The CDC Prevention Epicenters Program: Addressing Gaps in Healthcare-associated Infection/Antibiotic Resistance Prevention Practices

John A. Jernigan, MD, MS
Director, Office of Prevention Research and Evaluation
Division of Healthcare Quality Promotion
Centers for Disease Control and Prevention

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NATIONAL

ACUTE CARE HOSPITALS

HEALTHCARE ASSOCIATED INFECTIONS PROGRESS

Healthcare-associated infections (HAIs) are infections patients can get while receiving medical treatment in a healthcare facility. Working toward the elimination of HAIs is a CDC priority. The standardized infection ratio (SIR) is a summary statistic that can be used to track HAI prevention progress over time; lower SIRs are better. The infection data are reported to CDC's National Healthcare Safety Network (NHSN). HAI data for nearly all U.S. hospitals are published on the Hospital Compare website. This report is based on 2014 data, published in 2016.

CLABSIs
50% LOWER COMPARED TO NAT'L BASELINE*

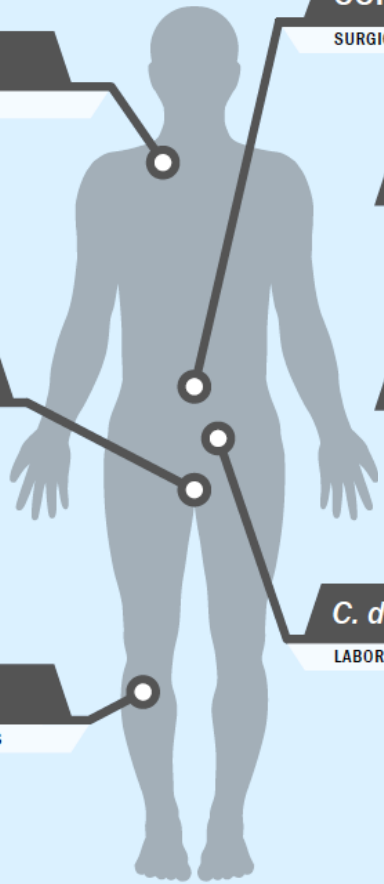
CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS

CAUTIs
0% NO CHANGE COMPARED TO NAT'L BASELINE

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

MRSA Bacteremia
13% LOWER COMPARED TO NAT'L BASELINE*

LABORATORY IDENTIFIED HOSPITAL-ONSET BLOODSTREAM INFECTIONS



SSIs
SURGICAL SITE INFECTIONS

See pages 3-5 for additional procedures

SSI: Abdominal Hysterectomy
17% LOWER COMPARED TO NAT'L BASELINE*

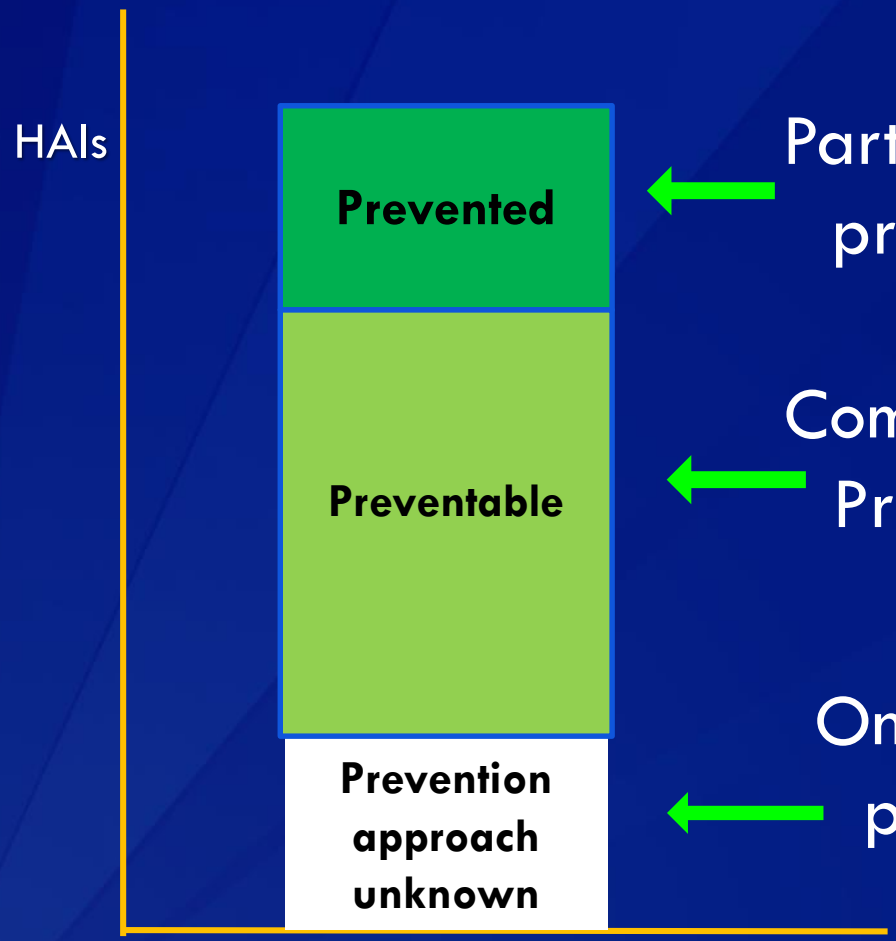
SSI: Colon Surgery
2% LOWER COMPARED TO NAT'L BASELINE*

