
August 28, 2013
Progress Review Overview

- Systems improvements with substantial impacts in Healthcare-Associated Infections and Blood Disorders and Blood Safety

- Provide an update on the progress of Healthy People 2020 objectives

- Examine what is being done to achieve the Healthy People 2020 objectives
Healthy People 2020 Remains Relevant

1979: Small Pox Eradicated
1982: AIDS is infectious
1988: SG Declares Nicotine Addictive
1990: Human Genome Project Begins
1990s: Drinking Water Fluoridation
2000s: Obesity and Chronic Disease
2009: H1N1 Flu
2005: Hurricane Katrina
September 11, 2001
Healthy People 2020

- Can be customized to meet needs of diverse users
  - Federal
  - State
  - Local

- Guided by collaborative stakeholder-driven process
Healthcare-Associated Infections (HAI) Definition

Infections that people acquire while they are receiving treatment for another condition in healthcare settings:

- Inpatient Hospitals
- Ambulatory settings
- Long-term care facilities
- HAIs of unknown origin
Each year, 1 in 20 U.S. hospital patients acquires a healthcare-associated infection.

$33 billion in potentially preventable healthcare costs annually.

SOURCE: http://www.cdc.gov/HAI/burden.html
HAI Risk Factors

- Transmission of communicable diseases between patients and healthcare workers
- Use of indwelling medical devices e.g. central line or urinary catheters and endotracheal tubes
- Contamination of the healthcare environment
- Surgical Procedures
- Injections
- Overuse or improper use of antibiotics
Infectious Agents that Cause HAIs

- Bacteria
- Fungi
- Viruses
- Other less common types of pathogens
Types of HAIs

- Central Line-Associated Bloodstream Infections (CLABSI)
- Catheter-Associated Urinary Tract Infection (CAUTI)
- Ventilator-Associated Events (VAE)
- Surgical Site Infection (SSI)
- *Clostridium difficile* gastrointestinal infection
- Methicillin-Resistant *Staphylococcus aureus* (MRSA)
Blood Disorders and Blood Safety

- Blood Safety
- Hemoglobinopathies
- Bleeding and Clotting
Blood Safety

- Each year, 5 million people in the U.S. need a blood transfusion
- Blood transfusions are lifesaving for people with:
  - Cancer
  - Inherited blood disorders
  - Liver disease or infection that stops blood production
  - Blood loss due to accidents
  - Surgical requirements
- Blood availability is critical
Infectious Threats to Blood Supply

- Bacteria
- Fungi
- Viruses
- Less common pathogens
Inherited and Acquired Blood Disorders

**Inherited Disorders**
- Hemoglobinopathies
  - Sickle Cell Disease (SCD)
  - Thalassemias
- Bleeding Disorders
  - Hemophilia
  - Von Willebrand Disease (VWD)

**Acquired Disorder**
- Venous Thromboembolism (VTE)
  - Deep Vein Thrombosis (DVT)
  - Pulmonary Embolism (PE)

## Hemoglobinopathies: Emergency Department and Hospital Utilization

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<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>#Visits</td>
<td>#Admissions</td>
</tr>
<tr>
<td>Sickle Cell Disease</td>
<td>199,470</td>
<td>79,085 (40%)</td>
</tr>
<tr>
<td>Thalassemia</td>
<td>4,626</td>
<td>2,941 (64%)</td>
</tr>
</tbody>
</table>

Bleeding Disorders

- Hemophilia ~22,000 U.S. males affected\(^1\)
  - Affects males, females are carriers
  - Damages joints and inhibits clotting
  - $3 billion annual in hemophilia care and treatment ($150,000 per person/year)\(^2\)

- Von Willebrand disease (VWD) ~ 1.4 million people in the U.S. affected\(^3,4\)
  - Most common bleeding disorder
  - 1 in 1,000 have bleeding symptoms\(^5,6\)
  - Women experience more severe symptoms (heavy menses, bleeding after child birth)
Clotting Disorders: Venous Thromboembolism (VTE)

- 900,000-1.2 million Americans experience VTE and 350,000 to 600,000 Americans experience DVT/PE each year\(^1,2,3\)
  - Risk of recurrence in 1-2 years is high and can lead to chronic cardiopulmonary problems \(^2\)
  - At least 100,000 deaths related to DVTs/PEs, but may be an underestimate \(^1\)
  - Diagnosis often missed \(^1\)
  - Approximately $10 billion each year in VTE-associated healthcare costs in the U.S \(^3\)
Presenters

Chair
- Howard K. Koh, MD, MPH
  Assistant Secretary for Health, U.S. Department of Health and Human Services

Data Presentation
- Irma Aripse, PhD
  Associate Director, National Center for Health Statistics, CDC

Healthcare-Associated Infections
- Don Wright, MD, MPH
  Deputy Assistant Secretary, Director, Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services

Blood Disorders and Blood Safety
- George A. Mensah, MD
  Special Advisor, Office of the Director, National Heart, Lung and Blood Institute, National Institutes of Health
- Michael Lu, MD, MS, MPH
  Associate Administrator, Maternal and Child Health Bureau, Health Resources and Services Administration

Community Highlight
- John Boyce MD, Diane Dumigan RN, Carrie Guttman RN
  Yale-New Haven Hospital
Irma Arispe, PhD
Associate Director, National Center for Health Statistics
Centers for Disease Control and Prevention
Presentation Outline

- Healthcare-Associated Infections
- Blood Disorders and Blood Safety
Healthcare-associated infections include:

- Central line-associated bloodstream infections (CLABSI)
- Catheter-associated urinary tract infections (CAUTI)
- Surgical site infections (SSI)
- *Clostridium difficile* infections (CDI)

Estimated more than 1 million healthcare-associated infections across healthcare settings each year.

