Role of Local Health Departments in Preventing and Monitoring Healthcare-Associated Infections

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Best Practices in Core Public Health
Fall 2011 Semiannual Meeting
October 20, 2011

Healthcare-Associated Infections (HAI) National Statistics

- 1 out of 20 hospitalized patients affected (5%)
- Associated with increased mortality
- Attributed costs: $26-33 billion annually

HAIs occurring in all types of facilities, including:

- Nursing homes
- Long-term acute care facilities
- Dialysis facilities
- Ambulatory surgical centers
- Hospitals

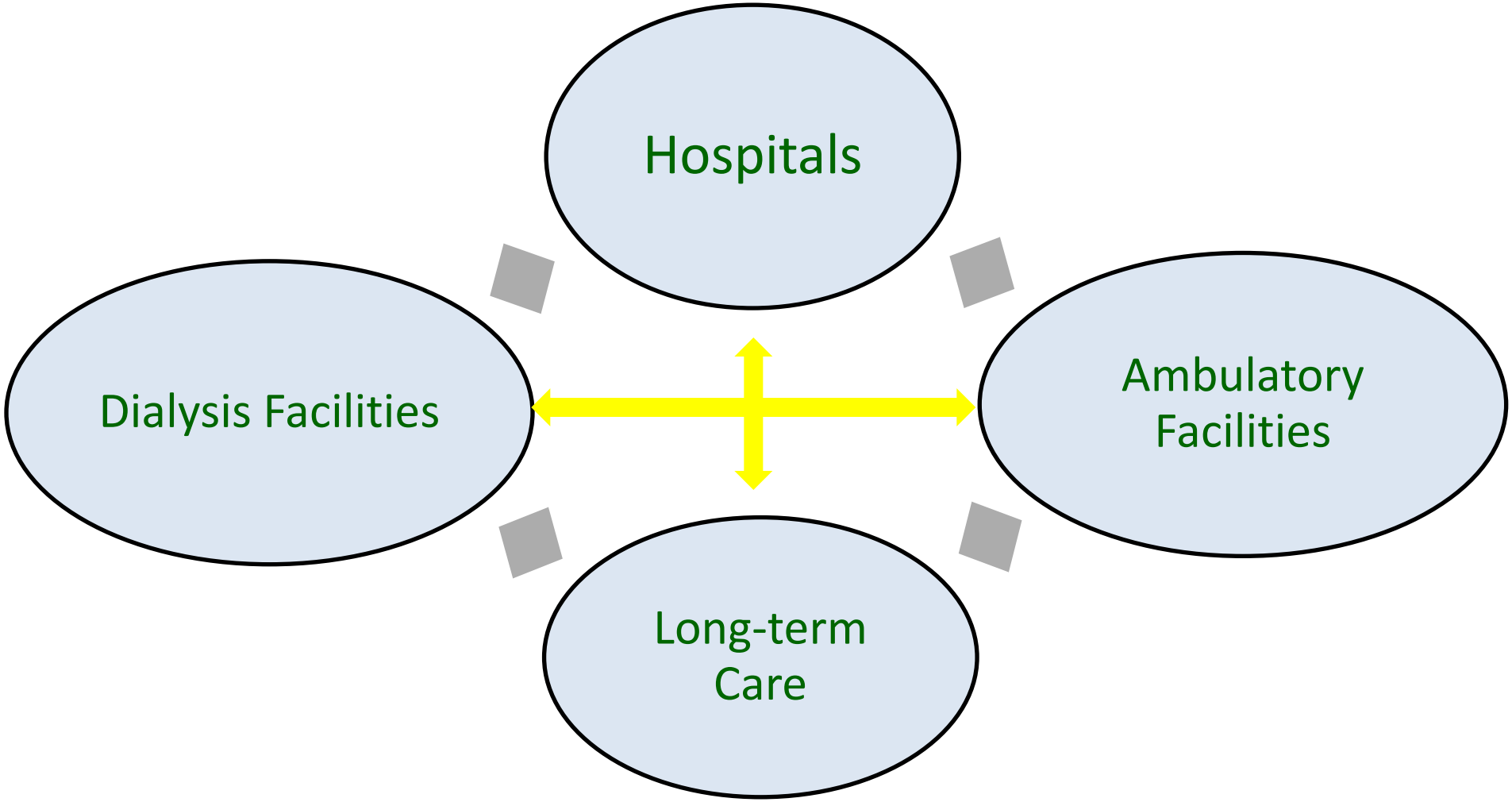
Healthcare-Associated Infections

- Device-associated infections
  - Catheter-associated urinary tract infections (**CAUTI**)
  - Central line-associated blood stream infections (**CLABSI**)
  - Ventilator-associated pneumonia (**VAP**)
- Procedure-associated infections
  - Surgical site infections (**SSI**)
- *Clostridium difficile* infections (**CDI**)

