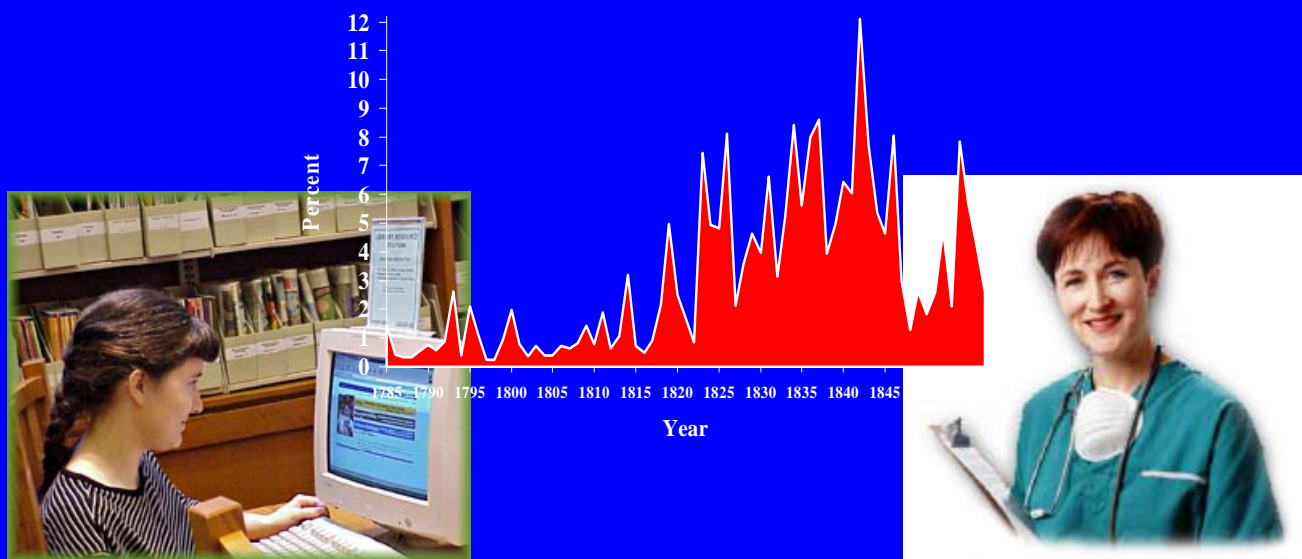


Pushing Forward to Reach Zero Tolerance



Robert W. Haley, M.D.
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Financial Interest: Infection Control & Prevention Analysts, Inc.
And Blue Cross Blue Shield of Texas

APIC Vision 2012

Goal 1

APIC will emphasize prevention and promote **zero tolerance** for healthcare-associated infections and other adverse events.

Increasing Public Awareness of HAI

Consumers Union

Publisher of Consumer Reports

End hospital secrecy
and save lives.

**Stop
Hospital Infections**.org

**TAKE ACTION
IN
YOUR
STATE**



IHI.org

A resource from the
Institute for Healthcare Improvement

100k lives Campaign

SOME IS NOT A NUMBER. SOON IS NOT A TIME.

APIC VISION 2012

PROTECTING

5 Million
lives FROM HARM

IHI.org

Historical Perspective

- 1970 – Modern infection control movement began
- 1970s & 1980s
 - Learned to measure HAI outcomes
 - CDC guidelines evolved into evidence-based recommendations
 - SENIC demonstrated both Surveillance and Control required
 - IC subordinated to QA/QI and generally not taken seriously
- 2000 – IOM report *To Err Is Human* raised IC to national consciousness
 - SSI, VAP and CLA-BSI incorporated into QI goals
- IHI “packaged” CDC Guidelines into “Bundles”
 - SCIP program “franchised” to enlist all into reducing HAIs

Historical Perspective

- Anecdotal reports suggested that CLA-BSI and VAP can be reduced to zero by applying “bundles.”
- APIC Vision 2012 adopted “Zero Tolerance” slogan.
- Keystone report (Pronovost et al. *NEJM* Dec. 2006) demonstrated phenomenal reduction in CLA-BSI in ICUs in 48 Michigan hospitals (med 2.7 to 0/1,000).
- Southwestern Pennsylvania study in 66 ICUs reduced CLA-BSI rate over 4 years (4% to 1.5%).
- “Zero Tolerance” goal widely adopted.

