Lessons for Transforming Practice from Healthcare Associated Infections (HAI) and MRSA Elimination Programs

Tools and Strategies for Transformational Change for the Integrated Healthcare Association's National Pay for Performance Summit (AHRQ)
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  - Testing Techniques to Radically Reduce Antibiotic Resistant Bacteria HHSA290200600013I (Completed)
  - Healthcare Associated Infections (HAI) Initiative Assessment Program HHSA290200600013I (Current)
  - Implementing and Improving the Integration of Decision Support into Outpatient Clinical

  - Funding from AHRQ and CDC
  - Testing Spread and Implementation of Novel MRSA-Reducing Practices HHSA290200600013 (Current)
  - Thanks to our collaborators, partners, providers, patients!

MRSA Phase One

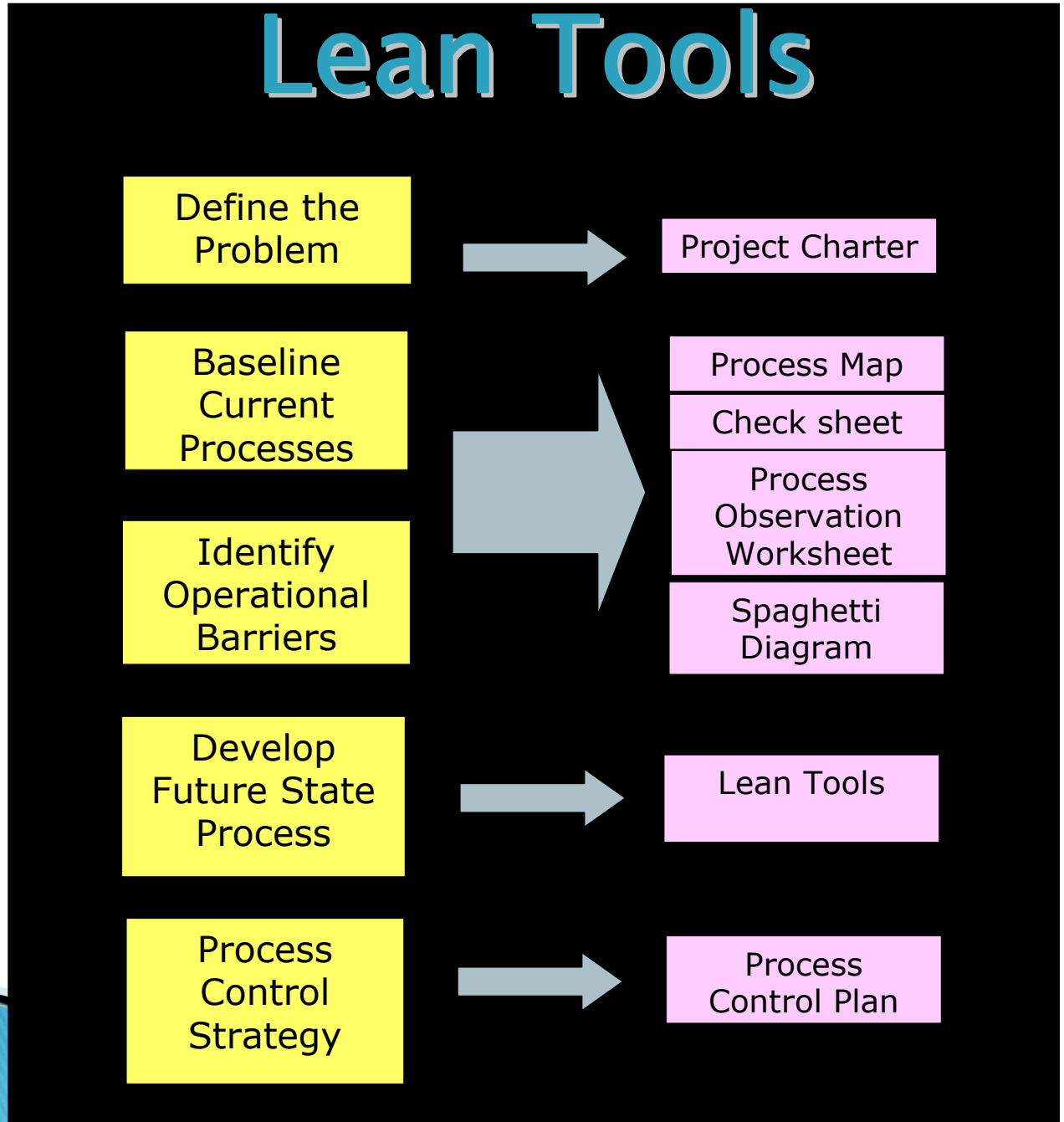
- AHRQ funded proposal to reduce MRSA in hospitals over 18 months through the ACTION collaborative funding mechanism