5 HAI cases per 100 hospital admissions or 1 in 20 patients acquires HAI annually.

HAI s in Healthcare Settings

- Hospitals
- Dialysis facilities
- Ambulatory facilities
- Long-term care

Healthy People
2020
Federal steering committee to coordinate and maximize prevention efforts

- Department of Health and Human Services
- Department of Defense
- Department of Labor
- Department of Veterans Affairs

Phase one: Acute Care Hospitals

Phase two: Ambulatory Surgical Centers, End Stage Renal Disease Facilities, and increasing influenza vaccination among health care personnel

Phase three: Long-Term Care Facilities

HAI Surveillance Systems

- National Healthcare Safety Network (NHSN) \(\rightarrow\) CDC
  - Web-based surveillance system
  - More than 12,000 facilities reporting

- Active Bacterial Core surveillance (ABCs), Emerging Infections Program (EIP) \(\rightarrow\) CDC
  - An active laboratory- and population-based surveillance system
  - Data from 10 states, 44 million persons
Data Systems and Sources

- Nationwide Inpatient Sample (NIS) → Healthcare Cost Utilization Project, Agency for Healthcare Research Quality (AHRQ)
  - The 2011 NIS has all discharge data from 1,045 hospitals in 46 States

- U.S. Renal Data System → National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health
  - Records on all ESRD patients in the U.S.
  - Data originate from CMS, United Network for Organ Sharing, the CDC, and the ESRD Networks
Progress Toward the National Action Plan Targets: Elimination of HAIs in Acute Care Hospitals

<table>
<thead>
<tr>
<th>Metric</th>
<th>Source</th>
<th>National 5-year Prevention Target</th>
<th>On track to meet 2013 HHS Targets?</th>
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<tbody>
<tr>
<td>Central line bloodstream infections*</td>
<td>NHSN</td>
<td>50% reduction</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Adherence to central-line insertion practices</td>
<td>NHSN</td>
<td>100% adherence</td>
<td>✓ Yes</td>
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<tr>
<td><em>Clostridium difficile</em> (hospitalizations)</td>
<td>HCUP</td>
<td>30% reduction</td>
<td>✗ No</td>
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<tr>
<td><em>Clostridium difficile</em> infections</td>
<td>NHSN</td>
<td>30% reduction</td>
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<tr>
<td>Urinary tract infections</td>
<td>NHSN</td>
<td>25% reduction</td>
<td>✗ No</td>
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<tr>
<td>MRSA invasive infections (population)*</td>
<td>EIP</td>
<td>50% reduction</td>
<td>✓ Yes</td>
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<td>MRSA bacteremia (hospital)</td>
<td>NHSN</td>
<td>25% reduction</td>
<td>Only baseline data are available</td>
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<tr>
<td>Surgical site infections</td>
<td>NHSN</td>
<td>25% reduction</td>
<td>✓ Yes</td>
</tr>
<tr>
<td>Surgical Care Improvement Project Measures</td>
<td>SCIP</td>
<td>95% adherence</td>
<td>✓ Yes</td>
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NOTES: *Healthy People 2020 objectives HAI-1 and HAI-2

NOTES: I = 95% confidence interval. The Standardized Infection Ratio compares the observed number of HAI cases during a reporting period with the 2006-08 baseline number of HAI cases.

SOURCE: National Healthcare Safety Network (NHSN), CDC/NCEZID.

Obj. HAI-1
Decrease desired
Invasive Methicillin-Resistant *Staphylococcus Aureus* Infections (MRSA), 2007-2011

Rate per 100,000 population

NOTES: I = 95% confidence interval. The rate is per 100,000 persons and adjusted for age, race, sex, and receipt of chronic dialysis.

SOURCE: Active Bacterial Core surveillance, Emerging Infections Program (EIP), CDC/NCIRD.
Clostridium Difficile Infection (CDI) Hospitalizations, 1998-2011

Rate per 100,000 population

NOTES: The CDI hospital stays include hospitalizations with a principal or secondary diagnosis of CDI.
SOURCE: National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP), AHRQ
**Clostridium Difficile Infection (CDI) Hospitalizations, 2011**

Rate per 100,000 population

NOTES: Rate of CDI stays per 100,000 population. The CDI hospital stays include hospitalizations with a principal or secondary diagnosis of CDI.

SOURCE: National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP), AHRQ
Infections, including HAI's, are the second leading cause of death among patients with ESRD.

Total death rate due to infections was 21.4 per 1,000 patient-years in 2008-2010.
- Septicemia was responsible for 70% of these infection-related deaths.

Estimated 37,000 CLABSI's occurred among hemodialysis patients in 2008.

Ambulatory Surgical Centers (ASCs)
- CDC is piloting strategies for tracking SSI in ASCs.
- Reporting of health care worker vaccination in ASCs proposed to begin in 2014.

End Stage Renal Disease Facilities
- Over 6,000 dialysis facilities have enrolled in NHSN since 2012.

Long-Term Care Facilities
- NHSN long-term care facility module has been activated in September 2012.

Influenza Vaccination Coverage, 2010-2011 Influenza Season

NOTES: Data are for children ages 6 months to 17 years and adults ages 18 and older. Data are for the total US population.
SOURCE: National Health Interview Survey (NHIS), CDC/NCHS.

