

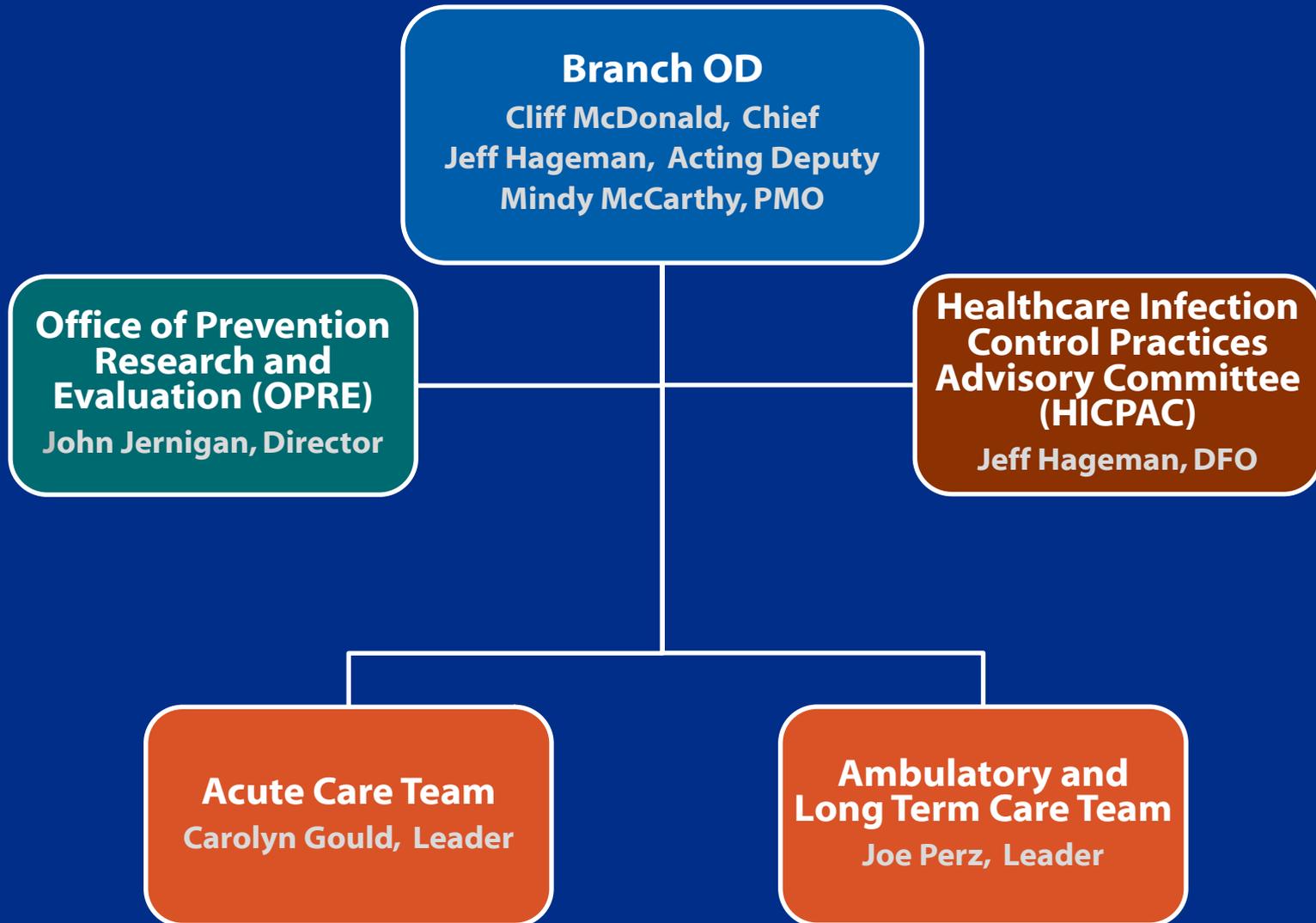
# Evaluating CDC HAI Prevention Activities

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# Prevention and Response Branch



# Translational Research: Moving Science to Action

- Translational research/evaluation involves moving knowledge and discovery gained from the basic *and epidemiologic sciences* to its application in clinical and community settings.

