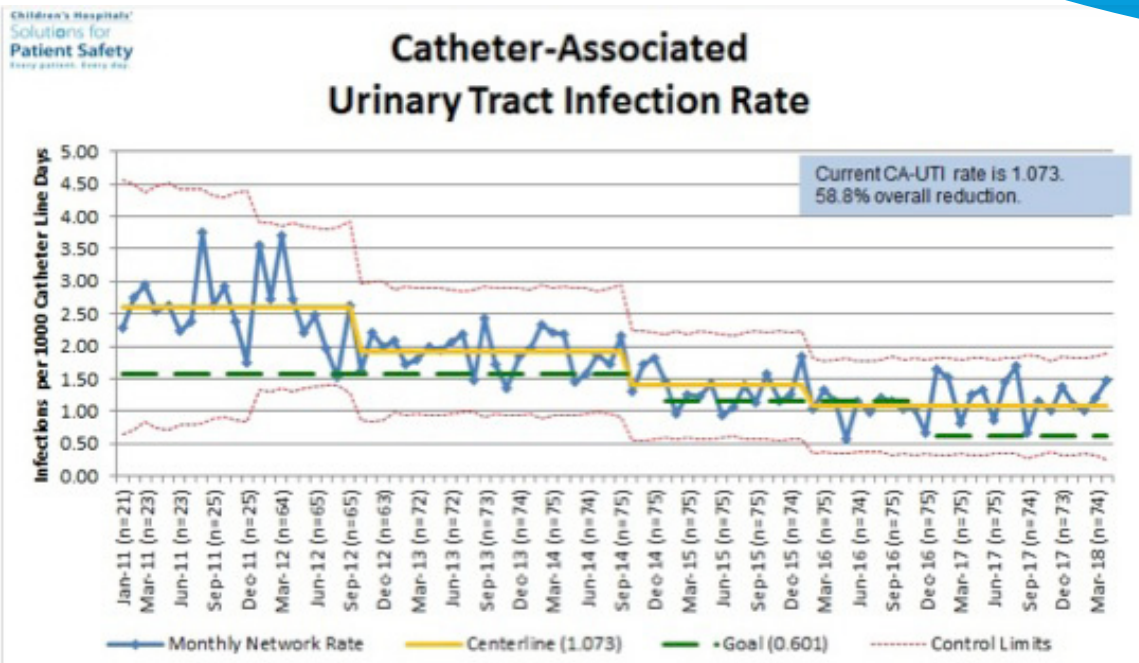
MAGNITUDE OF THE PROBLEM AND WHY IT MATTERS

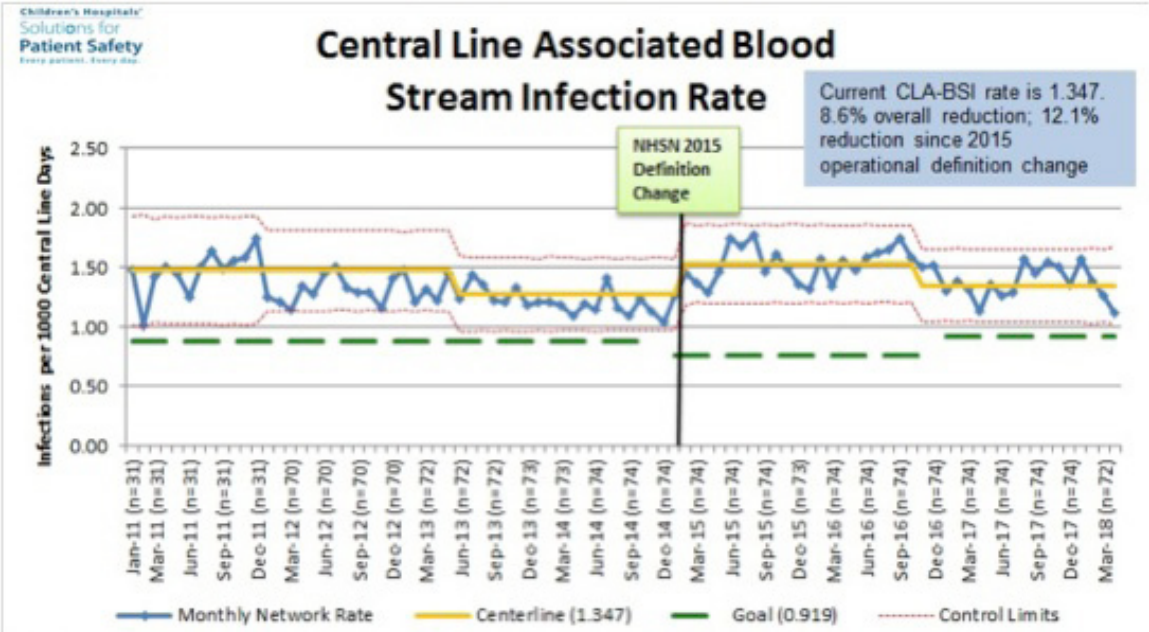
The risk of harm related to an inpatient stay is substantial. Studies using trigger tool methodologies (a manual retrospective record review using discrete data elements to identify possible presence of harm or potential harm) found that as much as 40 percent of adult and pediatric populations experience at least one harm while in the hospital. (Sammer 2017) Studies among pediatric patients have documented a harm rate of approximately 40 events per 100 admissions. (Stockwell 2015) It has been estimated that almost 40 percent of pediatric readmissions are preventable. (Gay 2015)