- Our interventions were based on the Pittsburgh VAMC bundle, using lean, organizational change and informatics (data exchange, reporting):
  - Conduct active surveillance of all incoming pts. in ICUs
  - Improve rates of contact isolation
  - Improve hand hygiene rates
  - Organizational change
  - Environmental decontamination

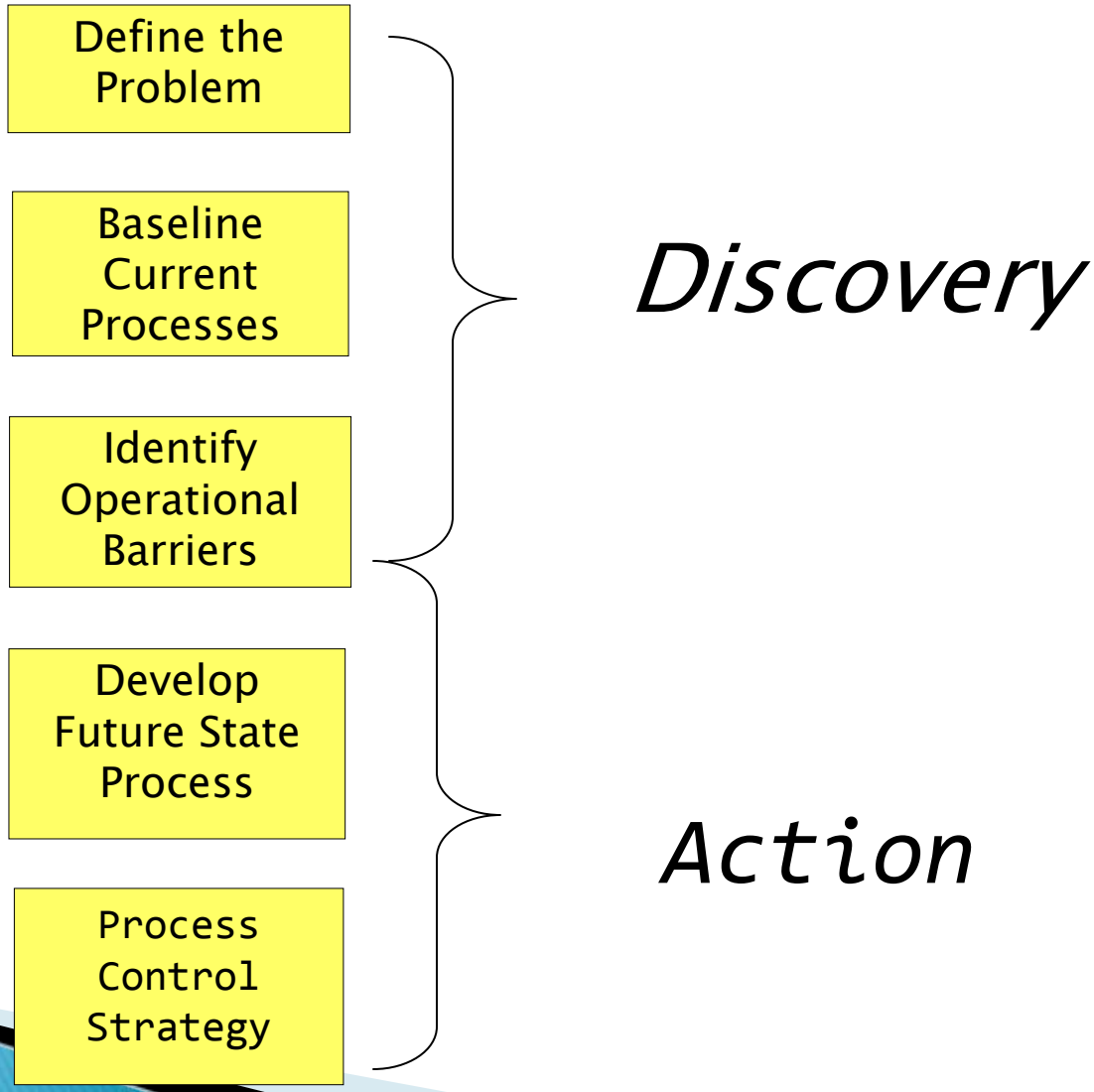
MRSA Phase One

- Our health care engineers partnered with and trained front-line workers to use lean and positive deviance approaches
- Focused on sharing evidence and methods, coaching front-line staff teams to lead instituting systems changes to systematize processes and sustain practices.
- Regular measurement and feedback of adherence to enhance adoption.