# Five Phases of Translational research<sup>1</sup>

- **T0** is characterized by the discovery of opportunities and approaches to health problems through technologic advances, surveillance, outbreak investigation, and epidemiologic studies
- **T1** seeks to move discovery into first application of candidate interventions in healthcare settings and patient populations
- **T2** assesses the value of the candidate interventions leading to the development of evidence-based guidelines
- **T3** attempts to move evidence-based guidelines into health practice, through delivery, dissemination, and diffusion research
- **T4** seeks to evaluate the “real world” health outcomes of population health practice

<sup>1</sup>Adapted from: *Genet Med* 2007;9(10):665-674 and <http://www.iths.org/about/translational>

# CDC SHEPherD Program

**Prevention  
Epicenters  
Program  
(T0-T2)**

**Health  
Department  
Supplement  
(T0, T2-T4)**

**Task Order  
System  
(T0, T2, T3)**

**IAAs  
&  
IPAs**

# Five Phases of Translational research<sup>1</sup>

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## ***...Evaluation of Public Health Practice***

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# Current HAI-Prevention Related Evaluations

- HHS HAI Action Plan
  - AHRQ, others
  - IMPAQ/RAND
- Prioritization of HICPAC Recommendations
  - CDC
  - RTI
- Algorithmic Detection of CLABSIs
  - CDC
  - Premier Hospitals
- Hospital-acquired Conditions--Present on Admission (HAC-POA)
  - CMS, others
  - RTI
- Dynamic Modeling for Analyzing National HAI Prevention Strategies
  - CDC
  - Jack Homer

# Current HAI-Prevention Related Evaluations (cont'd)

- Training Evaluation
  - CDC
  - FY 2011
- ASTHO Interviews Regarding State Legislation
  - CDC
- NACCHO Assessment
  - CDC
- CUSP Stop BSI Data Validation Project
  - AHRQ
  - HRET
- Assessments of HAI Burden
  - CDC
- Evaluating the Impact of ARRA HAI Funding to State Health Departments
  - CDC
  - IMAQ/RAND

## \$50 million in American Recovery and Reinvestment Act (ARRA) for HAI Prevention

- Stipulated that funds go to states
  - \$10 million to CMS to enhance state surveys of ambulatory surgical centers
  - \$4 million for Emerging Infections Program
  - \$35.8 million to state health departments through CDC's Epidemiology and Laboratory Capacity Grants

# Recovery Act Funding: ELC Activities (\$35.8M)

## A: State HAI program

- State HAI plan and State HAI coordinator
- Multidisciplinary committee for State HAI program
- Report to CDC on progress in HAI prevention