HP2020 Target: 90%
HP2020 Target: 70%

Percent

Children
Adults
Health care personnel

Obj. IID-12.11 through 12.13
Increase desired
Presentation Outline

- Healthcare-Associated Infections
- Blood Disorder and Blood Safety
  - Blood Donation and Safety
    - Hemoglobinopathies
  - Bleeding disorders
  - Clotting disorders
Blood Donations: Adults 18 Years and Older, 1998–2010

NOTES: Data are for adults who have donated blood in the past 12 months, and are age adjusted to the 2000 standard population.
SOURCE: National Health Interview Survey (NHIS), CDC/NCHS.
NOTES: Data are for adults who have donated blood in the past 12 months, and are age adjusted to the 2000 standard population, except data by age group*. Persons of Hispanic origin may be any race. Respondents were asked to select one or more races. Data for the single race categories are for persons who reported only one race. SOURCE: National Health Interview Survey (NHIS), CDC/NCHS.
Elective Surgeries Postponed due to Blood Inventory Shortages, 2001-2011

% Hospitals reporting delays

2001: 12.7%
2004: 8.4%
2006: 6.9%
2008: 4.4%
2011: 3.3%

SOURCE: National Blood Collection and Utilization Survey (NBCUS), HHS/OASH.
Transfusion-Related Adverse Reactions in 2011

Number of transfused units 20,933,000

Number of adverse reactions that required diagnostic or therapeutic interventions 50,570

- Transfusion-related acute lung injury (TRALI) 327
- Acute hemolysis due to ABO incompatibility 42
- Post-transfusion virus transmission 36

SOURCE: National Blood Collection and Utilization Survey (NBCUS), HHS/OASH.
Presentation Outline

- Healthcare-associated infections
- Blood Disorder and Blood Safety
  - Blood Donation and Safety
  - Hemoglobinopathies
  - Bleeding disorders
  - Clotting disorders
Hemoglobinopathies: Sickle Cell Disease (SCD)

- Estimated 1 out of every 500 Black or African-American births
- The death rate for children younger than 4 years of age fell 42% between 1999 and 2002.
- An estimated 90,000 - 100,000 persons are living with SCD in the U.S.
- In 2011, there were approximately 83,000 hospitalizations with principal diagnosis of SCD, or a rate of 27.1 per 100,000 discharges.

Hospitalizations for SCD by Age, 2011

NOTE: ICD-9-CM diagnosis code 282.6 for sickle cell disease.
SOURCE: Healthcare Cost and Utilization Project (HCUP), AHRQ.
Hemoglobinopathies: Thalassemia

- An estimated 1,000 people have severe thalassemia (or Cooley’s anemia) in the U.S.
  - Survivability depends on access to frequent blood transfusions
  - At increased risk for transfusion-related adverse reactions and healthcare-associated infections
  - Most common among people from the Mediterranean, Middle East, Africa, and parts of Asia (southern China, India, and southeast Asia)

- About 4,626 ED visits in 2010; 64% resulted in hospital admission.

Presentation Outline

- Healthcare-associated infections
- Blood Disorder and Blood Safety
  - Blood Safety
  - Hemoglobinopathies
  - Bleeding disorders
  - Clotting disorders
Bleeding Disorders:
Hemophilia and Von Willebrand Disease

- **Hemophilia**
  - Estimated 20,000 individuals (mostly males) with hemophilia in the U.S.
  - 1 in 5,000 male births each year
  - In 2011, 1,476 hospitalizations with a primary diagnosis of hemophilia

- **VWD affects males and females**
  - Estimated to affect 1% of population
  - Women more likely to notice symptoms

Female Von Willebrand Disease Patients at Hemophilia Treatment Centers, 2002–2012

Number of female patients registered at federally-funded HTCs

Presentation Outline

- Healthcare-associated infections
- Blood Disorder and Blood Safety
  - Blood Donation and Safety
  - Hemoglobinopathies
  - Bleeding disorders
  - Clotting disorders
Clotting Disorders: Venous Thromboembolism (VTE)

- 350,000 to 600,000 new cases of VTE each year
  - An estimated 1.2 million Americans are living with VTE
  - Estimated 168,000 hospitalizations due to VTE in 2011
  - At least 100,000 deaths due to VTE

- Risk factors for VTE: age, hospital admission, surgery, prior VTE, and cancer

- $10 billion each year in VTE-associated health care costs in the U.S.

Hospitalizations and Clinic Visits with a Diagnosis of VTE, by Age

Hospitalizations* per 10,000

- Annual hospitalizations with a diagnosis of VTE in 2007-09: 548,000

Clinic Visits** per 10,000

- Total clinic visits with a diagnosis of VTE in 2007: 1,295,000

NOTES: *Annual rate of hospitalizations with a discharge diagnosis of VTE, 2007-09.
**Number of clinic visits with a diagnosis of VTE, 2007.

SOURCES: National Hospital Discharge Survey (NHDS), CDC/NCHS; National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC/NCHS.

**Obj. BDBS-12 Decrease Desired
Key Takeaways

- Health care-associated infections account for a substantial portion of health care-acquired conditions.

- National Action Plan is tracking HAIs in acute care settings, and moving toward targeting HAIs in ambulatory and long term care settings.

- CLABSI and MRSA rates are declining, but have not yet met Healthy People targets.