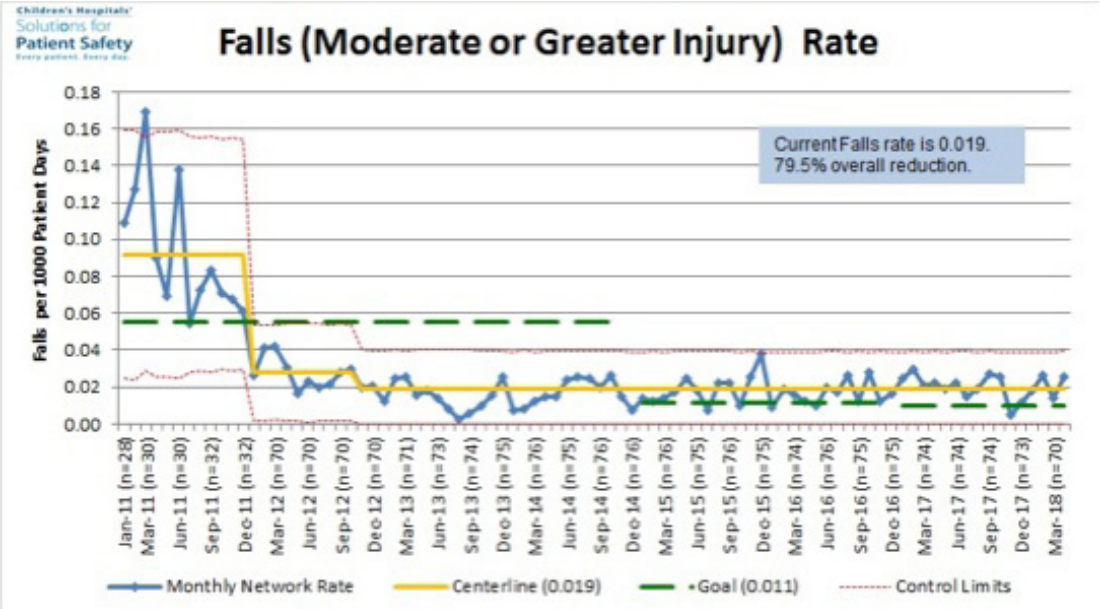
Great strides have been made in reducing specific harms. Hospitals in the SPS network have shared and implemented best practices and successfully reduced the incidence of many hospital-acquired conditions (HACs). A control-comparison study covering three years of the SPS collaborative found a significantly lower incidence in 8 of 9 HACs among the SPS network hospitals, compared with control hospitals, with decreases ranging from 9 percent to 71 percent ($P < 0.005$ for all). (Lyren 2017)

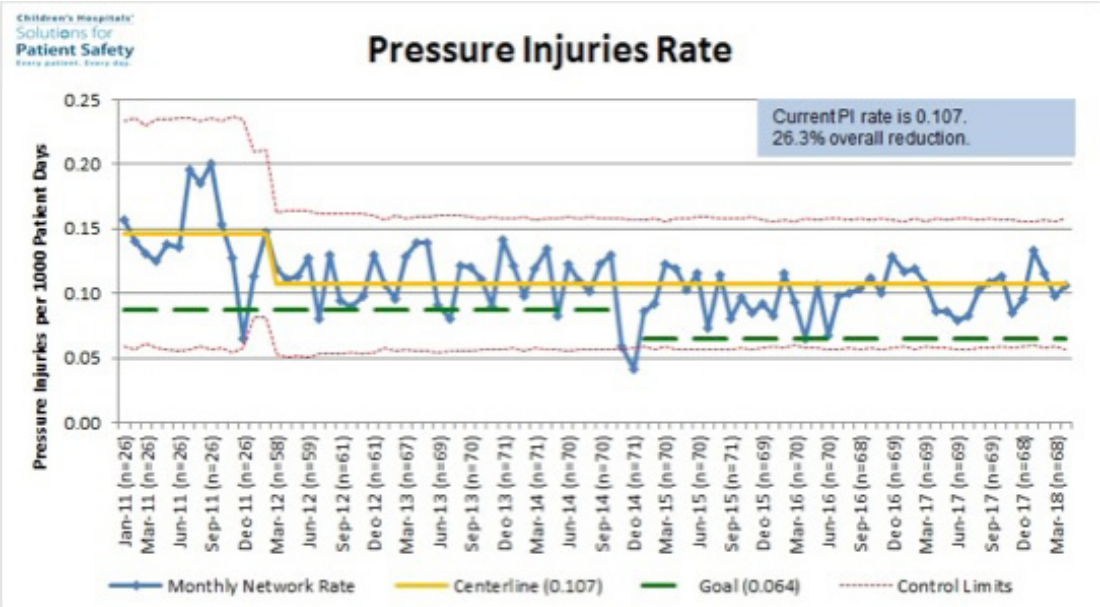
The SPS database reveals similar levels of improvement over longer periods of analysis. The six most common HACs in pediatric patients (adverse drug events, catheter-associated urinary tract infections (CAUTI), central line-associated blood stream infections (CLABSI), falls, pressure injuries and readmissions) have declined by as much as 79 percent in SPS network hospitals over seven years (see Figures).