## B: Expand NHSN

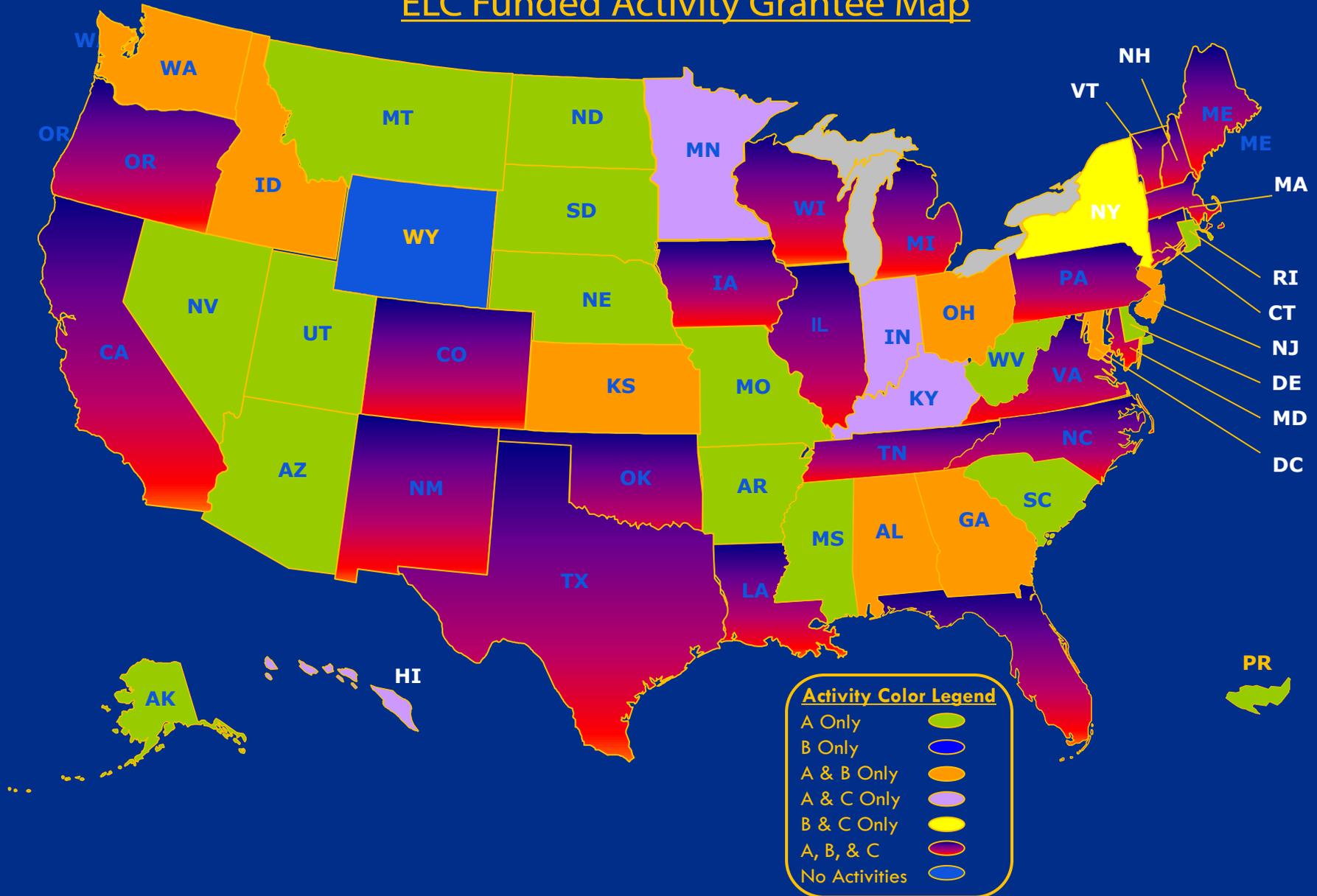
- NHSN state coordinator
- Training for hospitals in state and NHSN expansion
- NHSN reporting on HHS targets
- Validation studies in hospitals in state

## C: State Prevention Collaboratives

- Training for hospitals in state
- Linkage to other HHS and private sector initiatives
  - AHRQ, CMS
- Reductions in HHS Prevention targets