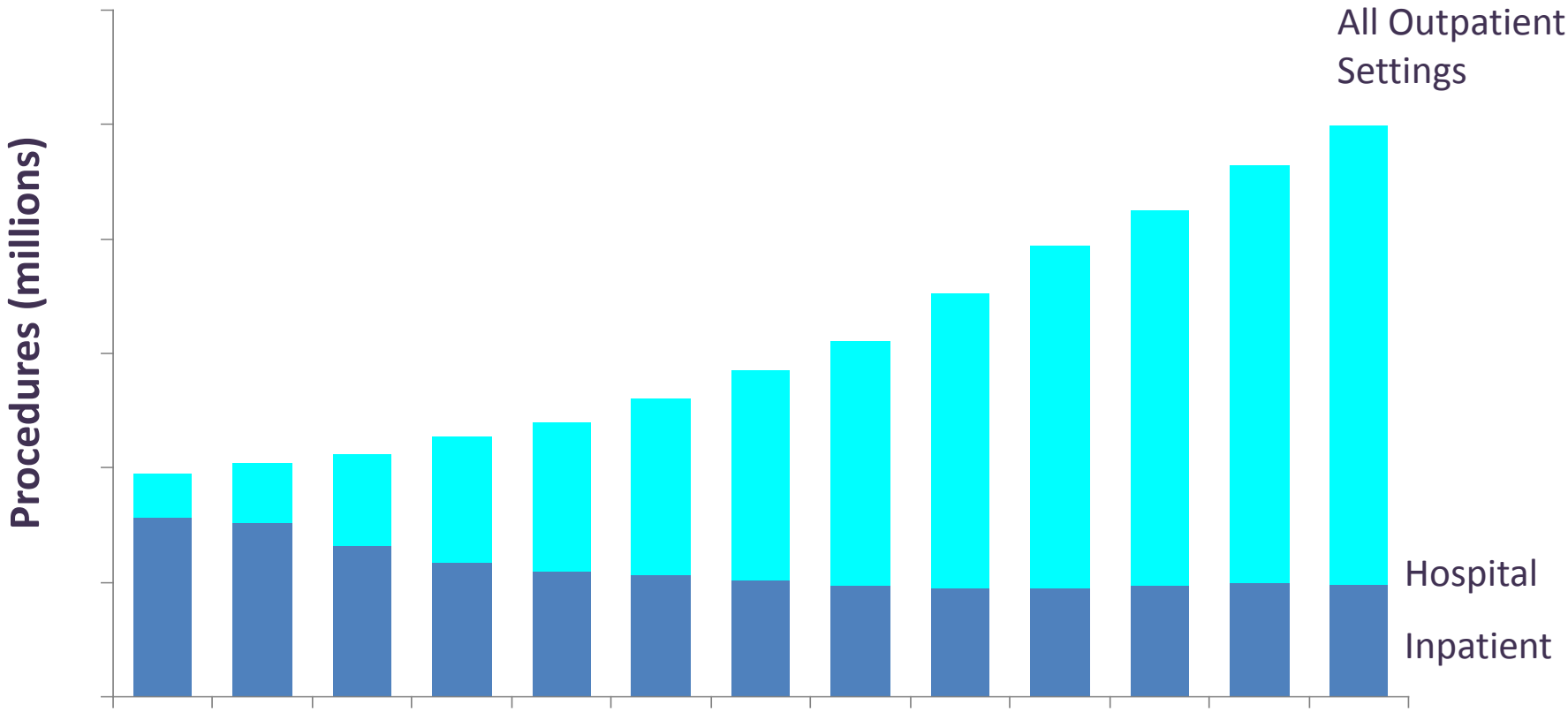
Changing Landscape of Healthcare

- Growing populations at risk
  - Aging population with underlying conditions
  - Immunocompromised individuals
  - Low birth-weight, premature neonates
  - Transplant recipients on immunosuppressive therapy
- Increasing prevalence of antimicrobial-resistant pathogens
  - MRSA
  - *Acinetobacter sp*
  - Multi-drug resistant gram negative enterobacteria
  - *Clostridium difficile*

Healthcare has Moved Beyond Hospitals



Surgical Procedures Increasingly Performed in Outpatient Settings

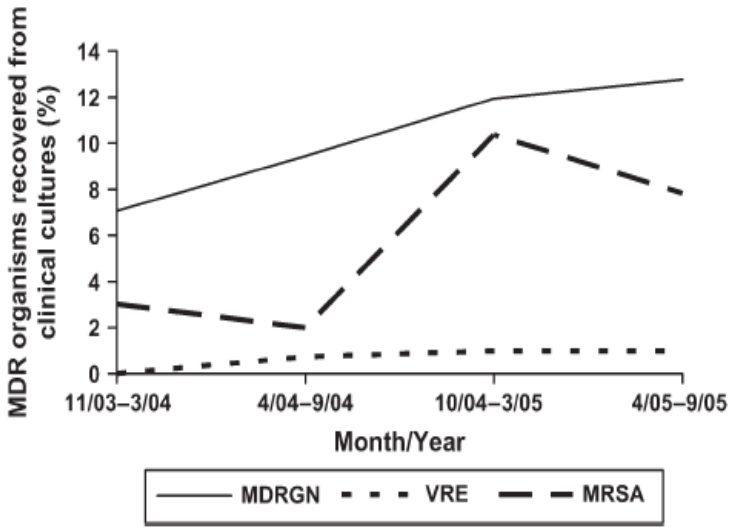


Source: Avalere Health analysis of Verispan's Diagnostic Imaging Center Profiling Solution, 2004, and American Hospital Association Annual Survey data for community hospitals, 1981-2004.
*2005 values are estimates.