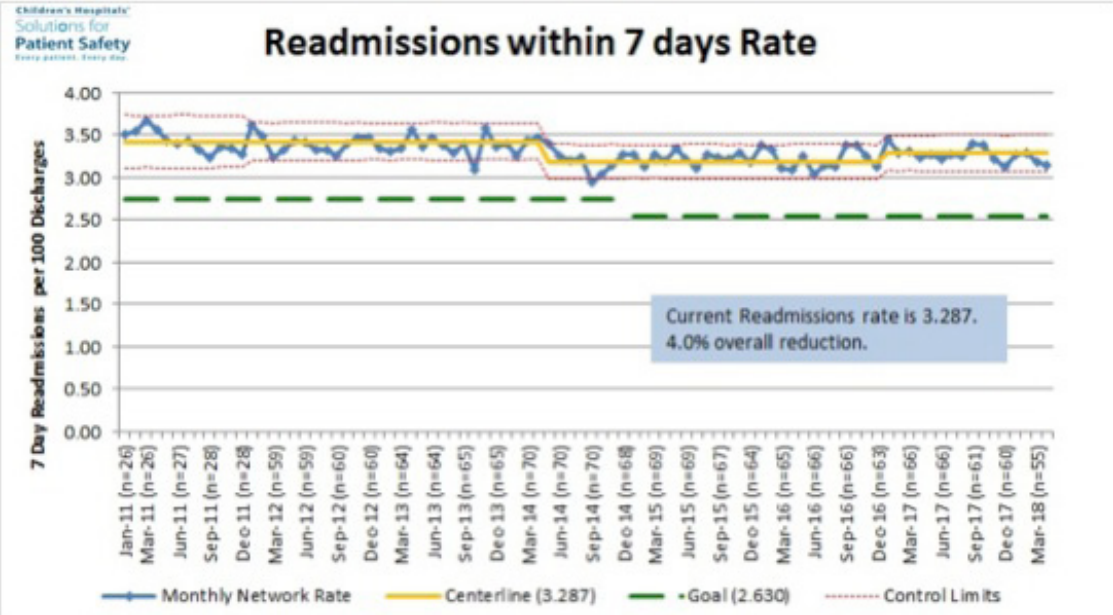












However, substantial variation persists in harm rates among hospitals caring for children.
A study of the incidence of pressure injury (PI) among pediatric patients cared for in SPS network hospitals found that among the 33 hospitals that participated in SPS from 2011 to 2013 (and had a baseline rate before any bundle elements were enacted), the rate of stage 3 and stage 4 pressure injuries declined significantly. (Frank 2017) However, among the first 78 hospitals to join SPS, those that adopted all the elements of the PI active surveillance and prevention bundle and achieved 80 percent compliance with the bundle had significantly lower rates than SPS hospitals as a whole. These data highlight an important gap: while many best practices have been identified, substantial variation exists in the implementation of these best practices. The goal of this change package is to assist hospitals that care for children to more effectively implement best practices to reduce the variation in harm rates and ultimately reduce the national harm rate.

HACs represent a sizable portion of the harms that patients experience in the hospital setting. However, the ultimate goal of patient safety is preventing any harm from reaching the patient. The U.S. Department of Health and Human Services Office of Inspector General has defined all-cause harm as "any event during the care process that results in harm to a patient, regardless of cause." (CMS 2013)

A barrier to reducing all-cause harm is the lack of data regarding effective interventions—in contrast to the considerable body of knowledge that exists regarding interventions to reduce specific HACs. Rather than delay the advancement of patient safety while waiting for evidence-based interventions to reduce all-cause harm, the current approach is to apply best practices that hospitals have used to reduce HACs, with the belief that these interventions will reduce other harms as well. This approach is reflected in this change package, with an emphasis on best practices related to high-leverage changes, such as leadership behavior and organizational culture.

While many of the younger Medicare beneficiary or pediatric patients are cared for at SPS children's hospitals, 50 percent to 70 percent of pediatric patients are cared for at the thousands of other hospitals across the United States. (Leyenaar 2016) Often best practices and guidance for prevention of HACs are focused on the majority of Medicare beneficiaries, who are age 65 or older. However, pediatric patients differ in a number of ways from adult patients and often require different approaches to prevent harm.

The difference between pediatric and adult populations in the risk of HACs (or their underlying causes) can be seen across the portfolio of CMS-priority HACs. Pediatric patients vary tremendously in size (from less than 1 kg to greater than 100 kg) and are subject to a variety of medication errors related to weight-based dosing. In addition, pressure injuries are much more likely to be caused by medical devices then by decubitus ulcers or "bed sores." The use and purpose of central lines and urinary catheters are very different in pediatric than in adult patients.

Because of the differences in risk and causes of HACs, the prevention strategies for pediatric HACs are different than those for adult patients. In some cases, the definitions of HACs themselves vary somewhat for pediatric patients. Even within the pediatric population, it is necessary at times to include age-specific adjustments to the HAC definitions, reflecting the significant differences between neonatal care and care of older children. It is important to use pediatric-specific definitions for pediatric patients to create a safe system across the lifespan.

The numerous differences between adult and pediatric patients in harm prevention preclude simply adopting tools that reduce harm among adult patients for use in pediatrics. Hospitals that primarily treat adults need pediatric-specific information and tools to reduce all-cause harm among their pediatric populations.

This change package reflects best practices of hospitals within the SPS network that were identified as high performers, as evidenced by HAC rates that were consistently lower than the SPS network average. The best practices of these hospitals, identified by an SPS change package development team through site visits and in-depth conversations, form the foundation of this change package. Adoption of the strategies and practices of these high-performing SPS hospitals by more hospitals that care for children will reduce the variation in the rate of all-cause harm, ultimately reducing the national pediatric harm rate. .

CURRENT DEFINITION:

All-cause harm has been defined as "any event during the care process that results in harm to a patient, regardless of cause." (CMS 2013) The Office of Inspector General encourages "internal hospital reporting of all adverse events—whether considered a complication, a preventable harm, or a harm caused by system failures or errors." (CMS 2013)

This change package focuses on reducing all-cause harm when caring for pediatric patients in inpatient settings. It includes best practices from pediatric-only hospitals with special attention to implementation at hospitals that primarily serve adult patients. The focus of this change package is high-level: it provides strategies and resources related to leadership, culture, improvement capability, and effective use of data. For information related to specific HACs, see the Solutions for Patient Safety change package for the relevant HAC at www.solutionsforpatientsafety.org/for-hospitals/hospital-resources.

About the Solutions for Patient Safety Learning Network

Ohio Children's Hospitals' Solutions for Patient Safety is a true learning network. Through a commitment by SPS members to the principle of "All Teach, All Learn" and to sharing knowledge, skills, and data transparently within the network, all participants move toward improvement. SPS members have created the largest data collection ever assembled that connects process specific reliability to harm outcome rates for pediatric patients. The network identifies best practices and then uses data to continuously refine and improve the standard for pediatric patients.

MEASUREMENT STRATEGY

A basic tenet of improvement science is that measurement is critical to achieving positive change. To state the case simply, "Successful measurement is a cornerstone of successful improvement." (IHI no date) It is the only way to ensure that changes made to reduce the risk of harm are leading to the intended outcome.

Health care organizations seeking to reduce all-cause harm for their pediatric patients should develop a measurement strategy in the early planning stage. Measurement should include monthly tracking of key results displayed as run charts (see template example in the Appendix). Key results include:

- Outcome measures for each HAC, using SPS operational definitions (available at: http://www.solutionsforpatientsafety.org/wp-content/uploads/sps-operating-definitions.pdf)
- Process measures for each HAC prevention bundle, with a minimum of 10 observations per month

Leaders or managers may choose to add other measures. However, they should take care to avoid making data collection too resource-intensive or complex. Keeping measurement of HACs as simple as possible and using relevant, important measures are essential to success.