What Does “Zero Tolerance” Refer To?

- Reduce all HAI rates to zero?



Nosocomial Infections Preventable by Infection Surveillance and Control Programs in U.S. Hospitals, SENIC Project 1970s

<u>Infection site</u>	<u>%</u>	<u>Number</u>
Surgical site infections	38	207,000
Bloodstream infections	35	38,000
Urinary tract infections	33	297,000
Pneumonia	22	52,000
Other sites	<u>32</u>	<u>138,000</u>
Total	32	732,000

What Does “Zero Tolerance” Refer To?

- ~~Reduce all HAI rates to zero?~~
- **Reduce selected HAI rates to zero?**



Keystone Study

(Pronovost et al. *NEJM* December 2006)

- 48 hospitals in Michigan participated
- ICP measured CLA-BSI rates/1,000 CLD in ICUs.
- Intervention
 - Implemented evidence-based measures to prevent CLA-BSI
 - Fed back CLA-BSI rates monthly and quarterly as a target to maintain motivation “bundle” adherence
- Results
 - CLA-BSI rate dropped from 2.7 to 1.6 per 1,000 CLD.
 - Multivariate model showed a 66% drop ($p < .001$)

Criticisms of the Keystone Study

(Jenny-Avital E.R. Letter NEJM March 2007)

- Decisions whether to call a CLA-BSI has a large subjective component
 - CDC definition is “deceptively ambiguous.”
 - Coag-neg staph is most common cause of CLA-BSI and most common contaminant.
 - Decision affected by whether cultures are repeated or just treated.
 - Primary vs secondary bacteremia classification subjective
- Keystone findings could have resulted from a “collective bias against attributing bacteremia to catheters.”

Historical Perspective

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But . . .

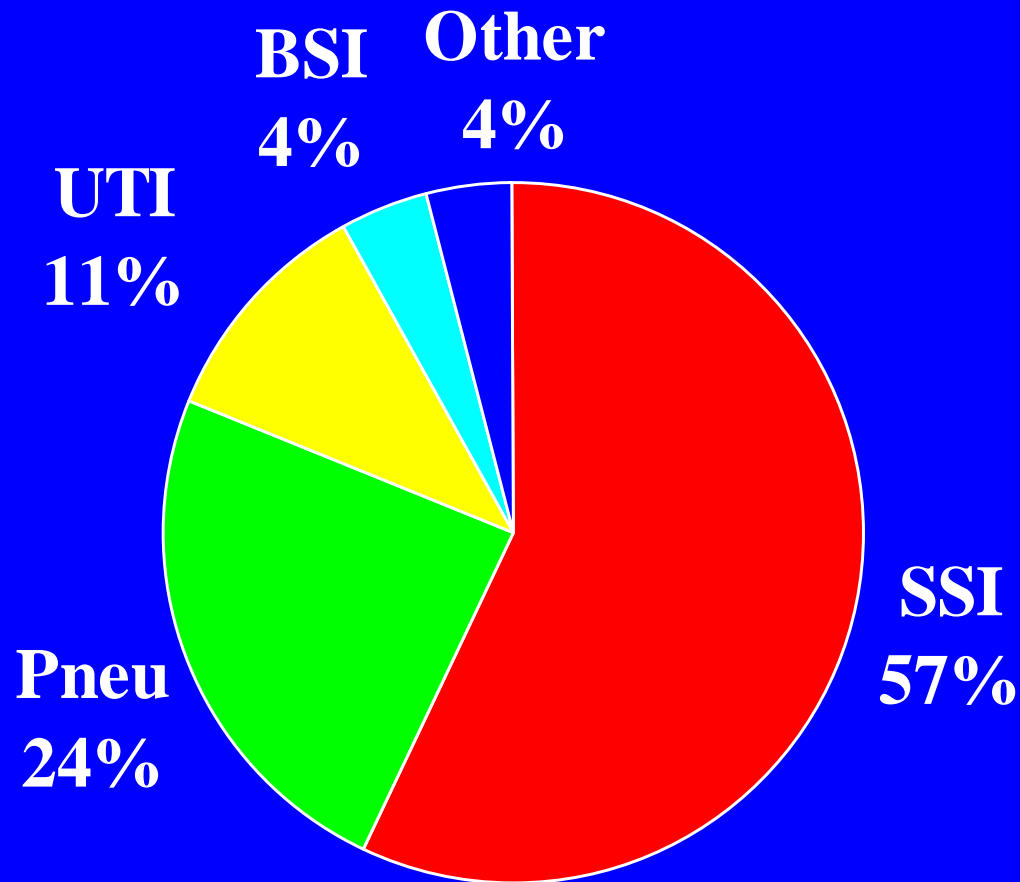
- **The growing problem of CA and HA MRSA enters the national consciousness!**
- **The APIC National MRSA Prevalence Study!**