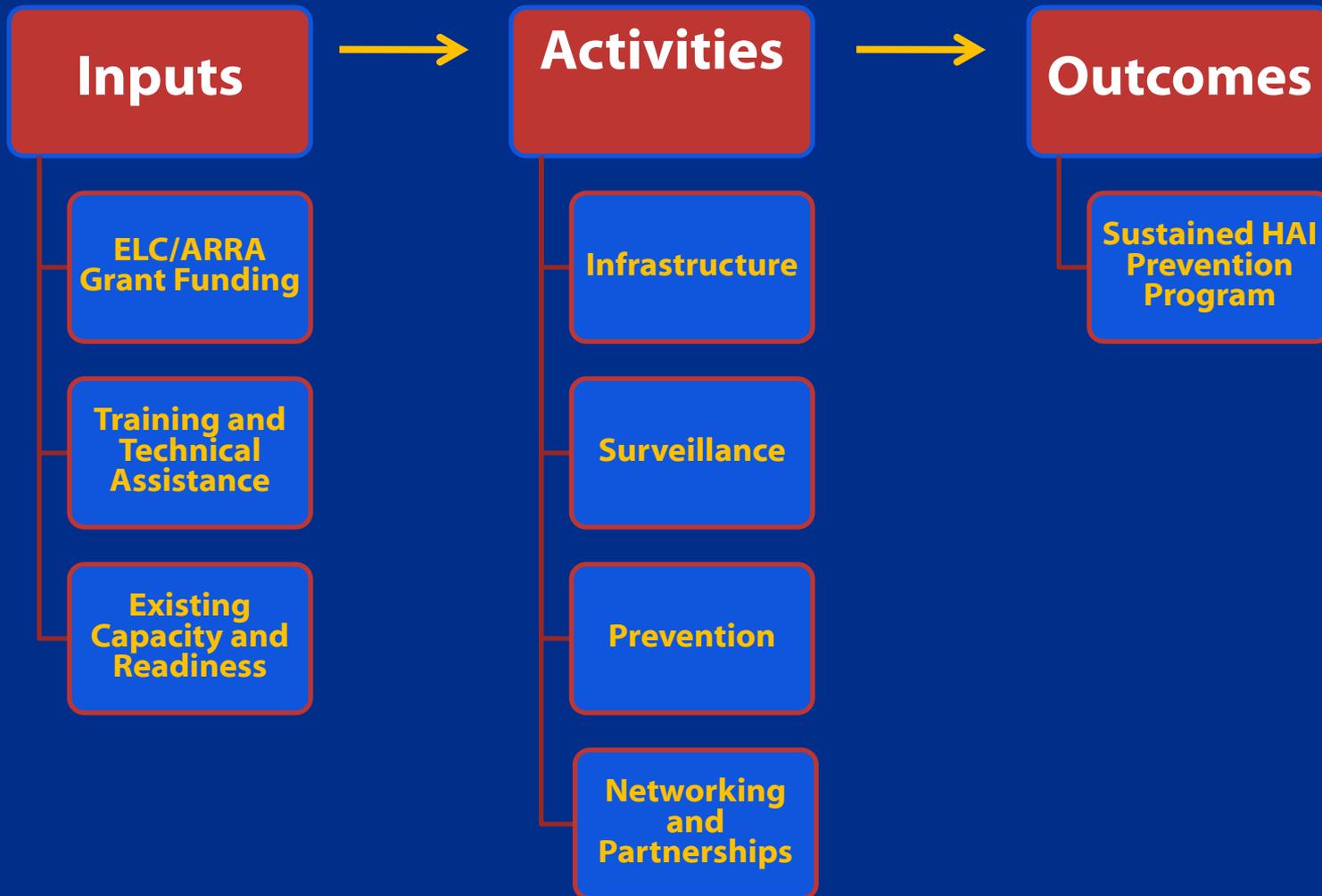
# Healthcare-associated Infections (HAI): Recovery Act 2009

## ELC Funded Activity Grantee Map



# Evaluation Framework for ARRA HAI Prevention: ELC

*Goal: To make patients safer by increasing state health department capacity for sustained HAI prevention*



# Evaluation Framework for ARRA HAI Prevention: ELC Infrastructure

## Activities

- Designate state HD staff to form HAI prevention program (A,B,C)
- Develop and submit a state HAI action plan (A,B,C)
- Assemble advisory group of champions and partners (A,B,C)
- Integrate lab activities into HAI program
- Develop framework/protocols for outbreak monitoring for HAIs (A,B,C)

## Year 1 Outcomes

- Increased IC Staffing and Expertise
- Enhancing partnership w/other state agencies, consumers, and hospitals
- Shared communication and knowledge transfer structures
- Increased dissemination of reporting protocols

## Year 2+ Outcomes

- Endorsed and executed state action plan
- Active and engaged multidisciplinary advisory group
- Enhanced public health lab capacity for HAI response prevention efforts
- Adoption of reporting protocols

**Sustained state-based HAI program**

# Evaluation Framework for ARRA HAI Prevention: ELC Surveillance

## Activities

- Use NHSN or similar system for outcome measurement (A,B,C)
- Actively promote use HAI surveillance system (B, C)
- Develop strategies to understand and enhance data quality (B)

## Year 1 Outcomes

- Increased NHSN facility enrollment, training and technical support
- Planned, initiated or executed NHSN validation activities
- Increased access to NHSN data for evaluation and targeted prevention efforts