EXISTING BUNDLES AND TOOLKITS

Bundles and Toolkits for Improving PFE

- **Solutions for Patient Safety Operational Definitions**
  http://www.solutionsforpatientsafety.org/wp-content/uploads/sps-operating-definitions.pdf
- **Solutions for Patient Safety Prevention Bundles**
  http://www.solutionsforpatientsafety.org/wp-content/uploads/SPS-Prevention-Bundles.pdf
- **Solutions for Patient Safety Adverse Drug Event Prevention Roadmap**
  http://www.solutionsforpatientsafety.org/wp-content/uploads/ADE-Prevention-Roadmap_SPS.pdf

REDUCING ALL-CAUSE HARM CHANGE PACKAGE

Change package development

To begin, the change package development team conducted a literature review to identify the issues and national thought leaders in pediatric all-cause harm. This information was used to identify selection criteria and to craft questions for the site visits. Next, the team used quantitative measures to select eight hospitals in the SPS network that were better performers in patient and family engagement and in reducing HACs; two that were relatively early in their efforts to reduce HACs and six that were further along in the journey. The selection criteria included:

- **Transparency** – Hospitals must have agreed to transparently share outcomes data and information within the SPS network
- **Patient and Family Engagement** – Hospitals must meet the following:
    - Patient/family member participants on hospital-wide quality committee
    - Patient/family member participants on board committee
    - At least three HAC/harm area teams include patient/family member participants
- **Culture Training** – Hospital must complete all in-person SPS network culture wave trainings, which include training on error prevention, leadership methods, and root cause analysis.
- **Engaged Senior Leadership** – CEO or top pediatric leader must of attended one of the following learning opportunities within SPS in past year and must have signed the annual commitment with SPS:
    - CEO/Top Pediatric Leader Convening
    - CEO/Top Pediatric Leader Webinar
    - SPS Board Training
- **Highly Reliable Processes** – Hospital must implement and measure SPS Prevention Bundle standard elements house-wide. Hospital's centerline must meet or be less than the aggregate SPS centerline, and its process reliability must be near or greater than 90 percent for core harm areas.

Of the eight hospitals selected, six care exclusively for children, and two treat both adults and children. One-day site visits were conducted between February 1, 2018 and April 10, 2018. Two or more members of the change package development team conducted each site visit. A standard set of questions was used to query interviewees. Questions specific to all-cause harm reduction included these, among others:

- What does daily management for quality improvement look like in your organization?
- How does your organization utilize quality and safety data for learning?
- How is learning from harm spread across microsystems?

The team also requested specific tools and resources that the site visit hospital had either developed or adapted from another sources. These tools and resources are listed within the change package, along with others identified by the change package development team.

Key insights from site visits

The SPS change package development team found that high-performing organizations share several features. First, these hospitals demonstrate full engagement of executive and board leaders. While other components are needed, if leaders at all levels are not fully "living safety," no other components are capable of successfully reducing all-cause harm. Site visit participants at these hospitals made statements that revealed the critical role of leadership, such as:

- "It comes down to leadership. You must have strong leadership who believes in [pediatric patient safety] work and says, 'This is important and we're going to do the right thing—and we're going to do it in a way that still meets all the regulatory and accreditation requirements."
- "One of the most important things is a leader who is transparent about what we're doing."

- "We have open conversations with [our CEO] about what's going on. It's safe to say, 'This is what I see. I don't know how to fix it, but something needs to be done.'"
- "Seeing a boss who cares inspires me."

Second, these hospitals have a strong safety culture. The concept of safety culture derives from the study of high reliability organizations and has been defined to include four key components: (AHRQ, no date)

- Acknowledgment of the high-risk nature of an organization's activities and the determination to achieve consistently safe operations
- A blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment
- Encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems
- Organizational commitment of resources to address safety concerns

During site visits, the strong safety culture in high-performing organizations was reflected in statements such as:

- "Safety is threaded through everything we do."
- "The most challenging aspect of reducing all-cause harm is the attitude shift to seeing harm as an opportunity to improve care, not a 'ding.' To ask, 'Where could we do better?'"
- "Everyone in the organization owns safety but different levels of ownership look different."
- "Not everyone belongs on our bus. We do outside counseling if needed to give people a chance for reform, but if they can't be a good member on our bus, we invite them to find a different bus."
- "Sometimes as a leader you need a reality check. You have to look back, to say 'Where were we? Where are we now? How do we keep moving forward?' Because you can get impatient. You see a patient getting better and you think, 'This is great!' That's not how it is with culture work; it takes a lot of time."
- "The word is out that the policy [on addressing disruptive behavior] is enforced. That speaks volumes. Then, as a nurse I'm not going to be afraid to make that call to a physician."
- "Fixing problems leads to increased trust, which leads to increased reporting."
- "We use the same methods and system to adjudicate physicians and nurses—not the peer review system."

Third, these hospitals have become "learning organizations," which requires both development of a safety culture and performance improvement, specifically a focus on achieving increased reliability. Leaders of high performing hospitals believe their success is due to working with leaders from other organizations; they no longer believe "Alone is better." Interviewees reflected this status with comments such as:

- "We could not do what we do without the capacity for quality improvement that we have, which was built over time."
- "You have to get over the fact that [a huddle] is not the most efficient thing. It isn't. Really effective communication doesn't save you time initially, but it does in the long run."
- "I think there's a choreography that you can build into the rounding structure to facilitate care, like in the NICU. We have the resident present the 'one liner' and then nursing presents their concerns and their quality checks, and then the parent presents their concerns. It's a part of the [rounding] structure."
- "Pick one improvement method. It doesn't matter if its Six Sigma, Lean, or Model for Improvement. Just use one, not three."
- "The system is already humungous. I try to boil it down to a single nurse caring for a single patient and ask, 'What can I do to simplify the process so that without thinking you are 100 percent in compliance with the CLABSI bundle?' Make it simple."