- National estimates are not available for many BDBS objectives; however, hemoglobinopathies, bleeding and clotting disorders are conditions that significantly impact those affected.
Don Wright, MD, MPH
Deputy Assistant Secretary
Director, Office of Disease Prevention and Health Promotion
U.S. Department of Health and Human Services
Cross-Federal Collaboration

- U.S. Department of Health & Human Services
  - Administration for Community Living (ACL)
  - Agency for Healthcare Research & Quality (AHRQ)
  - Centers for Disease Control & Prevention (CDC)
  - Centers for Medicare & Medicaid Services (CMS)
  - Food and Drug Administration (FDA)
  - Health Resources & Services Administration (HRSA)
  - Indian Health Services (IHS)
  - National Institutes of Health (NIH)
  - Office of the Secretary (OS)

- U.S. Department of Defense (DoD)
- U.S. Department of Labor (DoL)
- U.S. Department of Veterans Affairs (VA)
## Contributions

<table>
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<tr>
<th></th>
<th>Coordination</th>
<th>Surveillance</th>
<th>Research</th>
<th>Education</th>
<th>Communication</th>
<th>Incentives</th>
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<tr>
<td><strong>Office of Secretary</strong></td>
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**Not all partnerships are listed.**
Centers for Disease Control & Prevention: Surveillance

- **National Healthcare Safety Network (NHSN)**
  - Standardized data reported through internet
  - >11,000 facilities across United States
  - Data drives incentive payment programs

- **Emerging Infections Program (EIP)**
  - Population-level data
  - Information on pathogen-induced HAIs

[Links: National Healthcare Safety Network | Emerging Infections Program]
State-level Public Reporting
HAI Policy, 2004

Disclosures of HAI rates required
State-level Public Reporting
HAI Policy - January 2013

Disclosures of HAI rates required
DC*
Requires use of NHSN for reporting HAI data to the state (30 states and DC)
## Facilities Submitting Data to NHSN

<table>
<thead>
<tr>
<th>HAI Event</th>
<th>Number of Facilities Enrolled in NHSN*</th>
<th>Target Number of Facilities</th>
<th>CMS Reporting Start Date</th>
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</thead>
<tbody>
<tr>
<td>Acute care hospital</td>
<td>5,500</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td>CLABSI - ICU</td>
<td>3,400</td>
<td>3,400</td>
<td>11-Jan, 2011</td>
</tr>
<tr>
<td>CAUTI - ICU</td>
<td>3,350</td>
<td></td>
<td>12-Jan, 2012</td>
</tr>
<tr>
<td>SSI</td>
<td>3,800</td>
<td></td>
<td>12-Jan, 2012</td>
</tr>
<tr>
<td>MRSA Bacteremia</td>
<td>4,000</td>
<td>4,000</td>
<td>13-Jan, 2013</td>
</tr>
<tr>
<td>C. difficile Lab ID Event</td>
<td>4,050</td>
<td></td>
<td>13-Jan, 2013</td>
</tr>
<tr>
<td>Dialysis facilities</td>
<td>6,150</td>
<td>5,600</td>
<td>12-Jan, 2012</td>
</tr>
<tr>
<td>Long term acute care facilities</td>
<td>545</td>
<td>430</td>
<td>12-Oct, 2012</td>
</tr>
<tr>
<td>Inpatient rehabilitation facilities</td>
<td>1,100</td>
<td>1,200</td>
<td>12-Oct, 2012</td>
</tr>
<tr>
<td>Ambulatory surgical centers</td>
<td>285</td>
<td>5,300</td>
<td>14-Oct, 2014</td>
</tr>
</tbody>
</table>

NOTES: *Data as of July 31, 2013: Total number of facilities enrolled - 12,150; number of facilities actively submitting data - 11,100.
Agency for Healthcare Research & Quality (AHRQ)

CUSP Toolkit

The CUSP toolkit includes training tools to make care safer by improving the foundation of how your physicians, nurses, and other clinical team members work together. It builds the capacity to address safety issues by combining clinical best practices and the science of safety.

How to Use the CUSP Toolkit

The CUSP Toolkit is composed of instructional modules that a unit leader (facilitator) can use to teach his or her unit team members about CUSP principles.
Centers for Medicare & Medicaid Services: Payment Incentives

- **CMS Inpatient Prospective Payment System**
  - Prospectively set payment rates for hospitals
  - Additional payments for more costly episodes
    - NOT including secondary diagnoses resulting from HAIs

- **Hospital Value-Based Purchasing Program**
  - Affordable Care Act mandated incentive program
  - Must include HAI measures for the initial year (FY 2013) of the program
  - HAI measure list will expand to include SCIP, CLABSI, CAUTI, SSI, MRSA and Cdiff by FY 2017
Welcome to the Partnership for Patients

The Partnership for Patients is a public-private partnership working to improve the quality, safety and affordability of health care for all Americans.
National Awards Recognition Programs

■ Critical Care Societies Collaborative (CCSC) National Awards Program
  – Partnership between HHS and CCSC
  – Public recognition of critical care professionals in eliminating HAIs

■ Partnership in Prevention Award
  – Partners:
    – Association for Professionals in Infection Control and Epidemiology
    – Society for Healthcare Epidemiology of America
  – Recognizes single multidisciplinary team
For More Information

Division of Healthcare Quality
Office of Disease Prevention & Health Promotion
Office of the Assistant Secretary for Health
1101 Wootton Parkway
Rockville, MD
ohq@hhs.gov

Subscribe to the HAI listserv:
HAI Listserv
George A. Mensah, M.D.
Special Advisor to the Director
National Heart, Lung, and Blood Institute (NHLBI)
National Institutes of Health (NIH)
Translating Discoveries into Clinical and Public Health Practice

Systems and Procedures to Protect Blood Supply

- Federal infrastructure and Public-Private Partnerships
- Donor recruitment and screening
- Blood testing
- Preparation of blood and blood products
- Investigation of problems
# Contributions to a Safe and Adequate Blood Supply

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<thead>
<tr>
<th></th>
<th>Coordination</th>
<th>Surveillance &amp; Tracking</th>
<th>Research</th>
<th>Regulatory</th>
<th>Education &amp; Communication</th>
<th>Reimbursement &amp; Incentives</th>
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</table>
Historical Transfusion Risks of HIV, HCV, and HBV Have Declined