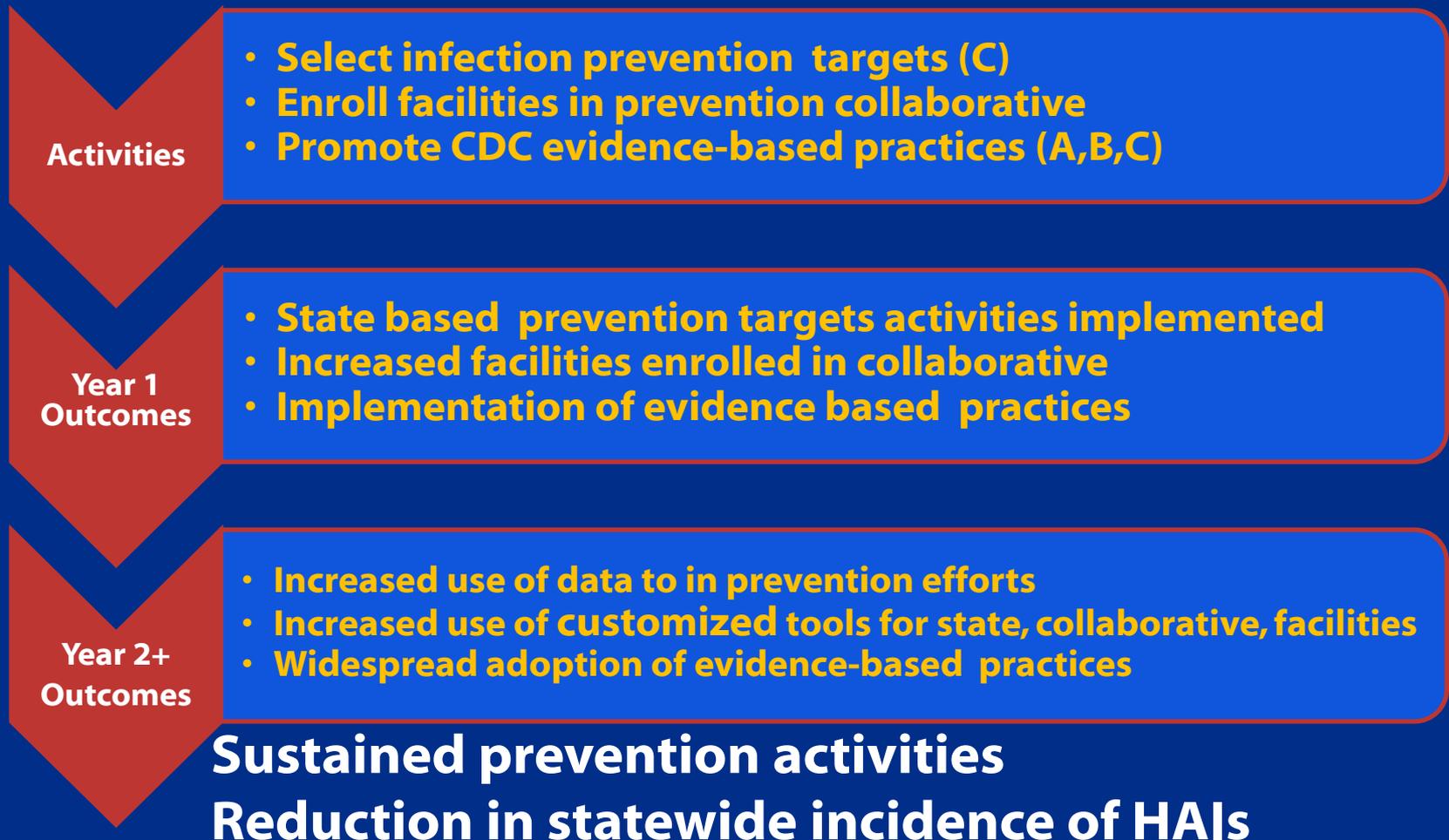
## Year 2+ Outcomes

- Increased outbreak /cluster reporting
- Sustained validation activities
- Improved quality of data reported to NHSN
- Regular use of NHSN data for prevention

**Sustained surveillance activities**

# Evaluation Framework for ARRA HAI Prevention: ELC

## Prevention



# Evaluation Framework for ARRA HAI Prevention: ELC

## Networking and Partnerships

### Activities

- Network with state-level stake-holders (A,B,C)
- Liaise with CDC to take advantage of expertise and resources (A,B,C)
- Learn best-practices from other states (A,B,C)
- Develop and maintain communication channels w/state agencies, facilities, public (A,B,C)