The change package development team identified key features important to improving safety for pediatric patients in general and specifically in hospitals that primarily treat adults. As noted previously, pediatric patients are at higher risk for medical errors, especially related to medications. Pediatric patients rely on parents or other caregivers for advocacy and decision-making to a greater degree than most adult patients, making family

engagement critically important. Among hospitals that treat primarily adults, the pediatric-specific needs regarding safety may be eclipsed by other concerns and priorities. Specific interventions, such as separate safety committees for pediatrics, may be necessary to address this issue. Family representatives that can speak to the needs of pediatric patients should be involved.

The safety challenges related to caring for pediatric populations are countered by several distinct advantages. Pediatric hospitals can leverage their mission to galvanize change. As one site visit participant described it, "We're helping kids. That's hard to argue with." Pediatric hospitals have historically collaborated and learned from peer organizations to a greater degree than adult hospitals. For this reason and others, many pediatric hospitals are at the forefront in patient safety but want to share what they have learned with all hospitals caring for pediatric populations.

Strategies for improvement

High-performing hospitals used five general strategies to reduce all-cause harm in their organizations. These strategies, along with change concepts, action items, and relevant tools and resources are described in the tables that follow. For this change package, resources are materials that staff and leaders can read to gain further insights into a change concept or action item; tools are materials that staff and leaders can use to implement a change concept or action item.

Strategies for reducing all pediatric harm:

1. Unyielding Commitment of Hospital Leadership to Safety
2. Relentlessly Creating a Culture of Safety
3. Quality Improvement Skills at all Levels
4. Daily Management for Safety
5. Learning from Data Continuously

Strategy 1: Unyielding Commitment of Hospital Leadership to Safety

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CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
1. Shape the Future *Creating the Belief: "We can and we must eliminate harm for all."*	• Develop and share a vision statement for safety (e.g., "Safety is an ethical imperative.") • Share safety stories at every executive and board meeting (harms, near misses, and good catches) • Ensure leaders are approachable ("an open door policy for safety concerns") • Set the expectation that leaders will persistently prioritize safety (e.g., in meeting agendas, conversations, resource decisions) • Ensure that leaders create urgency to improve safety and moves to zero harm • Develop and share the executive team's top ten list of harms to focus on; include HACs on this list	**Tool:** Cincinnati Children's Hospital. Sample Vision Statement http://www.solutionsforpatientsafety.org/wp-content/uploads/Vision-Statement-Cincinnati.docx **Tool:** Cook Children's. Sample Vision Statement http://www.solutionsforpatientsafety.org/wp-content/uploads/Vision-Statement_Cook.pdf **Tool:** Nationwide Children's Hospital. Sample Strategic Plan http://www.solutionsforpatientsafety.org/wp-content/uploads/SampleStrategicPlanNationwideredo.pdf **Resource:** NHS Wales: Learning to Use Patient Stories http://www.1000livesplus.wales.nhs.uk/sitesplus/documents/1011/T4I%20%286%29%20Learning%20to%20use%20Patient%20stories%20%28Feb%202011%29%20Web.pdf **Resource:** Safety First: Using Patient Stories with Boards http://www.ihi.org/resources/Pages/Tools/GuidelinesforUsingPatientStorieswithBoardsofDirectors.aspx **Tool:** Helen DeVos Children's Hospital. Sample Leader's Top Ten List http://www.solutionsforpatientsafety.org/wp-content/uploads/Sample-Leaders-Top-10-Problem-List_Helen-DeVos.pdf **Tool:** Nationwide Children's Hospital. Leadership Top 10 List http://www.solutionsforpatientsafety.org/wp-content/uploads/Leadership-Top-Ten-List_Nationwide.pdf

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
2. Our Leaders Own Safety *Ensuring the constant and ongoing active involvement of senior*	• Provide quality improvement and safety science education for all leaders, including physician leaders at all levels • Assign leaders as executive sponsors for safety projects to identify resources, share information, and eliminate barriers • Convene an organization-wide daily safety brief or include safety in daily operational brief (face-to-face meeting whenever possible) • Hold senior leadership safety walkarounds where leaders are actively querying frontline staff about safety concerns and barriers to improvement (i.e., rounding with purpose) • Hold regular safety operations calls to share information and report back on action steps and outcomes • Hold regular (e.g., weekly) leadership meeting to review recent events and share information; include C-suite leaders, nursing leaders, risk management representatives, and microsystem managers • Hold regular (e.g., monthly) executive leadership safety meeting to review apparent causes analyses (ACAs) and root cause analyses (RCAs), identify needed actions, and spread lessons learned; ensure follow-up reports on progress and sustainability after 6 to 12 months • Hold leadership update on a regular basis (e.g., quarterly) where mid-level managers and microsystem leaders report on recent projects and field questions from leaders	**Resource:** NEJM Catalyst: Senior Staff Safety Rounds: A Commitment to Ensure Safety Is the Top Priority https://catalyst.nejm.org/senior-staff-safety-rounds/ **Tool:** Washington State Hospital Association: Executive Rounds for Safety http://www.wsha.org/wp-content/uploads/ExecLeadershipRounding.pdf

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
3. Our Board Owns Safety *Ensuring that the Board of Trustees ultimately owns the goal of zero harm.*	• Provide quality improvement and safety science education for all board members • Set the expectation that safety is a priority for the board and that board members are the stewards of safety for the organization • Begin board meetings with safety stories (harms, near misses, and good catches) • Enlist board members to share with the larger community about the organization's quality and safety initiatives and outcomes	**Resource:** Safety First: Using Patient Stories with Boards http://www.ihi.org/resources/Pages/Tools/GuidelinesforUsingPatientStorieswithBoardsofDirectors.aspx **Tool:** St. Jude Children's Research Hospital. Writing and Telling Your Story for Presentations. http://www.solutionsforpatientsafety.org/wp-content/uploads/Writing-and-Telling-Your-Story_St.-Jude.pdf
4. Build Safety *Creating and refining roles and structures to drive safety work.*	• Create leader partnerships at multiple levels to aid collaboration and reduce silos (e.g., dyad structure of physician leader with patient services or nursing leader or clinical leader with quality leader) • Convene pediatric-specific quality committees in hospitals that primarily care for adults	**Resource:** Riley Hospital for Children at Indiana University Health: Presentation on Nurse-Physician Dyad Leadership structure https://www.childrenshospitals.org/Events/2018/03/04/2018-Quality-and-Safety-in-Childrens-Health-Conference/Sessions/The-RN-and-MD-Quality-and-Safety-Leadership-Dyad-Decreasing-Patient-Harm-Session-Repeats-at-1015-am/8BB7AF32269B4259ADF78FD9C7CF9C9C
5. Doing Right Is a Powerful Reward *Recognizing that the primary incentive for safety work is the intrinsic motivation to do the right thing for patients.*	• Hold leaders accountable for quality and safety performance through job descriptions, performance evaluations, and specific, actionable goals • Use financial incentives with caution to avoid undermining inherent motivation to improve; consider possible rewards structure after strong safety culture and practices have been established • Consider tying a portion of compensation to quality and safety metrics with a percentage based on outcomes and with an all-or-none mechanism (i.e., the entire leadership team receives or does not receive the bonus)	