- Weekly huddle of all hospital teams to identify barriers & facilitators, review and reinforce progress, share best practices, strategize about spread and solutions.
- Collaboration teleconferences

Lean Tools


Define the Problem
Project Charter
Baseline Current Processes
Identify Operational Barriers
Process Map
Check sheet
Process Observation Worksheet
Spaghetti Diagram
Develop Future State Process
Lean Tools
Process Control Strategy
Process Control Plan

Integrated Lean/PD approach

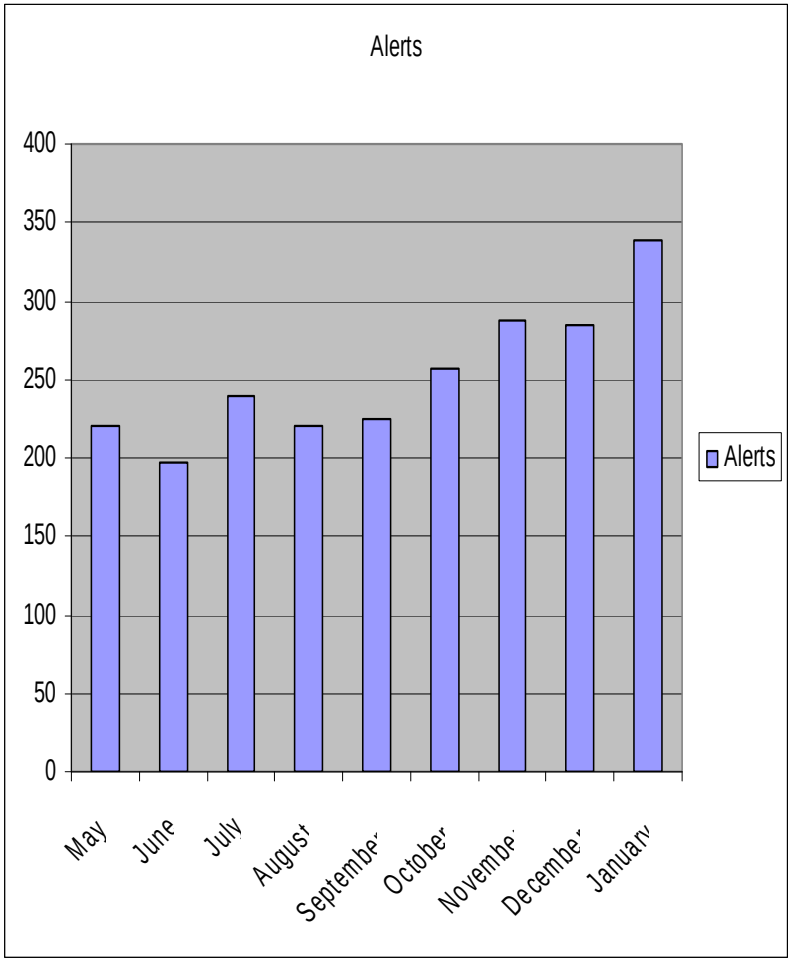


Discovery and Action Dialogues

- Informal meetings held with front line staff to discuss the current status of the process
- Incorporate as much front line staff as possible
- The goal is to 'discover' the issues and potential solutions and then take 'action' as rapidly as possible.
- It is easier to
  than to *"think your way into a new way to acting"*