Multidrug -resistant Gram Negative Infections in Longterm Care Facilities

- In one study of 1,661 clinical cultures from one LTCF (Nov 2003 to Sept 2005)
  - 180 (11%) MDR GNR
  - 104 (6%) MRSA
  - 11 (1%) VRE

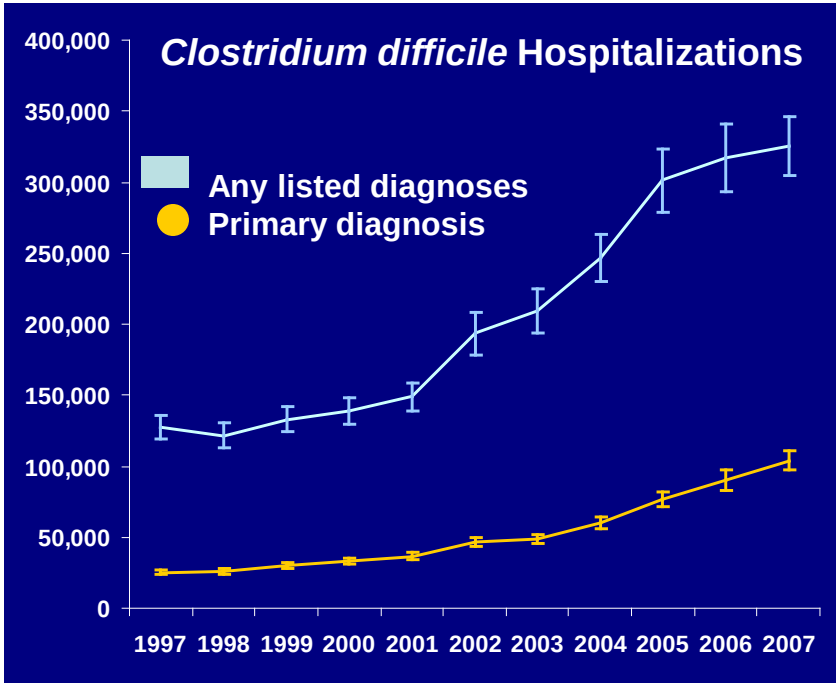
O'Fallon E, et al. J Gerontol 2009; 64:138-41



- Number of reports of sporadic cases from as early as 2004 from LTAC and LTCF

- Similar thing had been recognized with Extended Spectrum Beta Lactamases (e.g., movement from acute care into Long Term Care Facilities)

Estimate of *Clostridium difficile* Cases by Settings of Onset



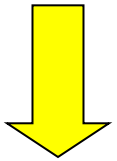
- **Hospital-acquired, hospital-onset cases**
  - **165,000, $1.3 billion in excess costs**
  - **9,000 deaths annually**
- **Hospital-acquired, post-discharge (up to 4 weeks)**
  - **50,000, $0.3 billion in excess costs**
  - **3,000 deaths annually**
- **Nursing home-onset cases**
  - **263,000, $2.2 billion in excess costs**
  - **16,500 deaths annually**

Outbreaks Due to Unsafe Injection Practices Summary of US Experience over Past Decade

- Steady increase in detected outbreaks stemming from unsafe injection practices, primarily in outpatient settings
- Approximately 20 outbreaks involving bacterial pathogens (e.g., drug resistant gram negative and invasive staph infections), typically resulting in bloodstream infections
  - Prolonged hospitalization and intravenous antibiotics
- Over 50 outbreaks of hepatitis B or C have occurred in healthcare settings
  - Majority attributable to unsafe injection practices or related breakdowns in safe care

Cultural Change in Healthcare

“Many infections are inevitable but some may be preventable“



“Each infection is potentially preventable unless shown otherwise”

Preventing Healthcare-Associated Infections: Everyone's Responsibility

Federal and State Actions

Data: Monitor and validate progress across all healthcare settings

Prevention: Identify and disseminate priority practices to prevent existing and emerging HAIs

Policy: Align payment and oversight with prevention

Capacity: Strengthen health departments to lead accountable, prevention initiatives targeted at local needs

Facility Actions

Data: Monitor progress and provide feedback to clinical staff

Prevention: Implement evidence-based practices

Policy: Ensure a culture of safety across the facility

Capacity: Provide adequate staff and appropriate trained personnel

Clinician Actions

- Correct medical device use (insertion, maintenance, and removal)
- Antimicrobial stewardship
- Prompt recognition and isolation
- Medical hygiene (hand and environmental hygiene, cleaning, and disinfection)