C. difficile Infections
8% LOWER COMPARED TO NAT'L BASELINE*

LABORATORY IDENTIFIED HOSPITAL-ONSET *C. DIFFICILE* INFECTIONS

*Statistically significant

HAI Prevention



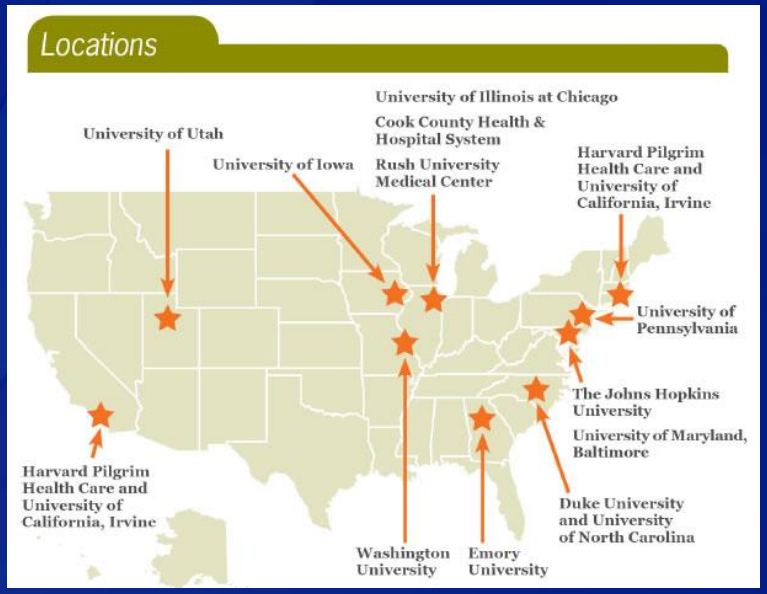
Partial implementation of known prevention strategies

Complete implementation of known Prevention strategies

Ongoing innovation for new prevention strategies

What is the Prevention Epicenters Program?

- **A program in which CDC works collaboratively with academic partners to create new strategies for preventing healthcare-associated infections and antibiotic resistance**
  - Aligns public health and academic innovation goals



It's not a grant program, it's a <u>cooperative agreement</u>

- CDC subject matter experts work together with outside scientists
- Informed by CDC's insight gained from surveillance, outbreak investigation, policy insight, etc.

Helps keep public health/academic goals on the same path

- **Emphasis on inter-epicenter collaboration**
- **CDC facilitates opportunities for collaboration with other partners (e.g. health departments, health systems, etc.)**
- **Innovation agenda focused on pragmatic public health solutions**
  - Goal to move toward practical public health application as quickly as possible

Example: Use of Chlorhexidine Bathing as an Infection Control Strategy

ORIGINAL INVESTIGATION

Effectiveness of Chlorhexidine Bathing to Reduce Catheter-Associated Bloodstream Infections in Medical Intensive Care Unit Patients

Susan C. Bleasdale, MD; William E. Trick, MD; Ines M. Gonzalez, MD; Rosie D. Lyles, MD; Mary K. Hayden, MD; Robert A. Weinstein, MD

Arch Intern Med. 2007;167(19):2073-2079

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY OCTOBER 2007, VOL. 28, NO. 10

ORIGINAL ARTICLE

Selective Use of Intranasal Mupirocin and Chlorhexidine Bathing and the Incidence of Methicillin-Resistant *Staphylococcus aureus* Colonization and Infection Among Intensive Care Unit Patients

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY OCTOBER 2009, VOL. 30, NO. 10

ORIGINAL ARTICLE

Effectiveness of Routine Patient Cleansing with Chlorhexidine Gluconate for Infection Prevention in the Medical Intensive Care Unit

Kyle J. Continuing Medical Education Article

The effect of daily bathing with chlorhexidine on the acquisition methicillin-resistant *Staphylococcus aureus*, vancomycin-resistan *Enterococcus*, and healthcare-associated bloodstream infections: Results of a quasi-experimental multicenter trial*