An Operational Citywide Electronic Infection Control Network: Results from 1st Year

- *Infection control is a regional problem, requiring a coordinated effort*
- *Created a citywide electronic notification system to prospectively track all known patients with MRSA*
- *Currently track 17,000 patients with a history of MRSA infection or colonization across Indianapolis.*
- *Since May 2007, delivered 2698 admission alerts on patients with a history of MRSA, 19 percent based on data from another institution.*
- *20 infection control providers (ICPs) spanning 16 hospital*



Kho, Lemmon, Dexter, Doebbeling AMIA 2008

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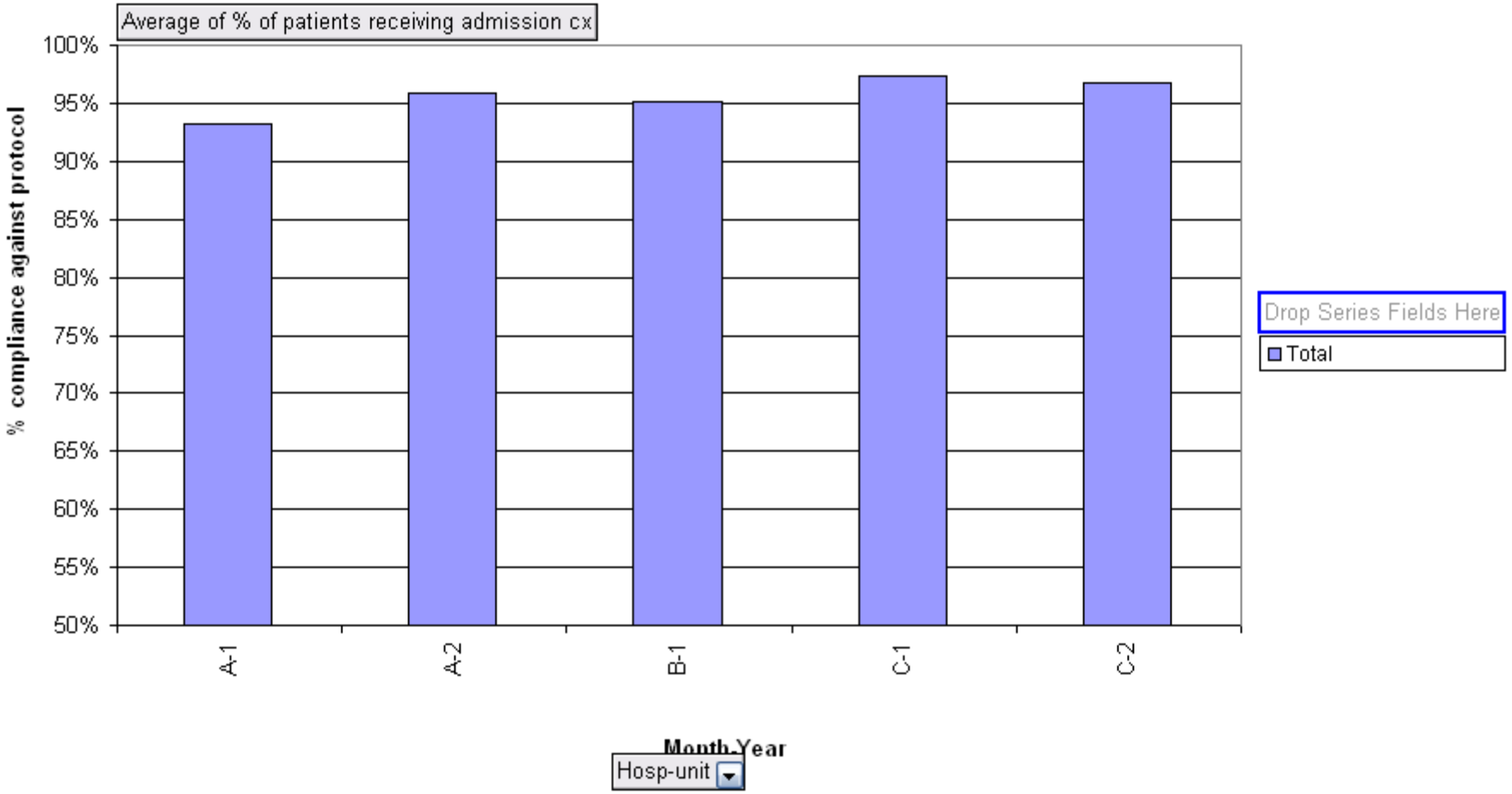
Admission Culture Compliance for Study Units (1/08-12/08)