### Year 1 Outcomes

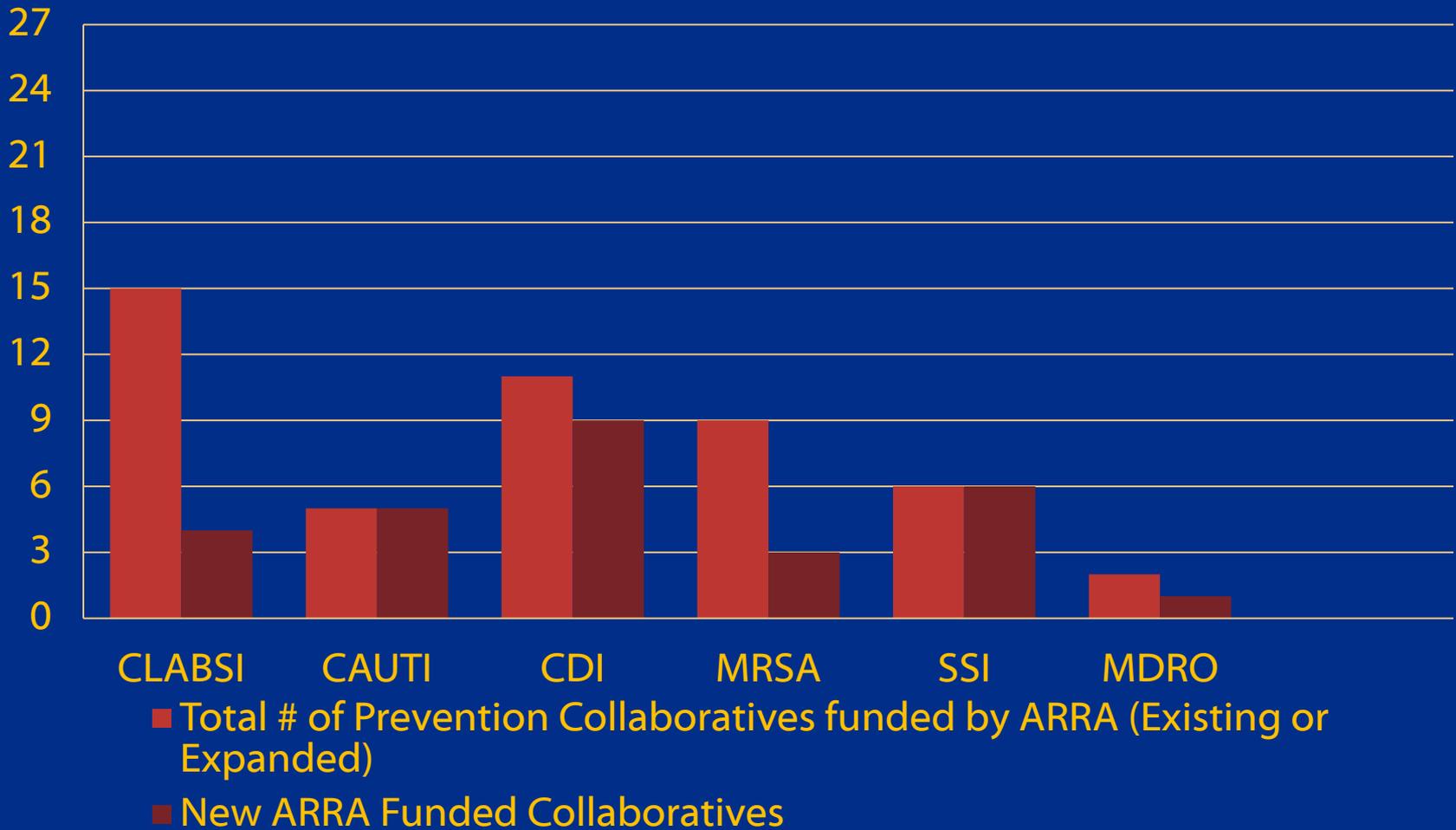
- Increased HAI staff representation at state-level stakeholder meetings
- Increased requests for CDC and SME technical assistance
- Implementation of communication and knowledge transfer structures with other public agencies, facilities, and organizations across the state

### Year 2+ Outcomes

- Increased number of formal partnerships
- Enhanced structures for cross-state collaborations
- Implementation of protocols for sharing data w/facilities and public