Federal Action Plan to Prevent HAIs

- Establish **measurable national goals**
- Improve **coordination t**o strengthen prevention, research, surveillance, incentives/oversight, and messaging strategies
- Engage external stakeholders for accountability and to implement strategies
- Approach problem in phases
  - Phase 1 – Hospitals
  - Phase 2 – Ambulatory surgical centers and dialysis centers
  - Phase 3 – nursing homes

Federal Action Plan to Prevent HAIs

- Congressionally mandated State HAI Plans
  - States are required to have a formal HAI prevention plan

- ARRA support to state health departments to prevent HAIs

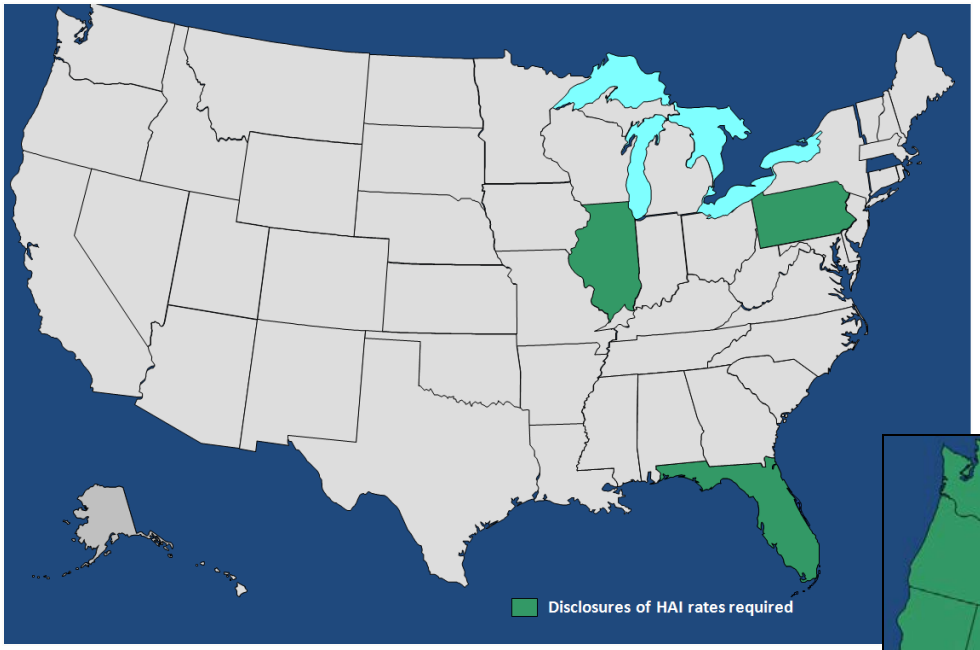
- Affordable Care Act
  - Section 3001- Hospital Value Based Purchasing Program

"…value-based incentive payments are made in a fiscal year to hospitals that meet the performance standards .

Healthcare Facility HAI Reporting to CMS via NHSN – Current and Proposed Requirements

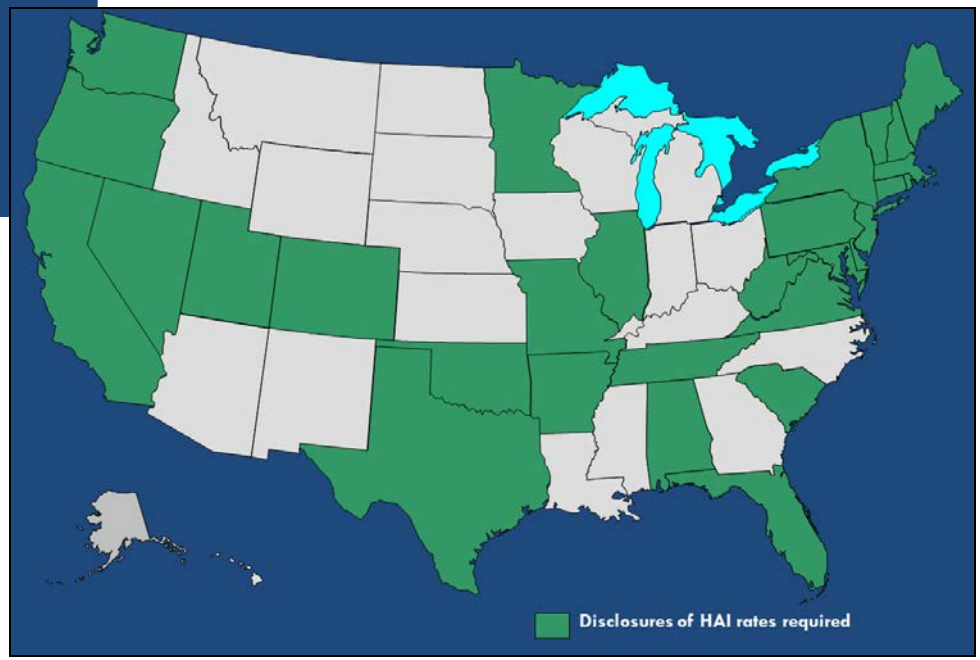
HAI Event	Facility Type	Reporting Start Date
CLABSI	Acute Care Hospitals Adult, Pediatric, and Neonatal ICUs	January 2011
CAUTI	Acute Care Hospitals Adult and Pediatric ICUs	January 2012
SSI	Acute Care Hospitals Colon and abdominal hysterectomy	January 2012
I.V. antimicrobial start *(proposed)*	Dialysis Facilities	January 2012
Positive blood culture *(proposed)*	Dialysis Facilities	January 2012
Signs of vascular access infection *(proposed)*	Dialysis Facilities	January 2012
CLABSI	Long Term Care Hospitals *	October 2012
CAUTI	Long Term Care Hospitals *	October 2012
CAUTI	Inpatient Rehabilitation Facilities	October 2012
MRSA Bacteremia	Acute Care Hospitals	January 2013
C. difficile LabID Event	Acute Care Hospitals	January 2013
HCW Influenza Vaccination	Acute Care Hospitals	January 2013
SSI *(proposed)*	Outpatient Surgery/ASCs	January 2013
HCW Influenza Vaccination *(proposed)*	Outpatient Surgery/ASCs	October 2013
* Long Term Care Hospitals are called **Long Term Acute Care Hospitals** in NHSN		