Busch, et. al., Transfusion, Oct 2013, in press. Used with permission

Objective: BDBS-18.3 reduce transfusion-transmitted infections
Blood Safety Includes the Availability of Blood and Blood Products

Local television station covered the NIH Blood Bank on the increased need for blood and platelet donor over the holidays http://clinicalcenter.nih.gov/blooodonor/urgentupdates.html

Objectives: BDBS-17 increase the proportion of persons who donate blood, BDBS-18.4 decrease persons with hemoglobinopathy who develop alloimmunization, BDBS-19.1 reduce blood shortages
Inherited and Acquired Blood Disorders

■ Inherited Disorders
  – Hemoglobinopathies
    o Sickle Cell Disease (SCD)
    o Thalassemias
  – Bleeding Disorders
    o Hemophilia
    o Von Willebrand Disease (VWD)

■ Acquired Disorder
  – Venous Thromboembolism (VTE)
    o Deep Vein Thrombosis (DVT)
    o Pulmonary Embolism (PE)

Sickle Cell Disease Research: From the Molecule to the Community

Discovery
1910-49
- Herrick: “sickle-shaped”
- Pauling: “molecular disease”

1972
- Penicillin Prophylaxis Studies I & II

1980s
- Newborn Screening

1990s
- Hydroxyurea clinical trials
- Test therapies

2000s
- Address gaps in research and evidence-based clinical care
- Adults with SCD

2010s
- Evidence-Based Practice Recommendations
- Comprehensive Sickle Cell Centers
- Stroke Prevention Trials I & II (STOP)
- Pediatric Hydroxyurea Phase III Clinical Trial
Life Expectancy of Patients with Sickle Cell Anemia has Increased

Objectives: BDBS-2 increase referrals for evaluation and treatment, BDBS-4 increase screening for complications, BDBS-5 increase therapies, BDBS-6 increase penicillin
Preventable ED Visits for SCD Pain
Children and Young Adults ages 5-21 years

Pre-program proportion = 7.9%

% of SCD patients visiting ED for pain
Goal (3%)

Post-program proportion = 1.1%

Objective: BDBS-7 Reduce preventable hospitalizations in SCD children

SOURCE: Kalinyak, K, Crosby, L, et. al. Funded by Cincinnati Children’s Hospital and Medical Center. Used with permission
Thalassemia Research: Improved Understanding but a Long Way to Go

**Treatments**

<table>
<thead>
<tr>
<th>Period</th>
<th>Transfusions and iron overload</th>
<th>Continuing work on iron chelators</th>
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</thead>
<tbody>
<tr>
<td>1960s</td>
<td>Regular transfusions cause iron toxicity</td>
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<tr>
<td>1970s</td>
<td>Other therapeutic approaches: Drugs to increase fetal hemoglobin Bone marrow transplant</td>
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<tr>
<td>1980s</td>
<td>Discovery: infused desferoxamine can eliminate iron toxicity</td>
<td>New radiology studies show iron overload in the heart</td>
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<tr>
<td>1990s</td>
<td>Continued work in oral chelators</td>
<td>First two oral chelators are available</td>
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<td>2000s</td>
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<tr>
<td>2010s</td>
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**SOURCE:** American Society of Hematology
http://www.hematology.org/SearchResults.aspx?searchtext=50%20years%20milestones
Give Blood Logo: Used with permission of the Cooley’s Anemia Foundation
Thalassemia: Comprehensive Care for Patients and Families

Objectives: BDBS-1 increase vaccinations, BDBS-2 increase referrals for evaluation and treatment, BDBS-4 increase screening, BDBS-5 increase therapies, BDBS-10 increase knowledge of carrier status

SOURCE: Abridged version of http://cooleysanemia.org/updates/CompCare3.pdf. Used with permission of the Cooley’s Anemia Foundation
Thalassemia + Blood Safety: A Collaboration of the Cooley’s Anemia Foundation and the CDC

Blood Safety

Objective: BDBS-18.3 decrease transfusion-transmitted infections

WHY PARTICIPATE IN THE BLOOD SAFETY PROGRAM?

because

Blood Safety is Knowledge

The Thalassemia Data and Blood Specimen Collection System (commonly called the Blood Safety Program) provides much needed knowledge.

And Knowledge is Power

So Blood Safety is Power

Research in Bleeding and Clotting: Basic Science to Clinical Application

- Molecular basis of hemophilia
  - Discovery of recombinant factor
- Molecular genetics and proteins in von Willebrand Disease (VWD)
  - ELISA assay to diagnose defects
  - NHLBI Report
- Venous Thromboembolism (VTE)
  - Risk factors
  - Therapies

Objectives: BDBS-14 increase referrals for women with bleeding disorder symptoms, BDBS-15 increase VWD diagnosis
VTE Healthcare Quality Measure

“Venous Thromboembolism (VTE): percent of patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or the day after hospital admission or surgery end date for surgeries that start the day of or the day after hospital admission”

The Joint Commission
National Hospital Inpatient Quality Measures

Objective: BDBS-13 reduce VTEs during hospitalization
Are federal partners* and stakeholders taking steps to help make progress toward HP2020-BDBS Objectives?