What Types of HAIs Could We Reduce to Zero?

What Types of HAIs Could We Reduce to Zero?

- **Might reduce to zero**
 - CLA-BSI
 - VAP in CCUs or MICUs
 - HA MRSA in smaller community hospitals
 - HA influenza
- **Can reduce only to an irreducible minimum**
 - SSI
 - VAP in SICUs, trauma units
 - HA MRSA in large city/county, university affiliated hospitals
 - C. difficile colitis, VRE, RSV in NICU
 - HA TB in high endemic communities

All Extra Hospital Days Due to Nosocomial Infections



What Does “Zero Tolerance” Refer To?

- ~~Reduce all HAI rates to zero?~~
- Reduce selected HAI rates to zero?
- **Reduce all rates to the irreducible minimum?**



What Does “Zero Tolerance” Refer To?

- ~~Reduce all HAI rates to zero?~~
- Reduce selected HAI rates to zero?
- Reduce all rates to the irreducible minimum?
- **A marketing campaign to get all hospital personnel to work toward infection prevention and control goals.**

IHI *5 Million Lives* Campaign

- A fabulous marketing campaign to enlist all hospital personnel to support infection control programs.
- Well supported with “bundles” for the major sites of infection, plans for implementation, economic analyses, and testimonial anecdotes to sell the program—all the marketing “capital” needed.
- Emphasizes buy-in from the top down in the organization.
- Appears to have had a major impact where implemented.

The SCIP Partnership

(Surgical Care Improvement Project)

- Sponsored by major national organizations including CDC, CMS, JCAHO, AHA, VA, IHI, ACS, ASA
- Goal – to reduce surgical complications by 25% nationally by year 2010.
- Targets
 - Surgical site infections (SSI)
 - Respiratory complications of surgery
 - Cardiac complications of surgery
 - Venous thromboembolic complications of surgery

Proven Infection Control Measures

- **Surgical site infection**
 - Good surgical technique
 - Shorter operation
 - No preop shaving
 - Cure preop remote infection
 - Control blood glucose
 - Avoid contamination of the operative field
 - Avoid shock and severe blood loss
 - Administer prophylactic antibiotic within ½ hour of the operation



Proven Infection Control Measures

- **Bloodstream infection**

- Avoid central IV catheters when possible
- Good aseptic insertion technique
- Remove catheter as soon as possible
- Switch to tunneled central catheter for long therapy
- Don't draw blood through the catheter



Catheter Site	N/year	Sepsis, %	Episodes/year
Central	5M	4–14	200,000
Peripheral	20M	0.1–0.3	20,000