State Legislation for Public Reporting of HAIs



2004

Public Reporting of HAIs
2004 and 2010



2010

- National system for tracking and comparing HAI rates

  - Mandatory HAI reporting accounts for a surge in NHSN participation from ~ 300 hospitals initially to over 4500 hospitals in 2011
  - Primary users are healthcare facilities, prevention collaboratives, and state and federal agencies
- Open to all: hospitals, health departments, ambulatory care, dialysis facilities, etc.

Use of the NHSN Patient Safety Component is Mandated in 25 States and the District of Columbia

Central line-associated bloodstream infections (CLABSIs)	AL, AR, **CA**, CO, CT, DC, DE, HI, IL, MA, MD, NH, NJ, NV, NY, OK, OR, PA, SC, TN,TX, VA, VT, WA, WV
Surgical site infections (SSIs)	AL, **CA**, CO, DE, HI, IL, MA, MD, NH, NJ, NV, NY, OR, PA, SC, TN, TX, VT, WA
Multidrug-resistant organisms and *Clostridium difficile* infections	**CA**, DC, ME, NJ, NV, NY, PA, TN and other states considering its use
Ventilator-associated pneumonias (VAPs)	OK, PA, WA
Catheter-associated urinary tract infections (CAUTIs)	AL, NJ, PA
Central line insertion practices (CLIP)	**CA**, NH
Dialysis events	CO

Increasing adherence to CDC guidelines: Recent successes in Blood Stream Infection Prevention

Hospital ICUs:

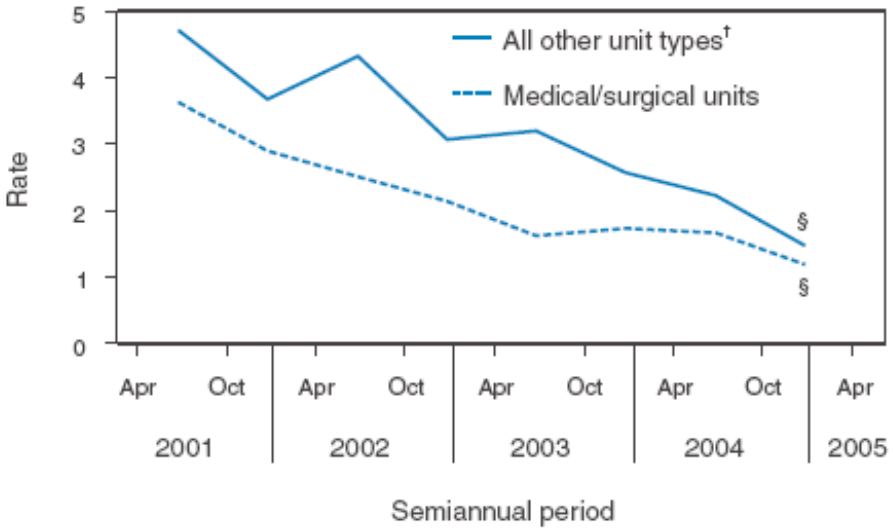
- **58% reduction (2001 vs 2009)**

Since 2001:

- **cumulative of 27,000 lives saved**
- **$1.8 billion in costs averted**

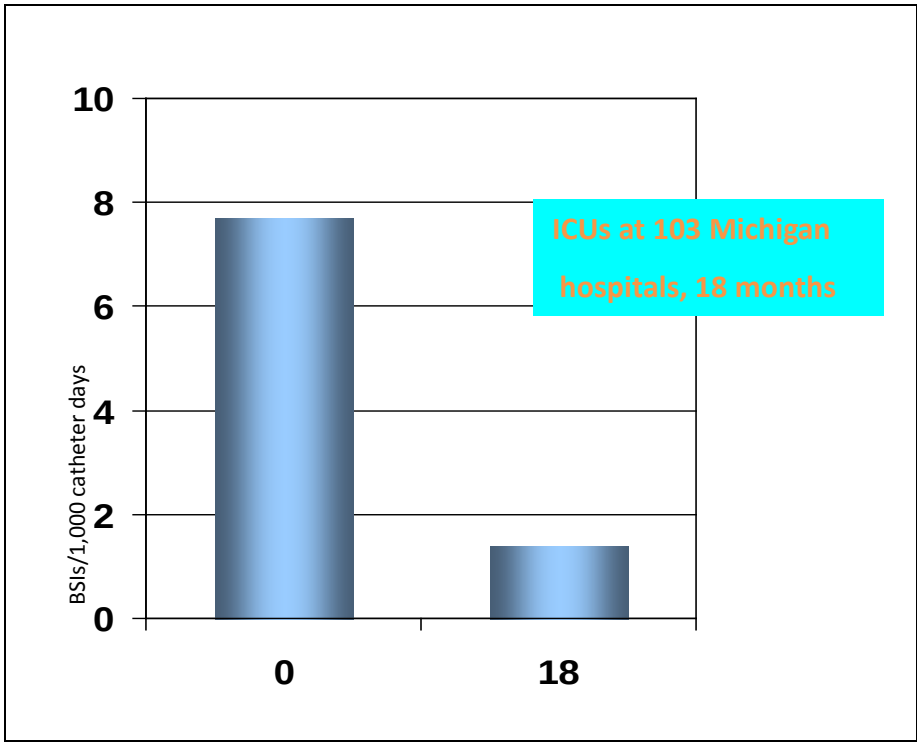
Following CDC Guidelines Reduces Healthcare-associated Infections in States- Examples of Success: Pennsylvania, Michigan

FIGURE. Central line–associated bloodstream infection rate* in 66 intensive care units (ICUs), by ICU type and semiannual period — southwestern Pennsylvania, April 2001–March 2005



* Pooled mean rate per 1,000 central line days.
† Includes cardiothoracic, coronary, surgical, neurosurgical, trauma, medical, burn, and pediatric ICUs.
§ p<0.001.

MMWR 2005;54:1013-16



Pronovost P. New Engl J Med 2006;355:2725-32.

The California Healthcare-Associated Infection Prevention Initiative (CHAIPI) 2010 results

An early evaluation from a subset of ten participating hospitals produced the following results:

- 905 patients prevented from acquiring an infection
- Hospital savings to the bottom line of over $4.1 million
- 29 % reduction in MRSA

HAI Prevention and Health Departments

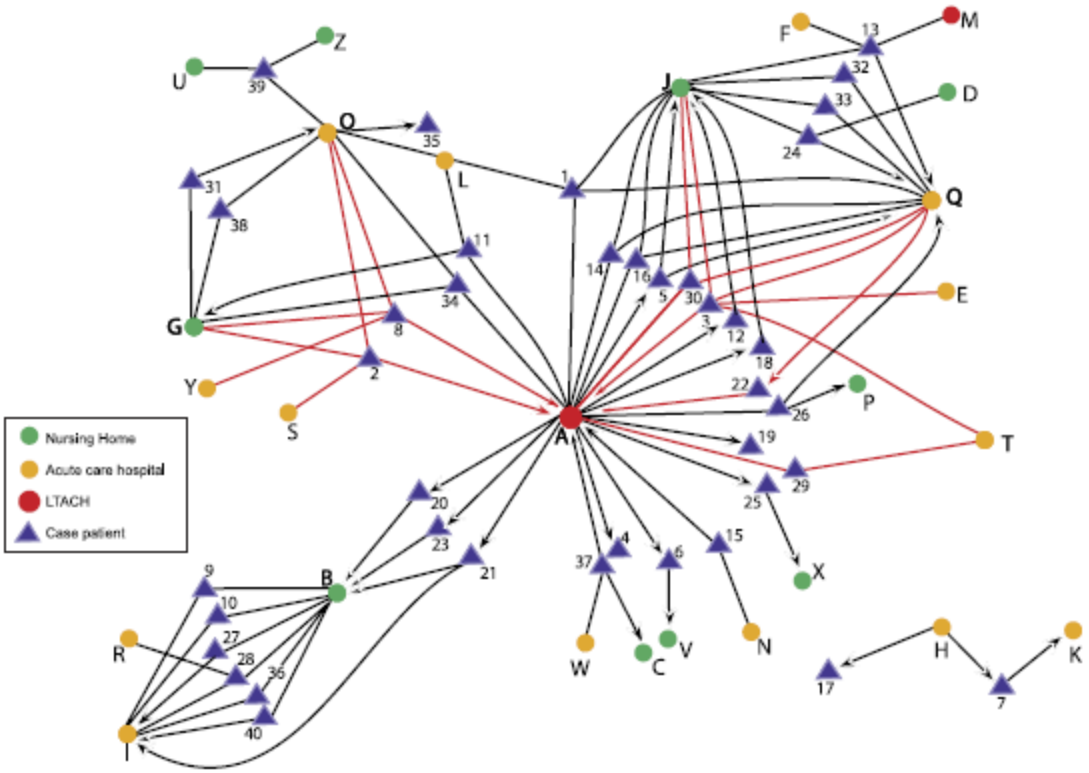
Growing focus on the role of public health:

- Neutral, external oversight
- Implementation of public reporting
- Consultative resource for HAIs
- Coordination of regional and statewide HAI prevention

HAI Prevention- Then and Now

- Then:
  - HAI prevention was focused on efforts within individual facilities
  - Public health generally not directly involved
- Now:
  - HAI prevention efforts focused at the regional, state and national level.
  - HAI prevention activities need to be coordinated across facilities.
  - Public reporting laws have engaged payers and consumers in HAI prevention.