<table>
<thead>
<tr>
<th>Steps</th>
<th>Hemoglobinopathies</th>
<th>Bleeding/Clotting</th>
<th>Safety</th>
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<tbody>
<tr>
<td>Yes</td>
<td>1-Vaccinations</td>
<td>13-VTEs during hospitalization</td>
<td>17-Blood donations</td>
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<tr>
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<td>2-Referrals</td>
<td>14-Referrals for bleeding</td>
<td>18.3-Adverse Events, Infections</td>
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<td>4-Regular screening</td>
<td>15-VWD diagnosis</td>
<td>18.4 Adverse Events, Alloimmunization</td>
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<td>5-Therapies</td>
<td>16-Hemophilia joints (HRSA)</td>
<td>19-Blood Shortages</td>
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<td>6-Penicillin prophylaxis</td>
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<td></td>
<td>7-Preventable hospitalizations</td>
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<td></td>
<td>10-Carrier status</td>
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<tr>
<td>Not yet</td>
<td>3-Medical home</td>
<td>12-VTEs out of hospital</td>
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<td></td>
<td>9-HS diploma/GED</td>
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*excluding HRSA, which will present its progress

For questions, comments and more information, email: NHLBI-HP2020-BDBS@nhlbi.nih.gov
HRSA is the primary Federal agency for improving access to health care services for people who are uninsured, isolated, or medically vulnerable.

Tens of millions of Americans get affordable health care and other help through HRSA's 100-plus programs and more than 3,000 grantees.
The mission of the Maternal and Child Health Bureau (MCHB) is to provide leadership, in partnership with key stakeholders, to improve the physical and mental health, safety and well-being of the maternal and child health (MCH) population which includes all of the nation’s women, infants, children, adolescents, and their families, Including fathers and children with special health care needs.
HRSA BD/BS Infrastructure

- The National Hemophilia Program
- Sickle Cell Treatment Demonstration Programs
- Sickle Cell Newborn Screening Program
- Thalassemia Program
The National Hemophilia Program

Funded since 1975 with two primary structured activities:

- **National Hemophilia Program Regional Network (RHN)**
  - 8 Regional Networks containing 135 Hemophilia Treatment Centers

- **National Hemophilia Program Coordinating Center (NHPCC)**
  - The American Thrombosis and Hemostasis Network (ATHN) was awarded funding in June 2012

The Regional Networks through ATHN will be providing data for several Healthy People 2020 objectives
Hemophilia Registration at Hemophilia Treatment Centers, 1998-2011

Number of patients registered at Federally supported HTC

Severity of hemophilia:
- Severe
- Moderate
- Mild

0 2,000 4,000 6,000 8,000

Age (years)
- 2-10
- 11-19
- 20-44
- 45-64
- 65+

SOURCES: Universal Data Collection System (UDC), 1998-2011, CDC/NCBDDD.
Von Willebrand Disease Registration at Hemophilia Treatment Centers

Number of patients registered at federally funded HTCs

Hemophilia Comprehensive Care Model
American Thrombosis & Hemostasis Network (ATHN)

- Not-for-profit organization
- Founded July 2006
- ATHN’s mission is to provide stewardship of a secure national database used to support:
  - Outcomes analyses
    - Research
    - Advocacy
    - Public Health
- Ultimate vision is to advance and improve care
ATHN: Current Data Initiatives

- CDC Public Health Surveillance for Bleeding Disorders
- HRSA National Hemophilia Program Coordinating Center
- ATHNdataset
  - Over 16,000 patients opt-in as of June 1, 2013
- ATHN-1: Cardiovascular Disease in Hemophilia
  - Standard data within ATHN database plus new data
- My Life Our Future
  - Genotyping data; linked to ATHNdataset phenotypic data
CDC Public Health Surveillance Project for Bleeding Disorders

- Building on the 13 year longitudinal surveillance in the CDC’s Universal Data Collection Project (UDC)
- Provide descriptive knowledge about the populations of hemophilia, von Willebrand disease (VWD), other bleeding disorders and VTE receiving care at HTCs (HTC Population Profile)
- Monitor health indicators among populations with bleeding disorders (Registry)
  - Assess trends over time
  - Measure rates of, and risk factors for, complications
  - Identify high risk populations for prevention
  - Identify issues that require research
CDC Public Health Surveillance Project for Bleeding Disorders: Two Data Sets

**HTC Population Profile (HTC PP)**
- Individual level data
- De-identified data set (all 18 identifiers removed)
- Population based data for hemophilia, VWD, other disorders needed for HP 2020
- Launched 9/2012
- Over 24,000 forms from 115 HTCs submitted

**Registry for Bleeding Disorders Surveillance**
- More detailed individual level data
- Limited data set
- Data elements related to identified HP 2020 measures included
- A subset of patients in HTC Population Profile
- Data collection begins Summer 2013
Thank You

Regional Hemophilia Networks
• New England Region
• Mid-Atlantic Region
• Southeast Region
• Great Lakes Region
• Northern States Region
• Great Plains Region
• Mountain States Region
• Western States Region

National Hemophilia Program Coordinating Center
• American Thrombosis & Hemostasis Network

Colleagues at the Center for Disease Control and Prevention (CDC)
• CDC Public Health Surveillance Project Science Committee
Sickle Cell Newborn Screening Program

Sickle Cell Disease for Newborn Screening Program

- Established in 2002
- Community-based networks partner with State Title V and state newborn screening programs, comprehensive sickle cell treatment centers, and other stakeholders to provide support to infants
- Projects work with the SCD National Coordinating Center to implement models of follow-up for individuals with sickle cell diseases and trait
- Works with Sickle Cell Disease Association of America (SCDAA) to work on Newborn Screening Educational project

SCD National Coordinating Center

- Coordinates and supports grantee networks through technical assistance and information exchange.
- Led by the National Initiative for Children’s Healthcare Quality (NICHQ).
- Holds hemoglobinopathy learning collaboratives so network teams may learn from each other and from national expert faculty.
Sickle Cell Treatment Demonstration Program

- Established in 2004
  - To improve access to services for individuals with sickle cell disease,
  - Improve and expand patient and provider education,
  - Improve and expand the continuity and coordination of service delivery for individuals with sickle cell disease or who are carriers of the sickle cell gene mutation.