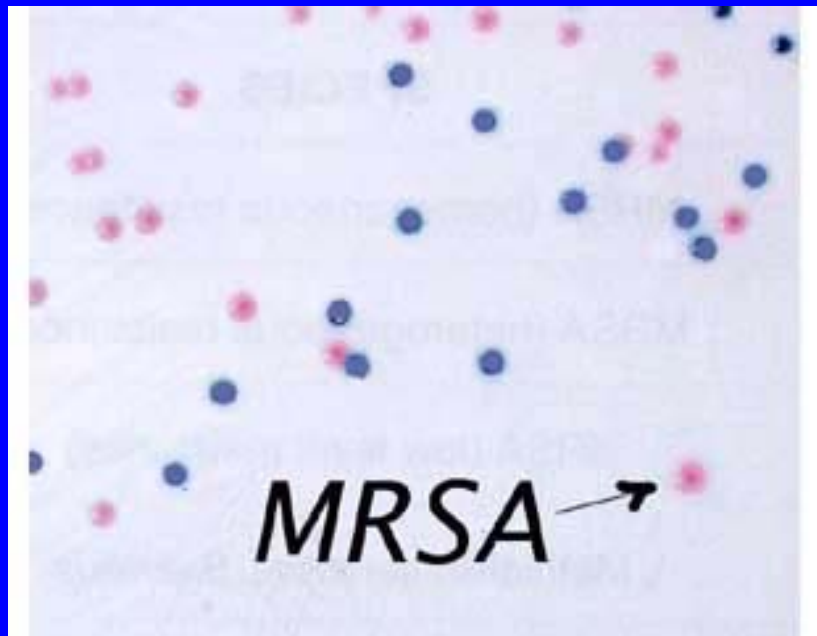
Proven Infection Control Measures

- **Ventilator-associated pneumonia**
 - Elevate the head of the bed
 - “Sedation vacations”
 - Earliest extubation
 - Control stomach acid (ulcer prophylaxis)
 - Deep vein thrombosis prophylaxis



Proven Infection Control Measures

- **Multidrug Resistant Pathogens**
 - “Barrier precautions”
 - Gowns
 - Gloves
 - Handwashing
 - Control of solid waste disposal
 - **Admission culturing for MRSA?**



How Will “Zero Tolerance” Actually Reduce HAI Rates

- Use IHI / SCIP marketing campaigns to enlist all hospital personnel to do their part to reduce HAIs.

How Will “Zero Tolerance” Actually Reduce HAI Rates

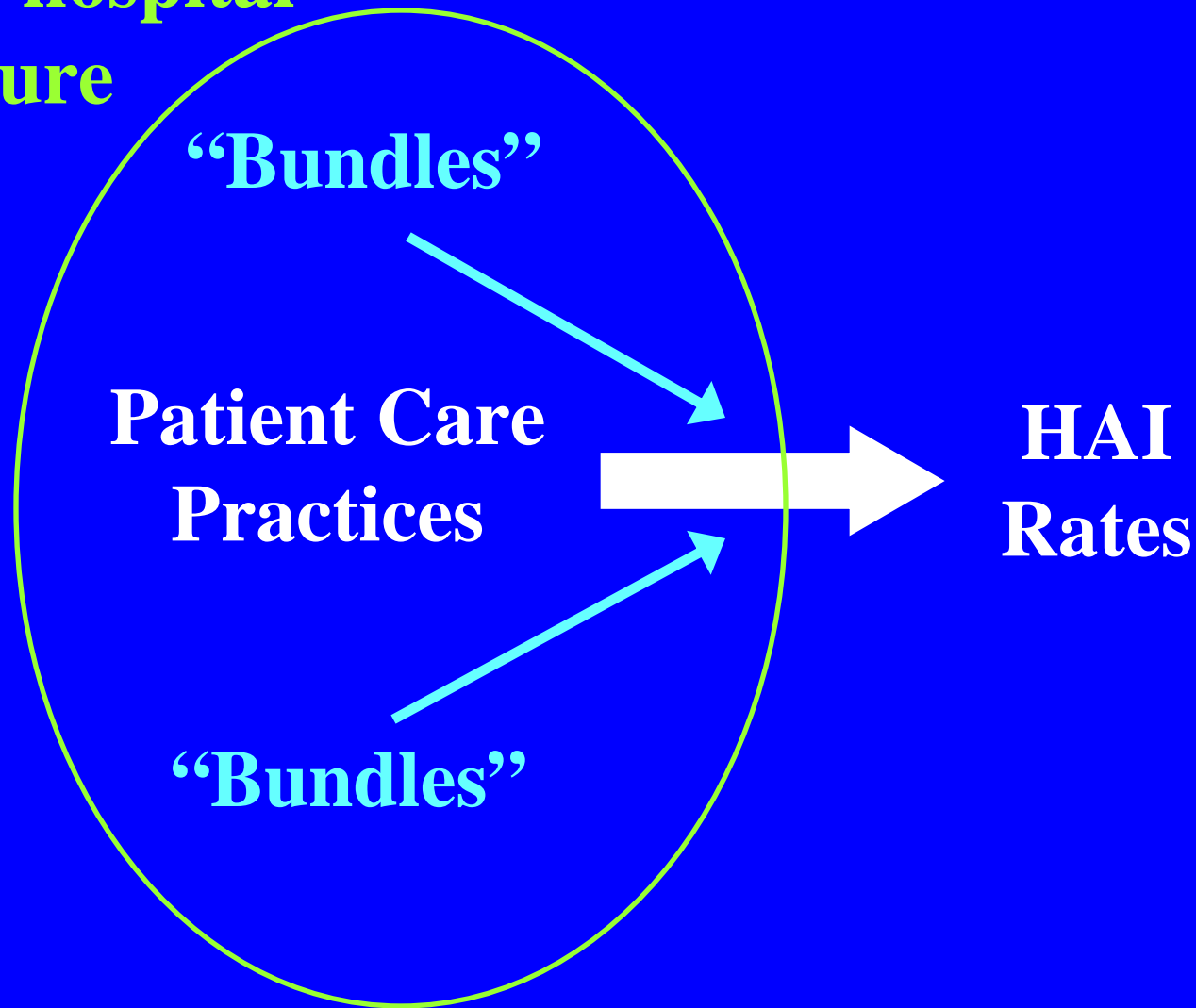
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How Will “Zero Tolerance” Actually Reduce HAI Rates