Successful control of HAI requires coordinated, regional effort among acute and long-term healthcare facilities and health departments



Won S, Munoz-Price S, Lolans K, Hota B, Weinstein R, Hayden M. for the Centers for Disease Control Prevention Epicenter Program. Rapid and Regional Spread of Klebsiella pneumoniae Carbapenemased CID 2011:53: 532-540

Critical Interdependencies Between Public Health and Healthcare

Medical professionals play an essential role in surveillance and prevention of public health threats:

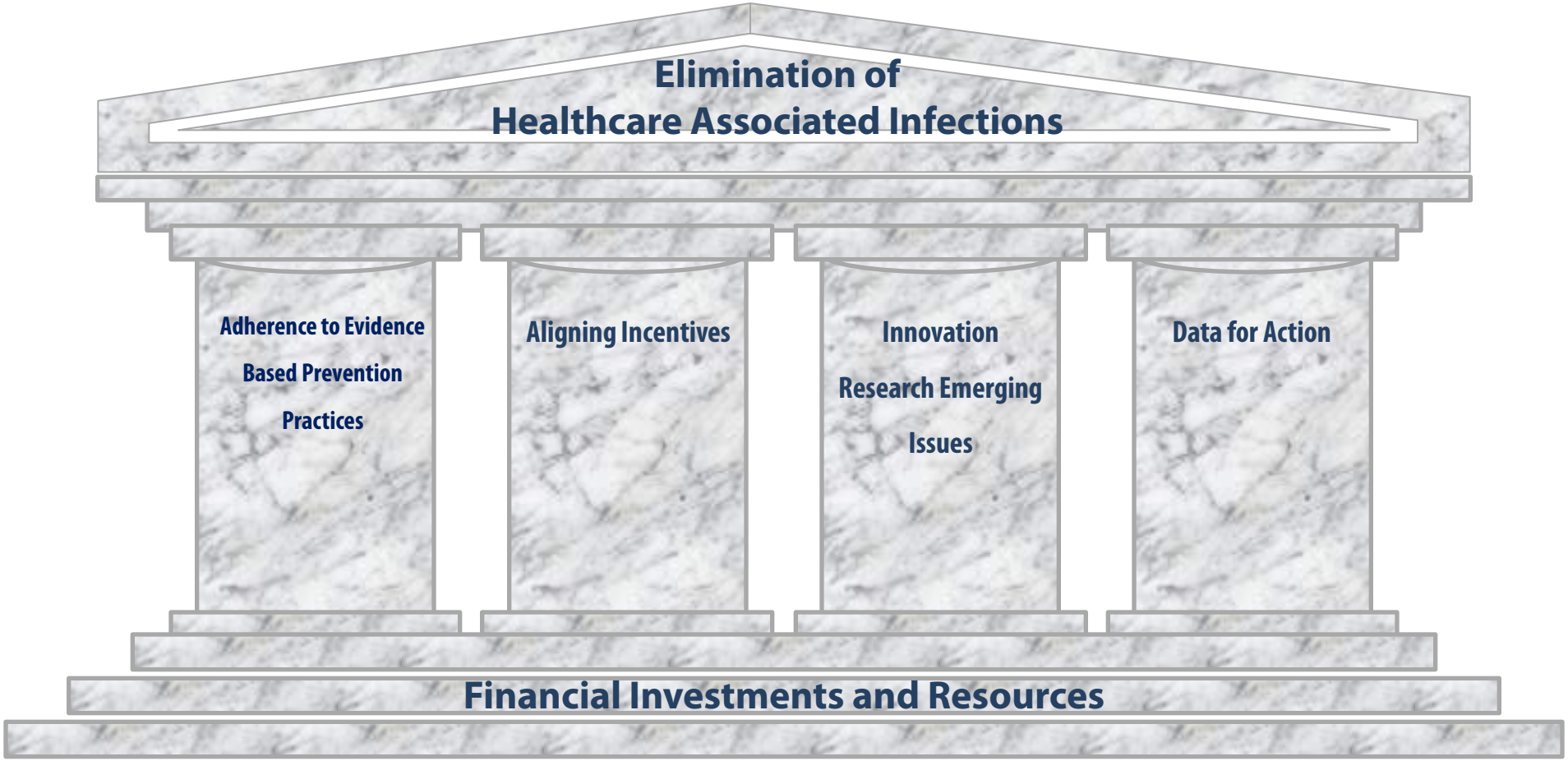
- Preventive services promoted by public health are delivered primarily in healthcare:
  - Immunizations
  - Clinical preventive services
  - Smoking cessation
- Healthcare providers are mandated to submit incidents of reportable conditions to public health:
  - Vaccine preventable diseases
  - “Never Events/Sentinel Events” > 50% of states
  - Healthcare-associated infections ~ 50% states