Michael W. Climo, MD; Kent A. Sepkowitz, MD; Gianna Zuccotti, MD, MPH; Victoria J. Fraser, MD; David K. Warren, MD; Trish M. Perl, MD, MSc; Kathleen Speck; John A. Jernigan, MD; Jaime R. Robles, PhD; Edward S. Wong, MD

Crit Care Med 2009 Vol. 37, No. 6

The NEW ENGLAND JOURNAL of MEDICINE

N Engl J Med 2013; 368:533-542

ORIGINAL ARTICLE

Effect of Daily Chlorhexidine Bathing on Hospital-Acquired Infection

The NEW ENGLAND JOURNAL of MEDICINE

N Engl J Med 2013; 368:2255-2265

ORIGINAL ARTICLE

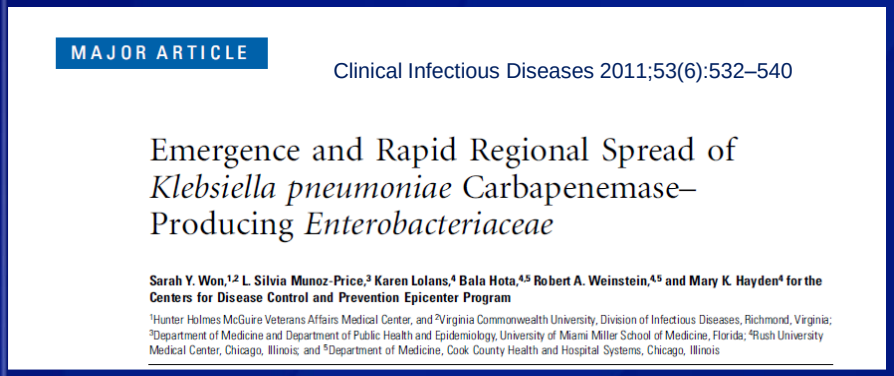
Targeted versus Universal Decolonization to Prevent ICU Infection

Susan S. Huang, M.D., M.P.H., Edward Septimus, M.D., Ken Kleinman, Sc.D., Julia Moody, M.S., Jason Hickok, M.B.A., R.N., Taliser R. Avery, M.S., Julie Lankiewicz, M.P.H., Adrijana Gombosev, B.S., Leah Terpstra, B.A., Fallon Hartford, M.S., Mary K. Hayden, M.D., John A. Jernigan, M.D., Robert A. Weinstein, M.D., Victoria J. Fraser, M.D., Katherine Haffenreffer, B.S., Eric Cui, B.S., Rebecca E. Kaganov, B.A., Karen Lolans, B.S., Jonathan B. Perlin, M.D., Ph.D., and Richard Platt, M.D., for the CDC Prevention Epicenters Program and the AHRQ DECIDE Network and Healthcare-Associated Infections Program*

63% of US Hospitals have implemented chlorhexidine bathing to prevent transmission of antibiotic resistant infections

Infect Control Hosp Epidemiol. 2016;37:1105-8

Example: Regional Interventions to Control Antibiotic Resistance



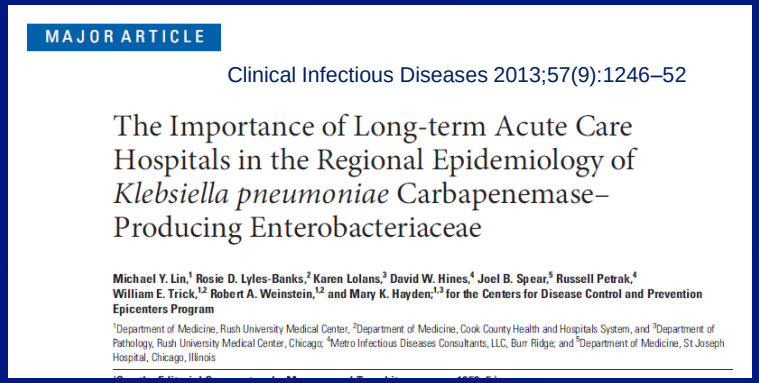
MAJOR ARTICLE

Clinical Infectious Diseases 2011;53(6):532–540

Emergence and Rapid Regional Spread of *Klebsiella pneumoniae* Carbapenemase–Producing *Enterobacteriaceae*

Sarah Y. Won,[1,2] L. Silvia Munoz-Price,[3] Karen Lolans,[4] Bala Hota,[4,5] Robert A. Weinstein,[4,5] and Mary K. Hayden[4] for the Centers for Disease Control and Prevention Epicenter Program

[1]Hunter Holmes McGuire Veterans Affairs Medical Center, and [2]Virginia Commonwealth University, Division of Infectious Diseases, Richmond, Virginia; [3]Department of Medicine and Department of Public Health and Epidemiology, University of Miami Miller School of Medicine, Florida; [4]Rush University Medical Center, Chicago, Illinois; and [5]Department of Medicine, Cook County Health and Hospital Systems, Chicago, Illinois