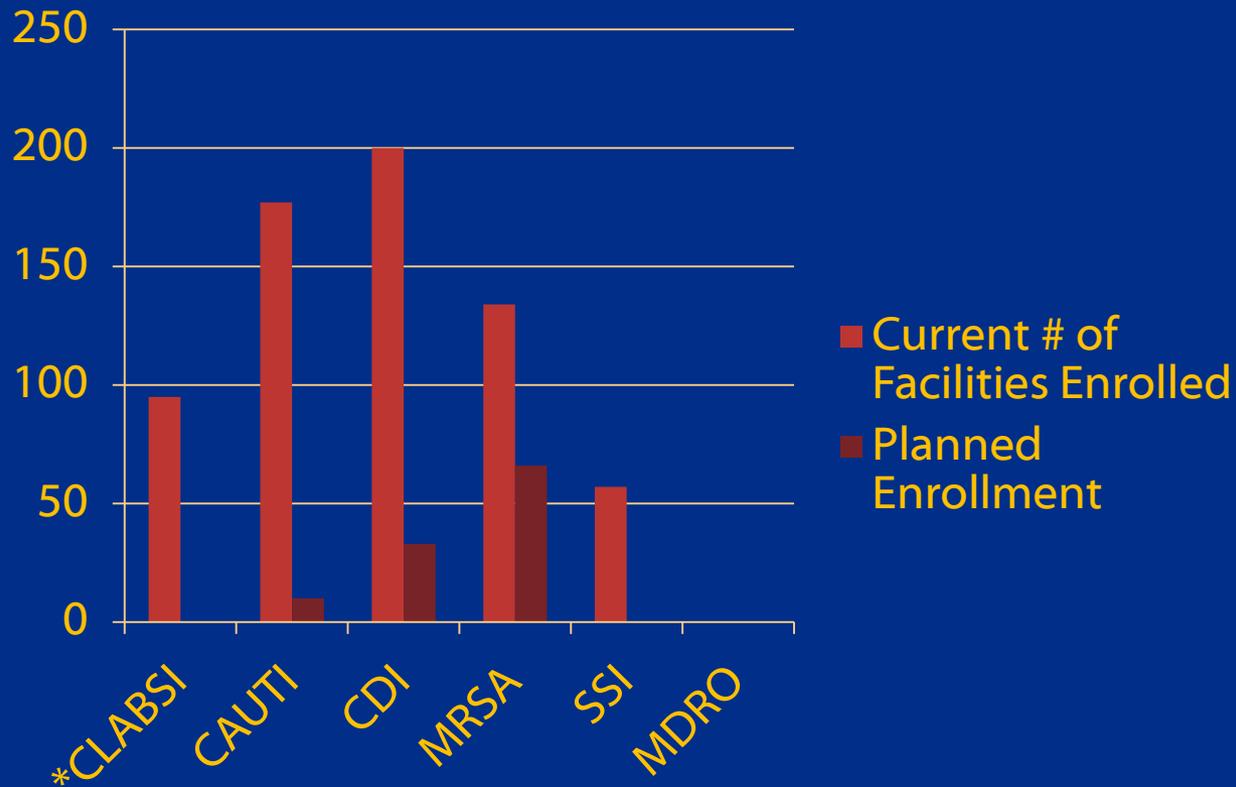
**Sustained and formalized partnerships with other state agencies, organizations and partners regarding HAI prevention**

## Number of Act C Funded States with Prevention Collaboratives Underway by Infection



y=27 Act C Funded States

## Current & Planned Prevention Collaborative Facility Enrollment by Infection



•CLABSI/CUSP- # of facilities enrolled was not a standard performance measure for existing collaboratives, information is representative of 9 out of a total of 14 HD's

•y=27 Act C Funded States

•Total current = 663

# Resources for State Partners in HAI Elimination

## ❑ Toolkits

- CLABSI
- SSI
- CAUTI
- MRSA
- CDI
- Long Term Care



## ❑ Slidesets

- Core and supplemental prevention strategies

## ❑ Baseline and interval prevention practices assessment form

- Standardized questions for use by states

## ❑ Environmental assessment toolkit

- Assessment form (checklist)
- Spreadsheet

## ❑ Long term care transfer assessment tool

# Prevention Strategies

- **Core Strategies**
  - High levels of scientific evidence
  - Demonstrated feasibility
- **Supplemental Strategies**
  - Some scientific evidence
  - Variable levels of feasibility