Strategy 2: Relentlessly Creating a Culture of Safety

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
1. Safety for All *Working towards zero harm for patients and employees.*	• Review and address employee safety events • Highlight the importance of employee safety by sharing organizational and national data and best practices	**Resource:** Occupational Safety and Health Administration: Organizational Safety Culture - Linking Patient and Worker Safety https://www.osha.gov/SLTC/healthcarefacilities/safetyculture.html
2. Action Shapes Beliefs *Acknowledging that behavior change drives culture change.*	• Identify and adopt methods to shift to a safety culture, reinforce and sustain it, and hold all employees accountable for safety • Use a strategic roll out of culture change methods, walking the balance between too slow and too rapid introduction of new components • Identify ways to adapt the safety brand and approach as the culture journey evolves	**Resource:** Safety culture training and coaching by Press Ganey/HPI http://www.pressganey.com/solutions/safety
3. Model Safety and Reliability *Ensuring that leaders and physicians demonstrate high-reliability safety behaviors.*	• "Walk the walk" by demonstrating a non-blaming response at event reviews and other forums • Engage and elicit feedback on safety concerns and practices from frontline staff • Address concerns and fix issues as soon as possible to reinforce the value of reporting • Approach errors and near misses with a learning focus • Show "preoccupation with safety" at every level, from daily huddles to board meetings • Set the expectation that staff are accountable for the safety behaviors of colleagues: "200% accountable" (e.g., frontline staff reminds executive leader of safety issue when he is looking at his phone while walking in the hallway)	**Tool:** Solutions for Patient Safety. Live the Safety Message www.solutionsforpatientsafety.org/wp-content/uploads/Live-the-Safety-Message_Cincinnati.png

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
4. Partner with Patients and Families *Working with patient and families, who are motivated to assist with safety work.*	• Engage patients and families to heighten attention to potential safety issues • Encourage patient and family participation in bedside rounding • Invite patient and families to huddles to review safety events, when appropriate	**Resource:** Solutions for Patient Safety: Patient and Family Engagement Change Package https://www.solutionsforpatientsafety.org/wp-content/uploads/SPS_PFE_ChangePackage_Clean.pdf
5. Reject Disruptive Behavior *Taking in hand and assisting those that struggle to change.*	• Set the expectation that outlier (i.e., disruptive) behavior will not be tolerated • Develop a means for escalating concerns about outlier behavior, including escalation above immediate supervisor if a patient is at risk • Provide coaching for any staff with outlier behavior but if the behavior continues, discontinue employment regardless of the title or position of the individual	**Resource:** Joint Commission: Sentinel Event Alert: Behaviors That Undermine a Culture of Safety https://www.jointcommission.org/assets/1/18/SEA_40.PDF
6. Start Early *Understanding that creating the safety culture begins before the first day on the job.*	• Select future employees with safety focus in mind (e.g., ask interviewee to describe a situation in which he or she spoke up about a safety concern) • Emphasize the personal commitment to safety (e.g., hold a signing ceremony where new hires sign a "safety contract")	**Tool:** Sample description of selection process
7. Persistent Effort Over Time *Accepting that culture change requires frequent and continuous reinforcement.*	• Encourage leaders to send thank you letters to staff involved in good catches • Ensure that leaders focus on systems issues and demonstrate accountability yet "no blame," especially in meetings regarding adverse safety events • Ensure that leaders share safety priorities and initiatives with frontline staff (i.e., explain the "why")	**Resource:** Institute for Healthcare Improvement/National Patient Safety Foundation: Leading a Culture of Safety: A Blueprint for Success https://www.npsf.org/general/custom.asp?page=cultureofsafety

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
8. Brand It *Creating an internal campaign for safety*	• Collaborate with marketing to create a brand for safety work (e.g., Zero Hero, Mission Possible) • Provide visual indicators (e.g., badges) to show commitment to safety	**Resource:** Nationwide Children's. Be a Zero Hero https://www.nationwidechildrens.org/impact-quality

Strategy 3: Quality Improvement Skills at all Levels

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
1. Build Competency for Everyone *Acknowledging that all staff needs to learn safety behaviors and receive coaching to build competency in safety practices.*	• Require that full completion of safety training is mandatory for all employees • Provide education on safety science and culture (e.g., human factors, "Swiss cheese model," just culture, systems thinking) • Use simulation training in small groups to reinforce behaviors consistent with just culture • Use mixed group sessions for training (i.e., multidisciplinary) • Provide refresher training for all employees (e.g., every other year) • Provide safety training (possibly adapted) for trainees, such as residents and fellows • Use a coaching, rather than an auditing model • Use Kamishibai cards (K cards) to just-in-time training to improve safety practices	**Resource:** Safety training and coaching by HPI **Tool:** Cincinnati Children's Hospital. Huddle Tools http://www.solutionsforpatientsafety.org/wp-content/uploads/Huddle-Tool.pdf **Tool:** Cincinnati Children's Hospital. Situational Awareness Tool http://www.solutionsforpatientsafety.org/wp-content/uploads/Situational-Awareness-Tool.pdf **Resource:** Solutions for Patient Safety: Instructional videos about specific practices in HAC prevention bundles http://www.solutionsforpatientsafety.org/for-hospitals/hospital-resources/ **Resource:** Solutions for Patient Safety: Webinar on preventing CA-UTI https://www.youtube.com/watch?v=yKgUn72VAKU&feature=youtu.be **Resource:** Solutions for Patient Safety: Webinar on preventing CLA-BSIs https://www.youtube.com/watch?v=_UHRAr36YZ8&feature=youtu.be **Resource:** Solutions for Patient Safety K-card instructional video https://www.youtube.com/watch?v=vtl4IdWBZis&feature=youtu.be