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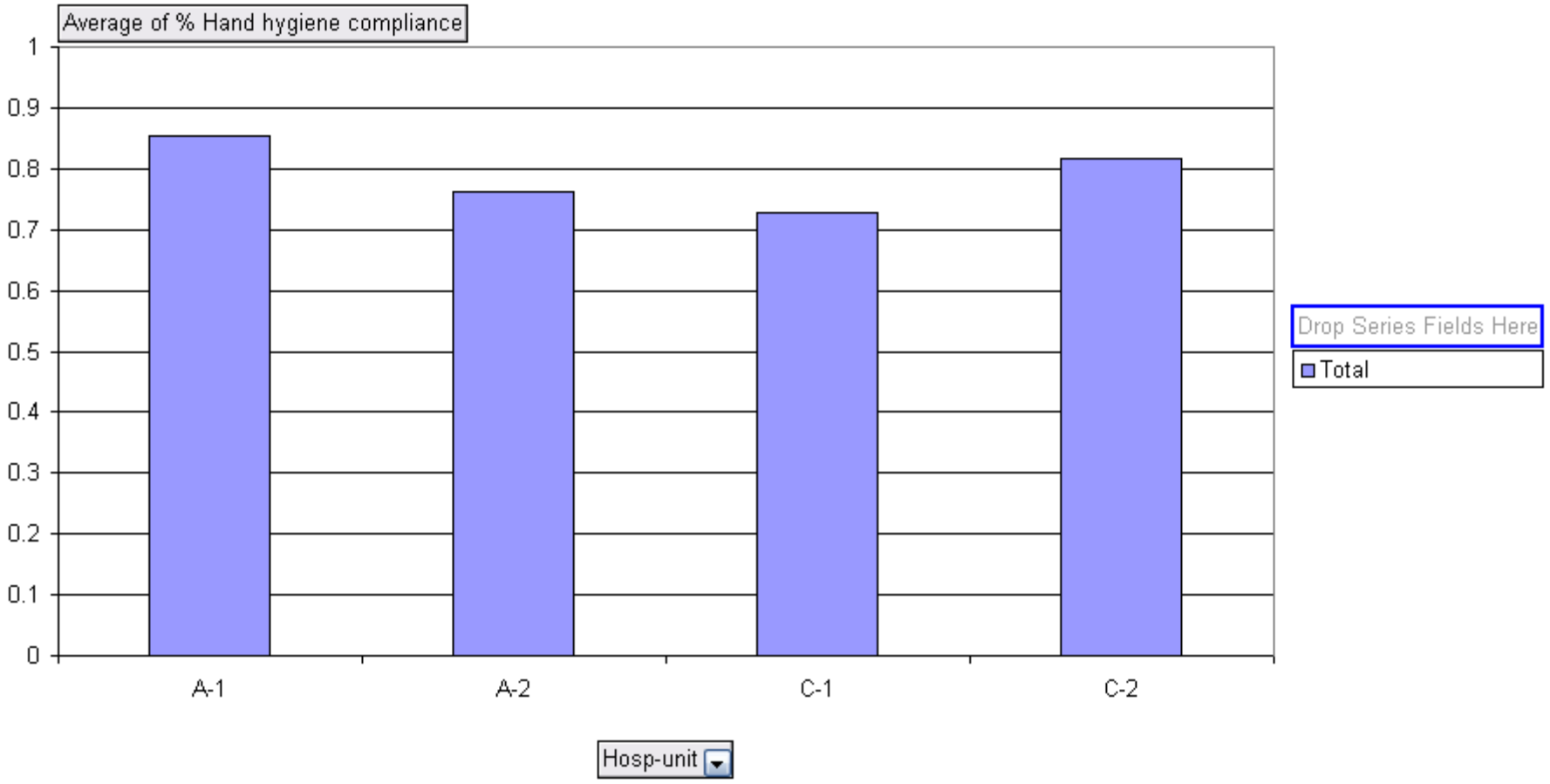
Hand Hygiene Compliance for Study Units (1/08-12/08)