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- **MOST IMPORTANT – IC must measure and feed back the infection rates of all HAI problems to be reduced.**

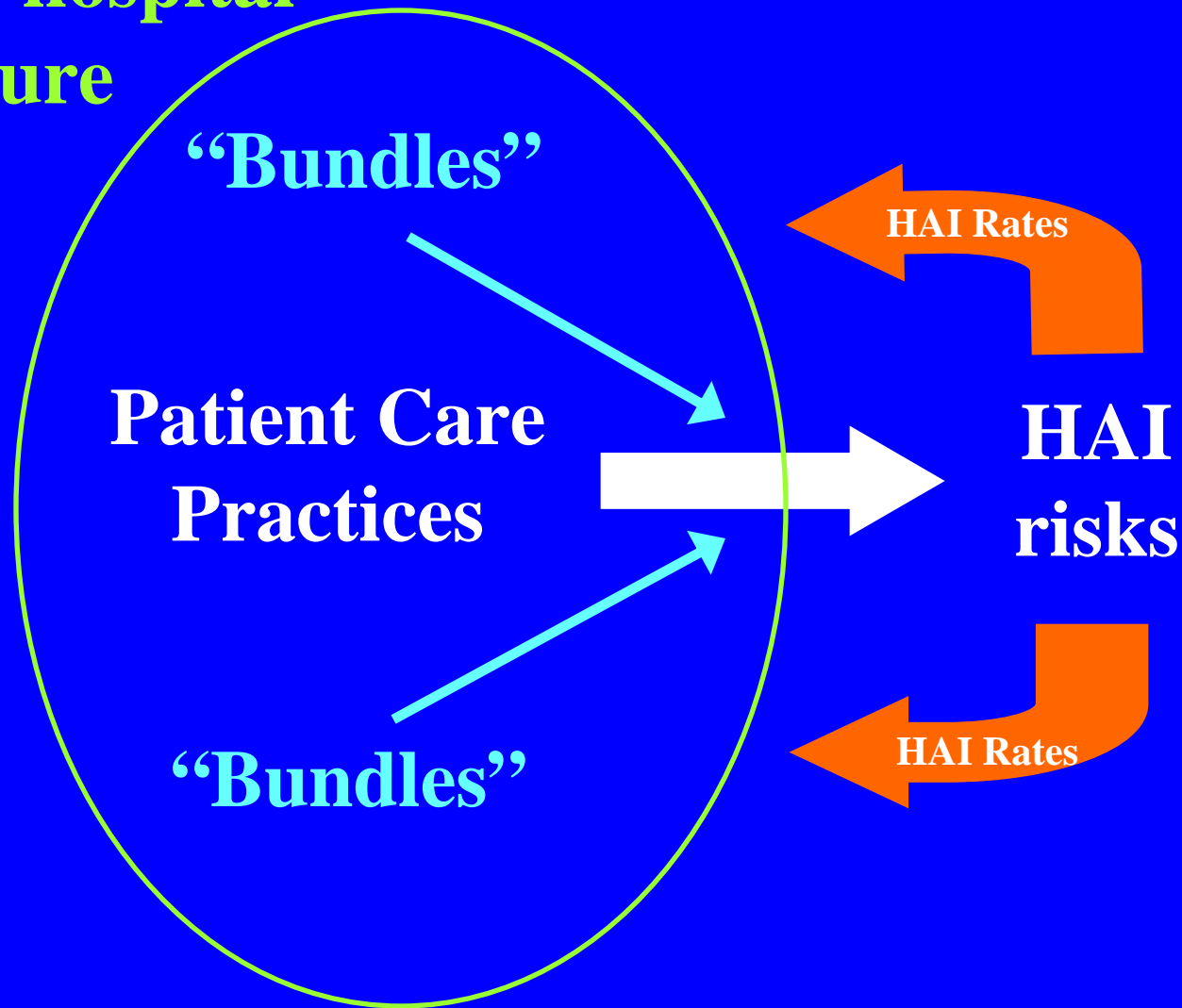
The Model for Reducing HAI Rates

The hospital
culture



The Model for Reducing HAI Rates

The hospital
culture



Measurement Drives ‘Bundle’ Compliance

- “Bundles” can be implemented initially by administrative directive through SOPs
 - Personnel committees can reinforce them.
 - But compliance will eventually erode.
- Measurement with feedback is necessary to maintain compliance
 - Process measurement of *all* bundle components is **useful**.
 - Outcome measurement of HAI rates is **essential**.
 - People will tire of measuring process and give it up.
 - HAI rates are influenced by many factors not in the bundles.