- Grantee networks have two main goals:
  - To support the provision of coordinated, comprehensive, culturally competent and family-centered care for individuals living with sickle cell disease, and
  - To work collaboratively with our non-federal partners.

- Originally 4 grantees and a National Coordinating Center; recently expanded to 6 grantees for sickle cell model system of comprehensive care and medical management treatment demonstration project.
**Thalassemia Program**

- In existence for over 30 years

**Purpose:** to support the demonstration of a model system of comprehensive care and medical management for individuals and families at risk or affected by Thalassemia.

- **Program initiatives:**
  - Developing and expanding outreach strategies and patient support groups
  - Establishing statewide newborn screening for thalassemia
  - Supporting successful transition to independent adult life including healthcare & employment
  - Developing and implementing program sustainability

- **Grants held:**
  - Children’s Hospital – Oakland Hematology Department; California
  - Ann & Robert H. Lurie Children’s Hospital of Chicago Comprehensive Thalassemia Program; Chicago
  - The Children’s Hospital of Philadelphia; Pennsylvania
HRSA is dedicated to developing, growing, and maintaining the critical infrastructure necessary to provide health care services to those with unmet needs, in conjunction with our federal partners and stakeholders.

Development of systems of care and the infrastructure necessary requires multi-stakeholder buy-in.

Validated data collection is necessary to track longitudinal trends and improve process and health care outcomes.

Data collection and program evaluation within rare diseases/condition is a significant challenge (cost, burden, time, etc), but can be accomplished.
Reducing Central Line-Associated Bloodstream Infections

John M. Boyce, MD
Diane G. Dumigan, RN, CIC
Carrie Guttman, MSN
Sean Boyle, RN

Yale-New Haven Hospital
New Haven, CT
• Private, non-profit teaching hospital that includes two inpatient campuses, Yale-New Haven Children’s Hospital, Yale-New Haven Psychiatric Hospital and Smilow Cancer Hospital at Yale-New Haven

• Primary teaching hospital of Yale School of Medicine

• 1,500 inpatient beds

• Staff: More than 13,000 employees, 4,800 university and community physicians

Our Mission

To provide sensitive, high-quality, cost-effective health care to all patients, regardless of ability to pay
Reduction of Central Line-Associated Bloodstream Infections

• In 2009, the Hospital of Saint Raphael (now the Saint Raphael campus of Yale-New Haven Hospital) joined the Comprehensive Unit-Based Safety Program (CUSP) to reduce central line-associated bloodstream infections (CLABSIs)
  – Utilized a number of CUSP tools when implementing our program

• In 2010, despite making progress, our CLABSI rates were still above expected levels, so the hospital re-organized our CLABSI prevention committee

• A multidisciplinary committee was formed
  – included front-line care givers involved in insertion and care of central lines
Methods for Reducing CLABSIs, Saint Raphael Campus, Yale-New Haven Hospital

Brainstorming:
We used affinity diagrams to clarify current knowledge

Understanding variation and selecting processes to improve

Results of Brainstorming Sessions: Four Common Areas Needing Improvement

<table>
<thead>
<tr>
<th>Line Insertion</th>
<th>Line Access</th>
<th>Line Maintenance</th>
<th>Line Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Poor use of the checklist</td>
<td>• Should we limit blood cultures off line</td>
<td>• Should we use antiseptic catheters</td>
<td>• Line Utilization</td>
</tr>
<tr>
<td>• Discomfort to stop procedure</td>
<td>• Should we limit other labs off line</td>
<td>• Should we validate dressing change skills</td>
<td>• Knowledge of line duration</td>
</tr>
<tr>
<td>• Lack of knowledge of sterile technique</td>
<td>• Need to develop line sepsis evaluation process</td>
<td>• The suture line is too tight for BioPatch®</td>
<td>• Should we change lines placed during codes/from outside</td>
</tr>
<tr>
<td>• Reluctance to implement chain of command</td>
<td>• Are we scrubbing hub</td>
<td>• Secretions are draining into dressing</td>
<td>• Are we removing lines soon enough</td>
</tr>
<tr>
<td>• Having too many inserters</td>
<td>• Should we remove the Clave®</td>
<td>• How frequently should we be changing the Clave®</td>
<td>• Is daily line assessment being discussed</td>
</tr>
<tr>
<td>• Limited teamwork</td>
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</table>
Intervention Tools

- Hired mobile simulation lab to re-train residents on catheter insertion technique
  - Khouli H et al. Chest 2011;139:80
- Re-certified all nurses who insert PICC catheters
- Re-educated physicians and nurses on use of new checklist
- High-level administrative support for nurses who reported physicians with suboptimal insertion technique
- Developed process for monthly review of checklists
- Daily central line rounds to assess post-insertion care
Intervention Tools

• Several cases reported as CLABSIs appeared to represent contaminants in blood cultures drawn from central catheters

• Reduce blood cultures drawn from central catheters
  – Memo to physicians recommending venipuncture as preferred site
  – 2-nurse protocol developed for drawing blood cultures from central catheters
  – Special kit developed for drawing blood cultures from central lines
INTERVENTIONAL TOOLS

• Have nurse at bedside for entire procedure
• Nurses and physicians hand-off patients
HHS/SHEA/APIC Partnership in Prevention Award

Saint Raphael campus team members, front row (left to right), John M Boyce, MD, Jeannette Bronsord, RN, Diane G Dumigan, RN, Alan S. Kliger, MD