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
2. Safety Champions *Developing and fostering the people in your organization who are natural advocates for safety.*	• Identify and coach champions for safety teams and projects at the frontline (e.g., CLABSI team or IV (intravenous) line champion) • Enlist champions to communicate "the why" to frontline staff and to gather and report feedback from the frontlines to managers and leaders	**Resource:** Solutions for Patient Safety. Successful HAC Champions http://www.solutionsforpatientsafety.org/wp-content/uploads/Successful-HAC-Champions_SPS.pdf
3. Pediatric Safety Experts *Creating pediatric safety expertise in your quality team.*	• Develop the capacity and depth of the quality department with increasing investment in personnel over time • Invest in developing personnel with strong quality and safety skills through a focused curriculum, initially with outside training then with in-house courses once capacity of the teachers is established • Ensure that every microsystem has an assigned quality improvement expert • Identify and train safety coaches to support frontline staff in improvement projects (e.g., system engineers) • Hire quality improvement experts from outside the health care industry and embed them within frontline teams to advise on improvement projects • Invest in a data analytics team to provide support for improvement projects • Assign an executive leadership dyad for each safety focus area (e.g., each HAC) • Convene a safety oversight group that will receive information on safety events from across the entire organization	**Tool:** St. Louis Children's Hospital. Sample Organizational Chart https://www.solutionsforpatientsafety.org/wp-content/uploads/Organizational-Chart_St.-Louis-1.pdf

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
4. Empowered Teams *Creating and empowering teams for priority pediatric harms and HACs.*	• Establish multidisciplinary HAC teams	**Resource:** Institute for Healthcare Improvement: Using Care Bundles to Improve Health Care Quality http://www.ihi.org/resources/Pages/IHIWhitePapers/UsingCareBundles.aspx **Tool:** Solutions for Patient Safety: Instructional videos on HAC bundles http://www.solutionsforpatientsafety.org/for-hospitals/hospital-resources/
5. Just One QI Method *Adopting one common quality improvement method and language*	• Select and train leaders and staff in a single structured quality improvement method, such as the Model for Improvement, Toyota Production System, Six Sigma • Monitor for consistent use of the method across the organization	**Resource and tools:** Institute for Healthcare Improvement: How to Improve http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx
6. Harness Technology for Safety *Engaging with your organization's technology leadership and experts.*	• Invest judiciously in technology that detects or prevents adverse events (e.g., technology for early detection of infiltration of peripheral IV lines)	**Resource:** Agency for Healthcare Research and Quality (AHRQ): Other Systems Can Prevent and Reduce Adverse Drug Events https://archive.ahrq.gov/research/findings/factsheets/errors-safety/aderia/ade.html#OtherSystems

Strategy 4: Daily Management for Safety

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
1. Daily Attention *Holding daily safety operational briefings or huddles.*	• Hold a daily face-to-face meeting or conference call to share information on safety issues and lessons learned across the entire organization • Share patient safety stories • Include recognition of staff (e.g., for a good catch, consistent safety practices, or increased time since last event)	**Resource:** Harvard Business Review: How Every Hospital Should Start the Day https://hbr.org/2014/12/how-every-hospital-should-start-the-day

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
2. Effective and Timely Communication *Enacting a tiered huddle system to facilitate communication up and down the org chart.*	• Launch safety huddles in microsystems multiple times a day (e.g., 3 in clinical units, 2 in operational units) • Use a tiered system to facilitate communication about safety issues, resource needs, and outcomes between the frontline and executive leadership • Set the expectation that individuals will report back to the group in a short timeframe about actions taken and outcomes	**Resource:** NEJM Catalyst: Tiered Escalation Huddles Yield Rapid Results https://catalyst.nejm.org/tiered-escalation-huddles-yield-rapid-results/
3. Make Priorities Visible *Developing visual management systems.*	• Use whiteboards in patients' rooms to improve communication and engage patients and families • Use whiteboards at the unit level for situational awareness, data sharing, and recognition • Create a centralized space for visual management of quality and safety projects across the entire organization	**Resource:** Helen DeVos Children's Hospital: Centralized space for visual management (I-HUB) http://www.solutionsforpatientsafety.org/wp-content/uploads/IHub-Visual_Helen-DeVos.jpg
4. Safety Initiatives *Sponsoring discrete safety initiatives to address priority issues.*	• Include quality improvement personnel, data analysts, clinical staff, and patients and family if appropriate	
5. Integrate Efforts *Creating structure and rhythm to coordinate and integrate safety efforts.*	• Convene a regular huddle of quality improvement staff (e.g., weekly) to report on recent events and safety projects	**Resource:** Helen DeVos Children's Hospital: Centralized space for visual management (I-HUB) http://www.solutionsforpatientsafety.org/wp-content/uploads/IHub-Visual_Helen-DeVos.jpg

Strategy 5: Learning from Data Continuously

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
1. Transparency and Trust *Knowing the truth requires transparency, and transparency requires a sense of trust.*	• Commit as an organization to avoid "competing on safety" and to share data with peer organizations to advance learning • Open RCAs on events (adverse events, harms, near misses, unexpected outcomes) to all employees organization-wide, to highlight safety issues and share lessons learned • Share event- and safety-related data widely on organization-wide intranet • Share a portion of data on public website • Consider carefully with patient and family input the posting of data in public areas of the hospital, as it may be disturbing to some families • Anticipate that heightened awareness and reporting may cause an initial increase in observed events ("Embrace the red.")	**Resource:** Cincinnati Children's. Sample data on intranet https://www.solutionsforpatientsafety.org/wp-content/uploads/Sample-Data-on-Intranet_Cincinnati.png
2. Share Data *Presenting the data to produce effective learning.*	• Present data in a form that is engaging for the relevant audience (e.g., show unit-level staff the number of patient events or days since last event rather than rate or percentage of events; create relevant and balanced dashboards for leaders) • Display results of K-card rounding on K-card boards	**Resource:** Sample data presentation for unit-level staff
3. All Teach, All Learn *Learning invaluable lessons from peer organizations.*	• Use data to learn from safety performance at other pediatric hospitals • Move beyond the charts. Find others to call or visit. Ask questions. Share your data and your learning	**Tool:** Solutions for Patient Safety: https://www.solutionsforpatientsafety.org/our-results/