 - HAI rates are the bottom line that inspire behavior change.

SENIC Profile of the Program Found Effective in Preventing Surgical Site Infections

Profile

Percent Prevention

An organized hospitalwide program with:

- High intensity surveillance
- High intensity control
- Feedback of SSI rates to surgeons

20%

PLUS

- A physician with special expertise in infection control

38%

* $p < 0.0001$ for comparison with hospitals not having these ISCP characteristics

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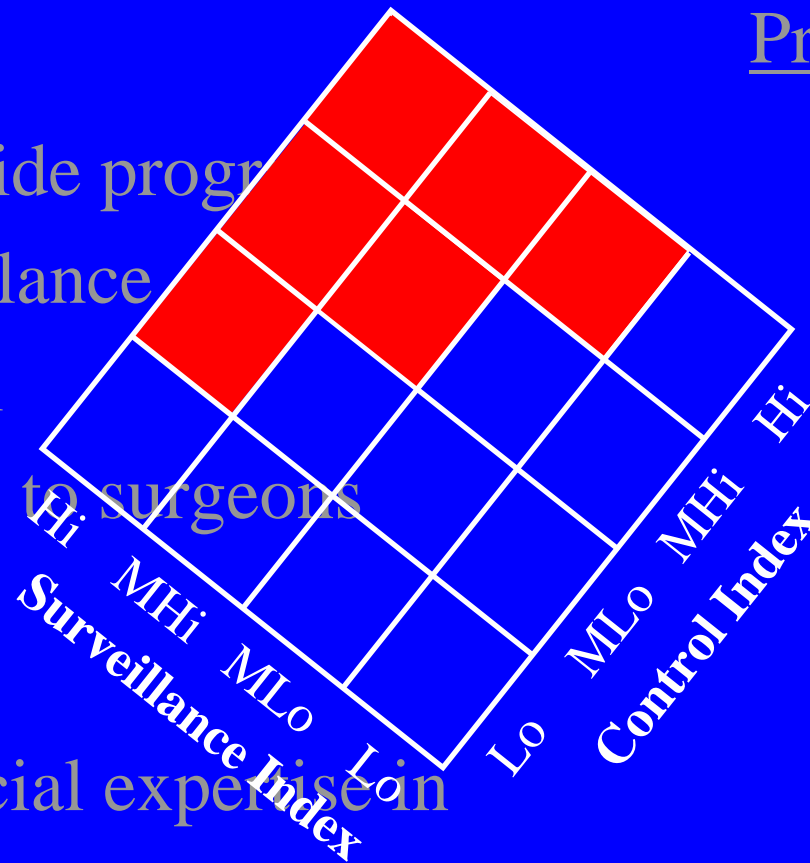
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The Central Role of HAI Outcome Measurement in Making the “Bundles” Effective

No hospital has demonstrated a reduction in the infection rate from “bundles” without measuring the infection rate concurrently with implementation of the “bundles.”

