THE TRUE COSTS OF HAIS

REDUCE CROSS CONTAMINATION AND HAIS

5.12.15
INTRODUCTION
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About the Presenter

- Attending Anesthesiologist at Physician Anesthesia Services, P.C., in Golden, CO
- Specializes in Cardiac and Pediatric Anesthesiology
- Founder and inventor of SuctionShield
- President of Patient Shield Concepts, LLC
- Board Certified in Anesthesiology and Pediatrics
- Member of Colorado and American Societies of Anesthesiology
Lynn White, M.D.

About the Presenter

Formerly in Chicago, IL

• Staff Anesthesiologist, Clinical Faculty at Rush Presbyterian St. Luke’s Medical Center
• Associate Director of the Pediatric Emergency Department at Michael Reese Hospital and Clinics
• Associate Professor of Pediatrics at University of Illinois College of Medicine
SELF ASSESSMENT
(CA)UTI, SSI, BSI and pneumonia.

These four HAIs account for what percent of HAIs in acute care settings?

a) 90%
b) 10%
c) 75%
d) none of the above
U.S. Situation
Self Assessment

HAIs rank ______ among most common medical errors?

a) 4\textsuperscript{th}

b) 1\textsuperscript{st}

c) 5\textsuperscript{th}

d) 2\textsuperscript{nd}

e) none of the above
U.S. Situation

Self Assessment

HAIs rank ______ with respect to annual cost of medical errors?

a) 4th
b) 1st
c) 2nd
d) 3rd
e) none of the above
U.S. Situation

Self Assessment

Which HAI class occurs most frequently in hospitals?

a) SSI
b) (CA)UTI
c) (CLA)BSI
d) VAP
e) C. difficile
U.S. Situation

Self Assessment

Which category of HAI incurs the most direct costs per case?

a) (CA)UTI
b) (CLA)BSI
c) C. difficile
d) SSI
e) VAP
The hospital staff did this to you?

No, the hospital staph.
FULL SCOPE OF THE PROBLEM
1.7 million HAIs annually in acute care hospitals

- Incidence of 1:20 patients admitted
- Resulting in 99,000 patient deaths per year

Excludes 26,000 U.S. facilities, such as:

- ASCs
- SNFs
- LTACs
- Hospice
- Dialysis Centers
U.S. Situation

CMS Report 2012

Physicians are underreporting
- HAI appears after discharge
- HAC readmission rate underestimated

Patients with CABG
- 1:34 ratio of mediastinitis reported in hospital vs. after discharge
DIRECT MEDICAL COSTS
Direct Medical Costs

**Without cost-shifting**
Excess medical costs: $10 billion
(Zimlichman, JAMA Int Med 2013Dec 9-23;173(22) 2039-46)

**With cost-shifting**
$35-45 billion for acute care hospitals annually
$28-33 billion for non-acute care hospitals annually
(Scott, et al, CDC publication, March 2009)
U.S. Situation

Direct Medical Costs

Total direct, indirect and nonmedical social cost estimate

$96-147 billion per year

(Marchetti and Rossiter, J Med Econ 2013 Dec;16(12):1399-404)
COMPONENTS OF DIRECT MEDICAL COSTS
Cost Components

75% of HAIs
(CA)UTI
(CLA)BSI
SSI
VAP

+ CDI > 90%
Reimbursed by CMS

75% of HAIs

(CA)UTI

(CLA)BSI

SSI

VAP

+ CDI > 90%
(cutting CDI & MRSA soon)

HAI Costs per Patient

Average cost across all admissions:

(CA)UTI: $1,000
VAP: $40,000
SSI: $20,800
(CL)BSI: $45,800
CDI: $11,000

$1,100
(with or without HAI)
HAI Costs

per Patient with HAI

Reduction in overall net profit margins:

$5,018

(Murphy, et al. APIC Briefing, Feb, 2007)
HAI Costs

Average cost:

$23,000
HAI Costs per Infection

*Excess costs increase with MRSA:*

- SSI: $42,000
- (CLA)BSI: $58,500
HAI Costs

Increased Length of Stay:

Without HAI
5 days

With HAI
22 days
Length of Stay Increases

(CLABA): +10.4 days
SSI: +11.2 days
VAP: +13.1 days
CDI: +3.3 days

+ MRSA
+15.7 days
+23 days
# HAI Mortality

## Death Rates by Category

- **VAP**: 36%
- **(CLA)BSI**: 31%
- **(CA)UTI**: 13%
- **SSI**: 8%
- **Others**: 11%

*(Kleven, et al, Public Health Reports Mar-April, 2007)*
HAI Costs

% of excess costs in US Hospitals by Category of HAI

(CLA)BSI: 36%
SSI: 29%
VAP: 21%
CDI: 5%
(CA)UTI: 2%
HAI Incidence

HAI Incidence by Category

(CA)UTI: 34%
SSI: 17%
BSI: 14%
Pneumonia: 13%
CDI: 10%

(Data from Zimlichman, et al JAMA Int Med 2013 Dec 9-23;173-(22))
Overall Mortality from HAIs

6.5%
HAI Mortality

*Increase in Mortality from HAIs*

1.5 - 2x
HAIs in the ICU

5x - 10x more likely
to acquire an HAI than non-ICU patients
HAIs in the ICU

50-70% 
with antimicrobial-resistant strains
Leading Cause of Death in ICU

Pneumonia
Leading Cause of Death in ICU

Most Expensive
Pneumonia
Sepsis

Most Deadly
Pneumonia
Sepsis

(AJIC:43(2015) 4-9.)
HAIs & ICU Patients over 65 years old

Increases
Cost by $150,000

Decreases
Lifespan by many years

(AJIC:43(2015) 4-9.)
Patients Undergoing Invasive Surgery

19.5% mortality + $33,000 each = Sepsis

(AJIC:43(2015) 4-9.)
Patients Undergoing Invasive Surgery

11.4% mortality

+ $46,400 each

= Pneumonia

(AJIC:43(2015) 4-9.)
CMS Penalties for Underperforming Hospitals

- Steady decrement in Medicare reimbursements each year, progressing from -1% to -2%
- Hospitals with high readmission rates losing 3%
- Additional penalties for improper or non-reporting to IQR
Hospitals face Medicare payment penalties for high readmission rates

You again?!

I don’t feel well.
Readmission Rates within 30 days

<table>
<thead>
<tr>
<th>With HAI</th>
<th>Without HAI</th>
</tr>
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<tbody>
<tr>
<td>30%</td>
<td>6%</td>
</tr>
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Average Chance of Readmission within a year

- **MRSA** positive culture: 40%
- **VRE** positive culture: 67%

(Emerson, et al, Inf Control & Hosp Epidemiol 2012 June;33(6)539-44)
Average Readmission Time from Hospital Discharge

27 days for a culture positive patient

(Emerson, et al, Inf Control & Hosp Epidemiol 2012 June;33(6)539-44)
INDIRECT COSTS OF HAIS
Loss of CMS Reimbursements

Including
(CA)UTI
(CLA)BSI
SSI
HAP/VAP

Coming Soon
MRSA (hospital-acquired)
CDI
Predicted 2014 Penalties

2,225 Hospitals
$227 million in withheld compensation
= Up to $1 million loss per large hospital annually

(JAMA: June23/30,2013, Vol.309,#4)
Predicted 2015 Penalty Increases

300 bed hospital
+ poor HAC prevention performance
+ high readmission numbers

= $1.3 million loss annually

(PWC Health Research Institute "Health Reform: Prospering in a Post-Reform World")
Predicted 2014 Penalties

= up to $1 million per hospital annually

Large Hospitals 40%  
Small Hospitals 28%

(JAMA: June 23/30, 2013, Vol. 309, #4)
Reality of CMS Penalties

Large Hospitals including:
- Teaching Hospitals
- Inner City Hospitals (safety net)

Disproportionately penalized due to higher patient acuity

(JAMA: June23/30,2013, Vol.309,#4)
Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS) Surveys

= the centerpiece of
Value-Based Purchasing (VBP) reimbursements
2010 HCAHPS Patient Satisfaction Studies

Patient Satisfaction is linked to:

a) nurse:patient ratios  
b) Interdisciplinary collaboration  
c) Work environment
2013 HCAHPS Patient Satisfaction Studies

Patient Satisfaction is linked to:

a) Nurse:patient ratios
b) Interdisciplinary collaboration
c) Work environment
d) Performance
HCAHPS Patient Satisfaction Studies

Patient Satisfaction is now linked to:

- 30% patient experience of care
- 70% Clinical Process of Care (HACs, etc.)
HCAHPS Patient Satisfaction Studies

Reimbursements from the worst performers are given to best performers.