Critical Interdependencies Between Public Health and Healthcare

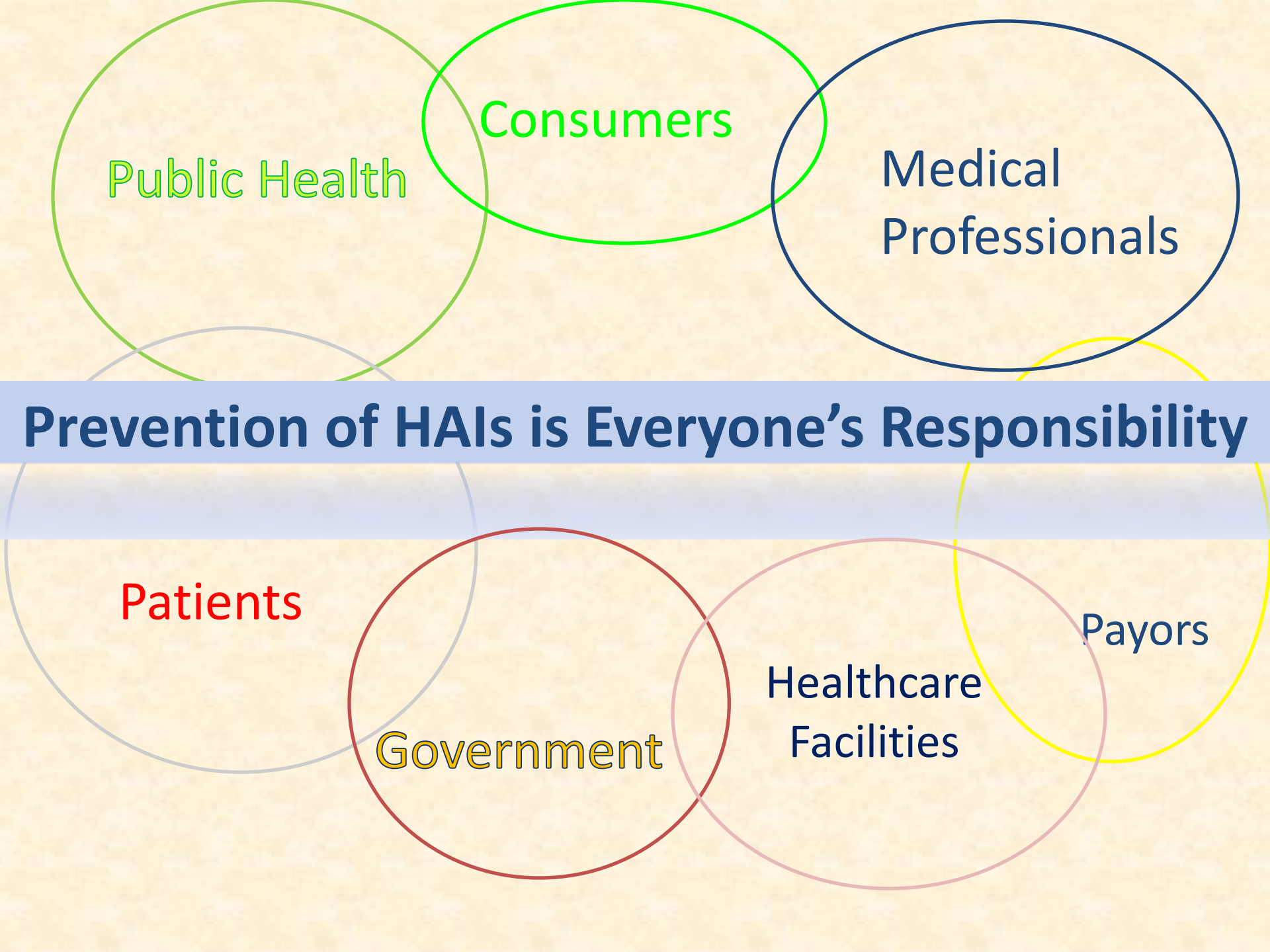
Public health plays an essential role in surveillance and response to emerging health threats:

- Responds, investigates, and controls outbreaks in healthcare
- Promotes guidelines/treatment recommendations developed by medical societies
- Initiates prevention activities within healthcare settings based on population-based surveillance data:
  - smoking cessation
  - obesity prevention
  - cardiovascular disease screening
  - cancer screening

Paradigm for Elimination within a Public Health Context



Infect Control Hosp Epidemiol. 2010 Nov;31(11):1101-5.


Public Health
Consumers
Medical Professionals
Prevention of HAIs is Everyone's Responsibility
Patients
Government
Healthcare Facilities
Payors

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