CHANGE CONCEPTS	ACTION ITEMS	TOOLS AND RESOURCES
4. Storytelling *Recognizing that patient stories are invaluable*	• Use safety stories to teach and demonstrate the benefits of safety practices	**Resource:** NHS Wales: Learning to Use Patient Stories http://www.1000livesplus.wales.nhs.uk/sitesplus/documents/1011/T4I%20%286%29%20Learning%20to%20use%20Patient%20stories%20%28Feb%202011%29%20Web.pdf
5. Less Data Burden *Minimizing the effort required to mine effective data for learning.*	• Partner with the information systems department to identify and address data input, retrieval, or analysis issues • Develop and use systems to mine big data from the electronic health record to identify and mitigate potential risk and (e.g., use data on census, acuity, and staffing for situational awareness, use predictive models to identify patients at risk for decompensation)	
6. Action Learning *Learning lessons from harm events as quickly and effectively as possible.*	• Consider carefully the appropriate level of analysis based on the circumstances and severity of the event (e.g., RCA, ACA) • Use a standardized template for event analysis • Conduct event reviews at the frontline (i.e., in a patient room with similar equipment) • Ensure sharing of lessons learned across the organization, being careful to avoid harm to staff who were involved in the event	**Tool:** Helen DeVos Children's Hospital. Root Cause Analysis Report http://www.solutionsforpatientsafety.org/wp-content/uploads/RCA-Report_Helen-DeVos.pdf **Tool:** Helen DeVos Children's Hospital. Apparent Cause Analysis Report http://www.solutionsforpatientsafety.org/wp-content/uploads/ACA-Report_Helen-DeVos.pdf

ACTION PLANNING

Take action. Effectively implementing the strategies in this change package requires a basic capability in improvement science. If your organization or team does not yet have the relevant knowledge and skills, take the time to acquire them or collaborate with others in your organization that have this expertise.
There are many ways to approach implementing this change package and the one most likely to be effective will depend on the existing organizational culture, the size and components of the organization, the degree of engagement of executive and board leaders, and past patient safety efforts. However, these basic steps should be part of any initiative to reduce all-cause harm:

- Ensure leadership engagement
- Connect with an SPS hospital in your area (SPS members are actively building partnerships within their regions and welcome opportunities to share.)
- Implement the SPS Bundles of Care and Roadmaps http://www.solutionsforpatientsafety.org/for-hospitals/hospital-resources/ for:
    - Adverse Drug Events
    - Catheter Urinary Tract Infections
    - Central Line Bloodstream Infections
    - Falls
    - Pressure Injuries
    - Readmissions
- Coach and support staff in their efforts to achieve 100 percent compliance with the bundles
- Use real-time detection of harm with local experts and avoid use of billing data for safety monitoring
- Review metrics regularly to monitor progress
- Conduct huddles to learn from events that occur
- Regularly share outcome and process data, as well as information from huddles, with leaders and others through the organization
- Communicate effectively across the organization

Organizational leaders and managers would do well to carefully consider the timing of the various phases of implementation. For example, one option for phasing is:

- Ensure leadership is in place and engaged
- Implement first HAC bundle, looking for an easy first success with HAC reduction
- Address culture change and provide improvement training
- Implement other HAC bundles
- Share data across the organization to provide transparency and encourage further adoption of improvement methods

Address barriers. Successfully reducing all-cause harm requires that health care leaders and staff recognize potential barriers and proactively address them. Some potential barriers include:

- Lack of training of clinical staff in improvement science
- Lack of engagement of clinical staff with bundle compliance
- Leaders failing to enforce standards related to the bundles with physicians, due to concerns about their leaving, especially if the physicians are not employed by the hospital
- Actions required to be compliant with bundles interrupting the clinical workflow
- Lack of needed supplies available just-in-time to achieve bundle compliance

Each of these barriers (and others) can be overcome if they are acknowledged and addressed effectively. In many cases, addressing the barriers to reducing all-cause harm may require the use of improvement tools to accurately identify the underlying cause. For example, using the Toyota Production System/Lean tool of the Five Whys, a multidisciplinary team could determine that a key barrier to compliance with the CLABSI bundle was lack of standardization in central line dressing changes. With this information in hand, the team can strategize and test effective ways to support higher compliance.

CONCLUSION

Harm caused in the course of medical care remains a serious issue in this country. Evidence-based interventions are now available for reducing many HACs, and great strides have been made in decreasing the occurrence of these harms. In contrast, little evidence is available about effective interventions for reducing all-cause harm. To advance patient safety without the benefit of this information, it makes sense to apply best practices from hospitals within the SPS network that have achieved impressive reductions in HACs, in the belief that interventions to reduce specific HACs will lower the incidence of other forms of harm as well.

SPS network hospitals that achieved better performance in HAC reduction share several characteristics. Five overarching principles emerged as extremely important to their success: leadership engagement, strong safety culture, deep improvement capability, regular safety management practices, and effective use of data for learning. This change package provides many specific suggestions from these hospitals, as well as tools and resources that other health care organizations can use to improve patient safety.

These strategies—and the associated action steps—take time, resources, focus, and commitment to implement effectively. Top leadership must be engaged in this work and must set reducing all-cause harm as an organizational priority. The experience of hospitals within the SPS network is that such efforts are achievable and are well worth the required effort. This change package offers a roadmap for hospitals that care for pediatric patients to reduce all-cause harm and improve patient safety.

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APPENDIX