In the first five years

VBP hospitals (general acute care) risk
-$1.88 million each in median revenue

(2009 VBP Impact Study/ Data Advantage, LLC)
Quality Measurements

Unnecessary punishments on high-volume hospitals

patient assessments ≠ clinical standards

Quality Measurements

patient assessment + HAI readmission

Unnecessary punishments on high-volume hospitals
The Reality of a Discharge with HAI

Many patients who are discharged with an HAI:

a) Are admitted to LTACs or SNFs
b) Require home health care
c) Need long-term rehab and pain treatments
d) Experience altered quality of life
Financial Impact on Families

prolonged hospitalization + post discharge disability

Financial hardships: 62% of personal bankruptcies due to healthcare issues

Financial Impact on Families

Most are
Well-educated
Homeowners
Middle-class
Employed
75% insured

Financial hardships:
62% of personal bankruptcies due to healthcare issues

“Wait, this one’s a lawyer. We’d better wash our hands.”
Legal Costs

The Good News

70% of HAIS are preventable

The Bad News

70% of HAIS are preventable
Malpractice Legal Costs

Non-compliance with reporting standards + HAI prevention standards

Multi-million dollar malpractice settlements
HAI Legal Costs

24% of hospital professional liability costs = HACs

+ 1% annual rise in HAI claims

Multi-million dollar malpractice settlements
HAI Malpractice Cases

Guilty until proven innocent
HAI Malpractice Cases

Hospitals can establish innocence by:

a) Proving an infection was not an HAI
b) Utilizing standard of care documentation
c) Implementing evidence-based medicine practices

(Pyrek, K. “HAI-Related Litigation: What Infection Preventionists Need to Know”, Infection Control Today 12/18/09)
UNINTENDED CONSEQUENCES
HAIs and MDROs

Admitted patients are very likely to become colonized with resistant organisms over time, especially in the ICU.

MDROs increase due to:

- Antibiotic misuse
- Horizontal transmission in healthcare facilities
MDROs Increase Mortality

**Responsible for higher death rates than infections with susceptible organisms**

MRSA vs MSSA

> 2

LOS

much greater
MDROs Increase Mortality

**CDI**

250,000 hospitalized annually in the U.S.

**CDI**

14,000 die annually
HAIs and MDROs

This leads to:
- Infections that are not reimbursable are not a priority
- Unnecessary tests on newly admitted patients
- Inappropriate antibiotic treatments
- Increases in CDI rates
HAI Containment Initiatives

- National Healthcare Safety Network Mandatory Reporting
- Partnership for Patients Campaign
- Hand hygiene measures
HAI Containment Progress

• 1/3 of US hospitals in full compliance with guidelines

• BUT:

• < 50% of healthcare providers follow basic hand hygiene measures
CDC Progress Report

(CL)BSI -46%  
(2008-2013)

CDI -10%  
(2011-2012)

MRSA -8%  
(2011-2013)

SSI -19%  
(2008-2013)

(CA)UTI +6%  
(2008-2013)

≈ 50% of the infections
HAI PREVENTION
HAI Prevention Works

- Central venous catheter insertion protocols
- Sterile OR settings for urinary catheter insertion
- Oral care protocols prevent VAP and decrease infected biofilms
- MRSA and VRE patient isolation precautions and barriers
- Hospital Infection Preventionists
Transmission Prevention

Keys to Prevent MDRO Spread
• Hand hygiene monitoring programs
• Isolation precautions
• Environmental hygiene
• Active surveillance programs
• Decontamination
• Vaccination programs (pneumococcal vaccines)
Transmission Prevention

Hospitals are not self-regulating to prevent Yankauer cross contamination.
The Solution: SuctionShield

- This one-piece disposable holster isolates suction implements.
- Can help reduce cross contamination and HAI transmission.
- Reservoir at bottom isolates secretions
- Reduces suction noise
Q & A
THANK YOU

Put Infection in Its Place

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