The success stories have used feedback of HAI rates as a constant motivation for “bundle” compliance—a target for the staff to aim at.

“We know what to do to prevent infections.
Our problem is getting hospital personnel to
do it.”

Jay P. Sanford, M.D.

Charge to a medical resident
1973

“We know what to do to prevent infections.
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do it.”

Elaine Larson, RN, PhD
State of the Science Lecture
June, 2005

**So How Do We Get Hospital Personnel
To Do What is Needed To Reduce HAI Rates?**

**How Do We
“Push Forward to Zero Tolerance”?**

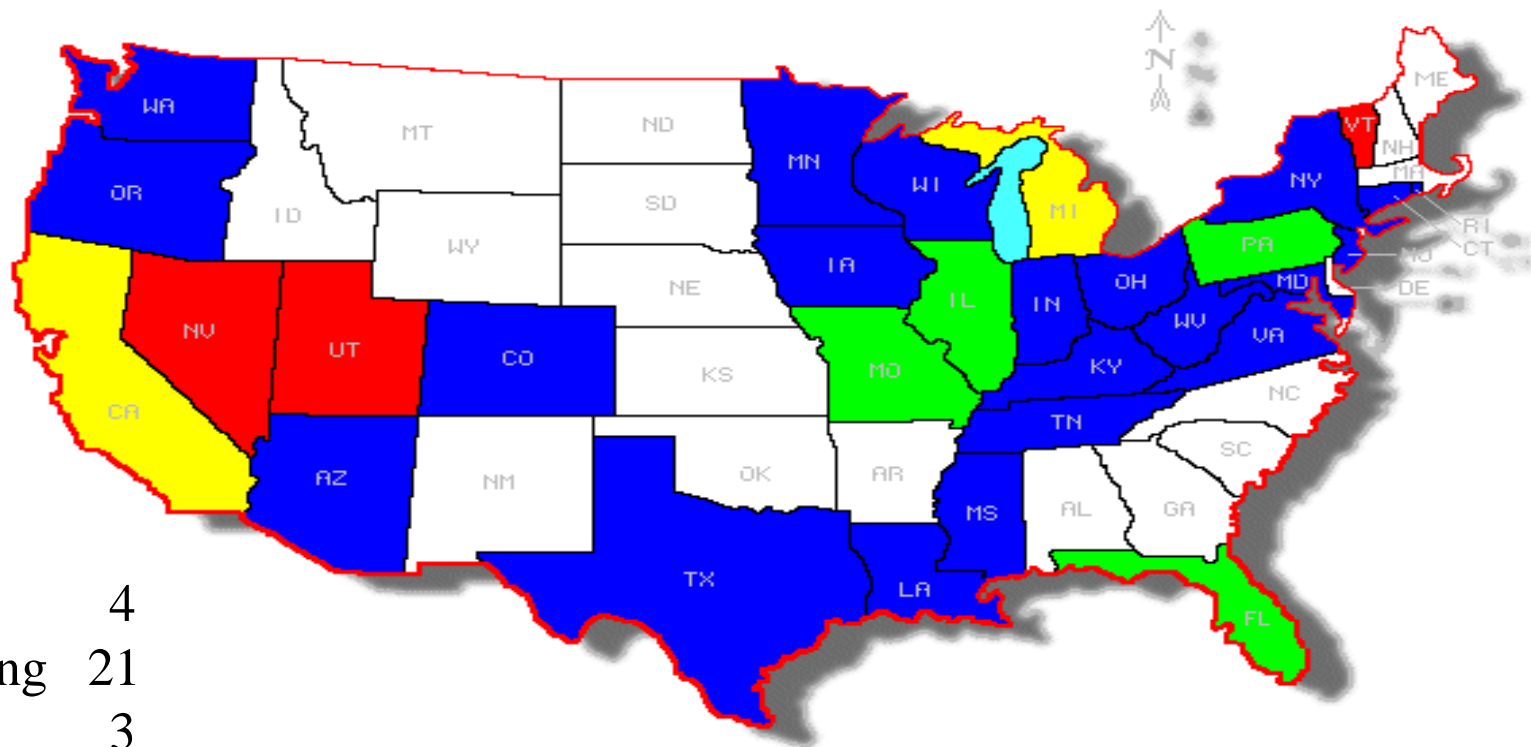
So How Do We Get Hospital Personnel To Do What is Needed To Reduce HAI Rates?