MRSA Phase One Results

- Significant improvement in process measure adherence to 80->95%
- Pre and post intervention results for first three hospitals mean of 60% reduction on study units over 9-12 months
- ~ 20% reduction MRSA infections hospital wide
- Reduction in level of MRSA among S. aureus (4th hospital)
- Reduction in associated BSIs and UTIs (4th hospital)

- Presented at Academy Health, AHRQ and AMIA 2008, 2009

MRSA Phase Two

- What is Positive Deviance?
- Technique to engage front line staff in owning & improving processes and sustaining change
- Based on identification of practices of used by ‘positively deviant’ staff/departments
- Critical for staff involvement/buy-in

MRSA Phase Two – Lessons Learned

- System redesign approach of training, consultation and coaching front-line staff seems to be strong, sustained approach
- Importance of buy-in from highest institutional levels crucial
- Enthusiasm builds from within because redesign teams own it!
- Informatics tool helpful in identifying great cross-over of MRSA patients in hospitals

Hospital Acquired Infections Assessment Center

Participants (Collaboratives)

- 5 ACTION HAI Awardee Partners
  - Denver/Parkland (2 hospitals)
  - Iowa (16 hospitals)
  - Yale (5 hospitals)
  - HRET (4 hospitals)
  - AIR/Carilion (6 hospitals)

Total = 33 hospitals

Hospital Characteristics

Hospital Types	#Hospitals	# Beds (Range)	# ICPs (Range)
Rural	13	25 – 130	.5 – 1.5
Tertiary	18	146 – 1106	1 – 11
Community	12	25 – 529	1 – 4
Government	3	477 – 955	2 – 11
Teaching	11	376 – 1106	2 – 11

* Total > 33 due to hospitals fitting into multiple types.

Methods

- Multi-method approach using both qualitative and quantitative data collection
- Qualitative portion
  - Case report forms and open-ended items from 3 Information collection forms
  - Thematic analysis and synthesis
- Quantitative portion
  - 3 data collection forms (5-point Likert items)
  - “Hypothesis raising” (Convenience samples)

HAI Reduction Activities

- Bundle Implementation – CLABSI, CAUTI, VAP, MRSA, SSI, Sepsis, SCIP
- Color-coded Armbands
- Education/Training
- Environmental Cleaning
- Flu Vaccination
- Increasing Compliance
- Nurse Champion Program
- Product Testing
- Statewide Collaboratives

HAI: Barriers & Challenges to Infection Prevention at the Point of Care

Key Barriers

- Problems when leadership support is MIA, naivete' about resource requirements
- Challenges of unanticipated change (turnover of residents, champions in units, nursing staffing, redesign of units, new information system)
- Demonstrating cost effectiveness, limited additional funds
- Competing priorities, level of required documentation in daily work
- Use and documentation of bundle variables inconsistent- Real time data collection, burden of reporting
- Availability of time, staff and effective approaches for training
- Need to convince professionals EBPs are beneficial to them and their patients—given limited time
- Mix of hospitals (large, small) and unique challenges (surveillance) of a small rural community, non-profit hospital
- Evolve guidelines based on developing evidence.
- Time, persistence and structured communication needed for practice/culture change to take hold.
- Involving key stakeholders (unit champions, front-line) integrating into the unit

Key Facilitators

- Teamwork Crucial (the leader isn't always in the front (bicycle racing team))
- Mechanism to provide staff with strong evidence-base
- Communicate expectations and require accountability
- Do what works locally—ability to adapt to local context
- Promise of providing back data one of greatest motivators.
- Strong physician and nurse leadership and champions
- IT develops an electronic checklist (data warehouse) to allow data queries and feedback compliance on process measures
- Top executives make rounds and solve problems
- Mandatory state reporting (NHSN) and changes in CMS reimbursement
- Leadership support results in sufficient time for front-line staff to improve processes, change systems and achieve success
- Communication, involvement of front-line staff imperative
- Celebrating the successes