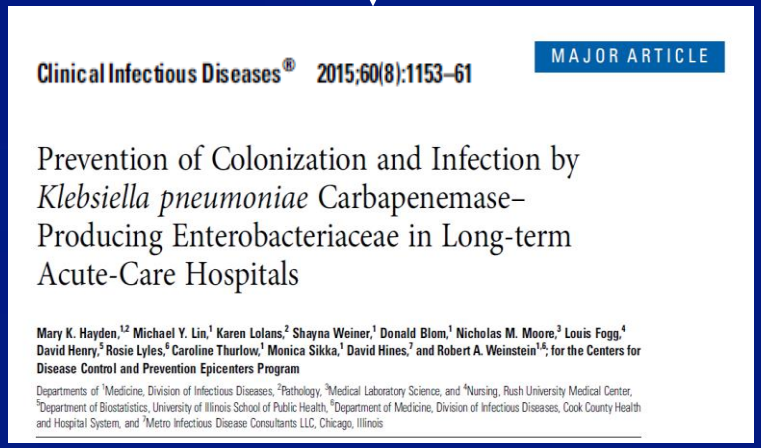
MAJOR ARTICLE

Clinical Infectious Diseases 2013;57(9):1246–52

The Importance of Long-term Acute Care Hospitals in the Regional Epidemiology of *Klebsiella pneumoniae* Carbapenemase–Producing Enterobacteriaceae

Michael Y. Lin,[1] Rosie D. Lyles-Banks,[2] Karen Lolans,[3] David W. Hines,[4] Joel B. Spear,[5] Russell Petrak,[4] William E. Trick,[1,2] Robert A. Weinstein,[1,2] and Mary K. Hayden;[1,3] for the Centers for Disease Control and Prevention Epicenters Program

[1]Department of Medicine, Rush University Medical Center, [2]Department of Medicine, Cook County Health and Hospitals System, and [3]Department of Pathology, Rush University Medical Center, Chicago; [4]Metro Infectious Diseases Consultants, LLC, Burr Ridge; and [5]Department of Medicine, St Joseph Hospital, Chicago, Illinois



Clinical Infectious Diseases® 2015;60(8):1153–61

MAJOR ARTICLE

Prevention of Colonization and Infection by *Klebsiella pneumoniae* Carbapenemase–Producing Enterobacteriaceae in Long-term Acute-Care Hospitals

Mary K. Hayden,[1,2] Michael Y. Lin,[1] Karen Lolans,[2] Shayna Weiner,[1] Donald Blom,[1] Nicholas M. Moore,[3] Louis Fogg,[4] David Henry,[5] Rosie Lyles,[6] Caroline Thurlow,[1] Monica Sikka,[1] David Hines,[7] and Robert A. Weinstein[1,6]; for the Centers for Disease Control and Prevention Epicenters Program

Departments of [1]Medicine, Division of Infectious Diseases, [2]Pathology, [3]Medical Laboratory Science, and [4]Nursing, Rush University Medical Center, [5]Department of Biostatistics, University of Illinois School of Public Health, [6]Department of Medicine, Division of Infectious Diseases, Cook County Health and Hospital System, and [7]Metro Infectious Disease Consultants LLC, Chicago, Illinois

- **Shared Healthcare Intervention to Eliminate Life threatening Dissemination of MDROs in Orange County (SHIELD OC)**
- **Providing Regional Organizations with TEchniques to ConTrol MDROs in Chicago (The Chicago PROTECT Project)**
  - Regional MDRO Intervention Orange County, California and Metropolitan Chicago
  - Use region specific patient sharing networks in simulation models to help to identify optimal intervention strategies, then implementing them and evaluate impact

Ongoing Prevention Epicenter HAI/AR Innovation

Examples of New Investments

- **Enhanced Detection of outbreaks of resistant pathogens in US hospitals**
- **Better ways to prevent transmission of resistant pathogens in healthcare settings**
- **Environmental Factors in Transmission**
- **Regionally coordinated public health interventions to prevent spread of antimicrobial resistance**
- **Antibiotic Stewardship**
- **Protecting the Microbiome**
  - Identifying new strategies to prevent disruption of, or restore, our normal flora

Summary

- **We have made progress in preventing antimicrobial resistant HAIs, but we need better prevention tools**
- **The prevention innovation pipeline can expand our toolbox**
  - CDC is increasing its investment in HAI/AR prevention innovation that addresses public health goals
- **The pipeline is producing promising advances**

Thank You!

John A. Jernigan, MD, MS
Director, Office of Prevention Research and Evaluation
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