\*The Collaborative should at a minimum include core prevention strategies. Supplemental prevention strategies also may be used. Most core and supplemental strategies are based on HICPAC guidelines. Strategies that are not included in HICPAC guidelines will be noted by an asterisk (\*) after the strategy. HICPAC guidelines may be found at [www.cdc.gov/hicpac](http://www.cdc.gov/hicpac)

## Prevention Strategies: Core

- Contact Precautions for duration of diarrhea
- Hand hygiene in compliance with CDC/WHO
- Cleaning and disinfection of equipment and environment
- Laboratory-based alert system for immediate notification of positive test results
- Educate about CDI: HCP, housekeeping, administration, patients, families

# Prevention Strategies: Supplemental

- Extend use of Contact Precautions beyond duration of diarrhea (e.g., 48 hours)\*
- Presumptive isolation for symptomatic patients pending confirmation of CDI
- Evaluate and optimize testing for CDI
- Implement soap and water for hand hygiene before exiting room of a patient with CDI
- Implement universal glove use on units with high CDI rates\*
- Use sodium hypochlorite (bleach) – containing agents for environmental cleaning
- Implement an antimicrobial stewardship program

\* Not included in CDC/HICPAC 2007 Guideline for Isolation Precautions



***Clostridium Difficile Infection (CDI)***  
**Baseline Prevention Practices Assessment Tool**  
**For States Establishing HAI Prevention Collaboratives**  
**Using ARRA Funds**

10. How long are patients with CDI kept on Contact Precautions?

- For duration of diarrhea
- For duration of hospitalization – until discharge
- For a specified time period after diarrhea resolves (please specify time period: \_\_\_\_\_)
- Other (please specify: \_\_\_\_\_)

13. In your facility, are patients with CDI placed in private rooms?

- Always
- Often
- Sometimes
- Rarely
- Never/no private rooms available

## Examples of ARRA ELC Evaluation Data Sources

- ❑ **Background narratives (N=51) submitted with funding proposal (for baseline assessments)**
  - Narratives describe level of HAI activity in state at baseline
  - Systematic abstraction of narratives underway
- ❑ **Quarterly reports submitted by grantee health departments (N=51 per quarter) on ARRA related activities**
  - Barriers/facilitators to infrastructure building
  - Activities related to NHSN enrollment, training, and validation
- ❑ **External data sources to assess contextual factors (e.g., reporting mandates, demographics, etc)**

# Examples of ARRA ELC Evaluation Data Sources (Cont.)

- ❑ **NHSN**
  - Participation metrics
  - Infection specific process and outcomes data
- ❑ **Health department staff participation on meetings, webinars, and infection-specific calls hosted by CDC**
- ❑ **“Deep Dive” into small number (N=6-8) states**
  - <in-depth contextual analysis>
  - <subjects: organizational representatives, hospitals, HD, lab, survery/cert, etc.>

# ARRA ELC Evaluation: Analytic Strategies

- ❑ **Interrupted time-series analysis**
  - Assess trends in target infection rates over time
  - Considers pre-intervention trends
- ❑ **Difference-in-difference analyses**
  - Examine difference trends over time for states implementing prevention collaboratives versus those not implementing
  - Compare trends in states with different implementation strategies
- ❑ **Estimation/projection of potential infection reductions in states that did not implement prevention collaboratives based on implementation in similar states**

# ARRA ELC Evaluation: Goals

## ❑ Ultimate return on investment (ROI)...

- Trending and modeling future HAI burden/mortality reductions and healthcare system/societal costs with variable levels of future funding to state health departments for HAI activities
  - To what degree possible with existing data sources?
  - What will be needed to improve this accountability?

## ❑ Other Goals

- Tell the story of how ARRA ELC funding changed HAI prevention in individual states
- What are key organizational, policy, and partnership factors that increased the impact of ARRA ELC funding (per capita) in certain states?
  - Improve the targeting and pre-conditions for states to receive future similar funding

# Acknowledgements

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