Courtesy: U.S. Dept. of Health and Human Services
CLABSI/1000 Catheter Days,
Saint Raphael Campus, Yale-New Haven Hospital
Q1 2010 – Q1 2013
Expanding Interventions to ICUs, York Street Campus, Yale-New Haven Hospital

- Intensified interventions at York Street campus began November 2012
Reducing CLABSIs on the Comprehensive Sickle Cell Specialty Unit York Street Campus, YNHH

• Why did we target the specialty unit?
  – high number of CLABSIs
  – a majority of reported CLABSIs appeared by clinical criteria to represent contaminants recovered from central line blood cultures

• Project components: focus on line maintenance
  – multidisciplinary team with local champions
  – tackled barriers particular to patients with sickle cell disease
  – process mapping
  – clinical rounding tool: prevention “bundle”
Reducing CLABSIs on the Comprehensive Sickle Cell Specialty Unit York Street Campus, YNHH (continued)

• Pilot unit results:
  – 58 weeks without CLABSI on sickle cell specialty unit

• Spread phase:
  – Interventions and processes spread to other units in the Department of Medicine

• Department results:
  – Reduction of CLABSIs on all Medicine floors:
    • CY 2012 – 39 infections
    • CY 2013 to date – 11 infections
Partnership for Patients Recognition

November 2012 HEN Week

Yale-New Haven Hospital, New Haven, Connecticut

Aim Statement
- Unit Aim: 100% of all blood cultures on unit will be drawn per evidence based guidelines by January 1, 2013 (peripheral draw strongly preferred)
- Hospital Wide Collaborative Aim: Eliminate Central Line Associated Blood Stream Infections (CLABSIs) at Yale-New Haven Hospital (YNHH)
- Patients with Sickle Cell disease are vulnerable, typically have poor peripheral access, and have a high incidence of central line usage

Run Charts
- Blood Cultures Drawn:
  - Peripheral, Central Line, and Unspecified Site (%)
- Days Since Last CLABSI:
  - Number of days since last CLABSI (Days since Last CLABSI)

Lessons Learned
- Frontline engagement, interdisciplinary collaboration, and strong sponsor leadership are keys to success
- Resources, direction, and oversight from a hospital wide charter helped overcome barriers
- It is essential to test new processes through PDSA to smooth out wrinkles and build buy-in

Recommendations and Next Steps
- Evaluate Critical Care Nurse off shift role in blood culture draws
- Integrate practice evidence into policy
- Change electronic record to force draw site in blood culture MD/LIP
- For draws off central line to reduce positives and to prevent infection: testing two nurse process using predried kit of sterile supplies

Team Members
- YNHH is a large academic medical teaching center
- The Comprehensive Sickle Cell and General Medicine Unit opened on April 2, 2012 and has 15 designated beds for Sickle Cell patients and in general medicine beds

Photo credit: Eric Craig

Left to right:
Rich Umbenstock, President and Chief Executive Officer, America Hospital Association
Carrie Gutman, Safety Coordinator, YNHH
Charisse Coulombe, MS, MBA, CPHQ Senior Director of AHA/HRET HEN
Maulik Joshi, Dr.P.H, President, HRET and Senior Vice-President, American Hospital Association

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Lessons Learned

• Multidisciplinary team must include personnel involved in catheter insertion and maintenance

• Executive leadership and administrative support is essential

• Educate personnel and implement best practices for line insertion and care

• Implement processes to minimize catheter-drawn blood cultures

• Monitor processes and CLABSI rates; provide feedback
Yale-New Haven Hospital, New Haven CT
Contact Information

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• Sean Boyle, RN  
  Assistant Patient Services Manager  
  Comprehensive Sickle Cell General Medicine Unit  
  Sean.Boyle@ynhh.org
# BSI Prevention Daily Rounds

**Date:** _____________  
**Shift:** _____________  
**Clinical Observer:** _____________

<table>
<thead>
<tr>
<th>Patient Name/MRN</th>
<th>Nurse's Last Name</th>
<th>Type of Central Line (Note: Midline is not a central line)</th>
<th>Dressing Change Date</th>
<th>CVAD Maintenance Orders Present?</th>
<th>Dressing C/D/I?</th>
<th>Dressing Correctly Labeled?</th>
<th>Dressing Changed Within 7 Days?</th>
<th>Needleless connector Changed Within 96hrs?</th>
<th>Action Taken/Comments</th>
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_CG/SB 3 4 13_
Please submit your questions through the Q&A function
Healthy People 2020 Team

Progress Review Core Planning Group

- Denise Stredrick, NIH/OD
- Ellen Werner, NIH/NHLBI
- Emily DeCoster, HRSA
- Kathryn McLaughlin, HRSA
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- Insun Kim, CDC/NCHS
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- Yen Luong, HHS/ODPHP
- Deb Nichols, HHS/ODPHP
- Emmeline Ochiai, HHS/ODPHP
- Ellis Davis, HHSODPHP
Online Resources and Tools

HealthyPeople.gov

Clinical Preventive Services
Millions of children, adolescents, and adults lack access to the clinical preventive services needed to prevent and detect illnesses like flu and cancer.

Get the Latest Healthy People News & Events

HHS Prevention Strategies
Healthy People supports prevention efforts across the U.S. Department of Health and Human Services (HHS) to create a healthier Nation.

Get to know the Leading Health Indicators
Persons with a dental visit
In 2010, 42.1% of persons aged 2 years and older had a dental visit in the past 12 months (age adjusted).

Spotlight
Healthy People 2020 Sharing Library
See what communities across the country are doing to address the Healthy People 2020 objectives!
Stay Connected

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TWITTER   @gohealthypeople
LINKEDIN  Healthy People 2020
YOUTUBE   ODPHP (search “healthy people”)