- Use IHI / SCIP marketing campaigns to enlist all hospital personnel to do their part to reduce HAIs.
- The ICP and the IC Committee must take a leadership role to guide the campaign and objectives.
- **MOST IMPORTANT – IC must measure and feed back the infection rates of all HAI problems to be reduced.**

State Laws are Requiring Outcome Measurement So use it to make the “bundles” successful.

Mandatory Reporting in the States
Where We Are Today
January 27, 2005

- - Enacted
- - Emerging/Existing
- - Targeted
- - Watch Coded

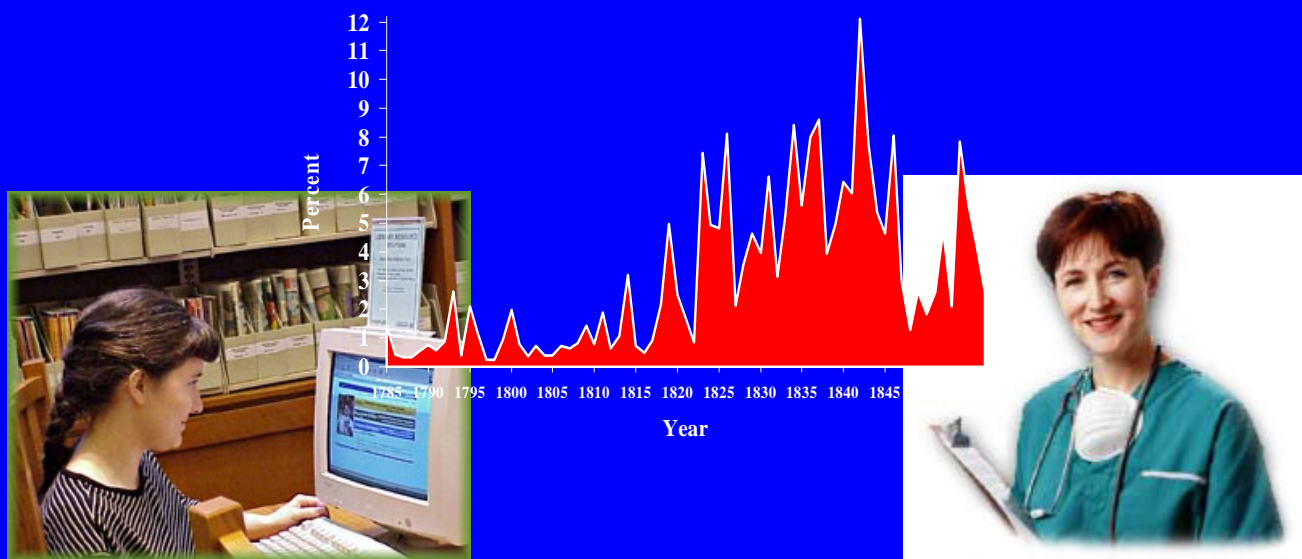


Enacted	4
Emerging/Existing	21
Targeted	3
Watch code	<u>3</u>
TOTAL	31

The Major Components of a Program Effective in Reducing Infection Rates in SENIC

- **Infection Prevention and Control Professional**
 - To collect clinical surveillance data and implement control measures
- **Hospital Epidemiologist**
 - To oversee the program clinically and interface with physicians and surgeons
- **Surveillance**
 - Careful clinical ascertainment of nosocomial infections with feedback of risk-adjusted infection rates to personnel
- **Control**
 - Programs for ensuring preventive patient care practices

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Fictitious Ways to Get to Zero Rates

- Apply HAI definitions less stringently
 - Easy to do with subjective components of definitions in CLA-BSI
- Change the HAI definition to count fewer events.
 - VAP rates vary from 20% to 80% with different definitions.
- Don't count infections if colonized on admission
 - Admission MRSA culturing will invite this.
- Change from clinical surveillance to entirely microbiologically based computer surveillance
 - Rates of SSI, VAP & postop pneumonia will drop to < half