Structured Case Report Form: 7 Lessons Learned Themes

1. Fostering Change
2. Communication & Collaboratives
3. Local, Focused Implementation
4. Frontline Staff Engagement
5. Learning Organizations
6. Support, Resources & Accountability
7. Feedback & Reinforcement

Info Collection & Reporting Summary

- Top Challenges identified were:
  - Changing habit
  - Acquiring resources (people, $$)
  - Getting buy-in from staff, physicians and administration
  - Time – burden on staff to learn and implement
- Lessons Learned were:
  - People = engage, get local buy-in, value of champions, peer support
  - Implementing Processes = simplify, present evidence, be persistent, involve ancillary departments
  - Education = difficult to reach all people in right way
  - Time = culture change takes time, be patient
  - Might not get it right the first time
- 59% felt their facility addresses patient safety and infection prevention well

Discussion

- Organizational change & sustainability strategies needed.
- Change initiatives in hospitals need both top-down support and bottom-up involvement.
- Engaging staff and physician support critical.
- Resource and data intensive.
- Start small, build on success.
- Collaboratives foster teamwork!

Lessons Learned – Fostering Change

- Identify current practices, opportunities and action plans for improvement
- Utilize strengths of individuals to motivate and sustain changes in behaviors—nurses really want to train younger nurses and mentor
- Posting results engages staff, patients, families
- After eliminating BSIs for a year in intervention unit, then every subsequent BSI is reviewed and discussed by an interdisciplinary team
- Use multiple venues to raise awareness and reinforce practice (start with medical leadership, then staff, getting board involved, posting BSI rates in bathrooms)

Lessons Learned – Communication & Collaboratives

- Standardize practices and action plans for improvement
- Compare performance in a meaningful way
- Fostering sharing, teamwork, competition
- Selection of awards for innovation

Lessons Learned – Local, Focused Implementation

- Start small with enthusiastic, committed team
- Posting results engages staff, patients, families
- Fostering unit-based competitition
- After eliminating BSIs for a year in intervention unit, then every subsequent BSI is reviewed and discussed by an interdisciplinary team

Lessons Learned – Frontline Staff Engagement

- Once physician (ICU) unit leadership adopts goals to be the best in hand hygiene for the hospital—strong driver of change
- Nurses encouraged by manager and ICU directors to "call out" non-adherence and teasing/cajoling low adherence providers
- Multiple champions, staff engagement helps overcome turnover in project leadership
- Regularly (daily) measuring and feeding back hand hygiene at unit level really reinforces adherence

Lessons Learned – Learning Organization

- Mechanism for capturing novel approaches that work
- Program for clinicians in TRIP, reviewing evidence, coaching TRIP project, write a manuscript
- Advanced Practice Institute provides training in implementing EBP, critique of CPGs, and hospital-specific action plans
- Training needed in leadership and organizational transformation
- Redesigning workflow and practices so routine EBP is the natural thing to do

Lessons Learned – Support, Resources & Accountability

- Developing implementation plans, audit tools, assess sustained translation of prevention interventions in clinical practice.
- Need to use strength and experiences of champions key to implementing and sustaining changes over time
- IT develops an electronic checklist whenever central line inserted to track denominators (data warehouse) for data queries and feedback compliance to units
- Sustainable, timely data collection strategies key

Lessons Learned – Feedback and Reinforcement

- Nurses encouraged by manager and ICU directors to “call out” non-adherence and teasing/cajoling low adherence providers
- Regularly (daily) measuring and feeding back hand hygiene at unit level really reinforces adherence
- IT develops an electronic checklist whenever central line inserted to track denominators (data warehouse) for data queries and feedback compliance to units
- Integrating checklists into work rounds, electronic systems is effective
- Collect limited data that is most relevant to showing impact of interventions
- Data collection needs to have face validity with clinicians and be timely

Future Research

- Identify effective strategies for implementing, spreading & sustaining HAI reduction programs
- Better understanding (scenario based training) of organizational factors predicting success
- Alternate approaches to redesign practice and workflow
- Novel strategies for electronic data capture, analysis and feedback