



**Grab a blank piece of paper and a pen ...
we are drawing a penguin ... 2 minutes**





Annotate as we go along – or use chat

- **Top, Bottom or Middle of page**





Annotate as we go along – or use chat

- **Left , Right or Front of facing**

Annotate as we go along – or use chat

- **Lots of details or Few details**





Annotate as we go along – or use chat

- **Wings close to body or outstretched**

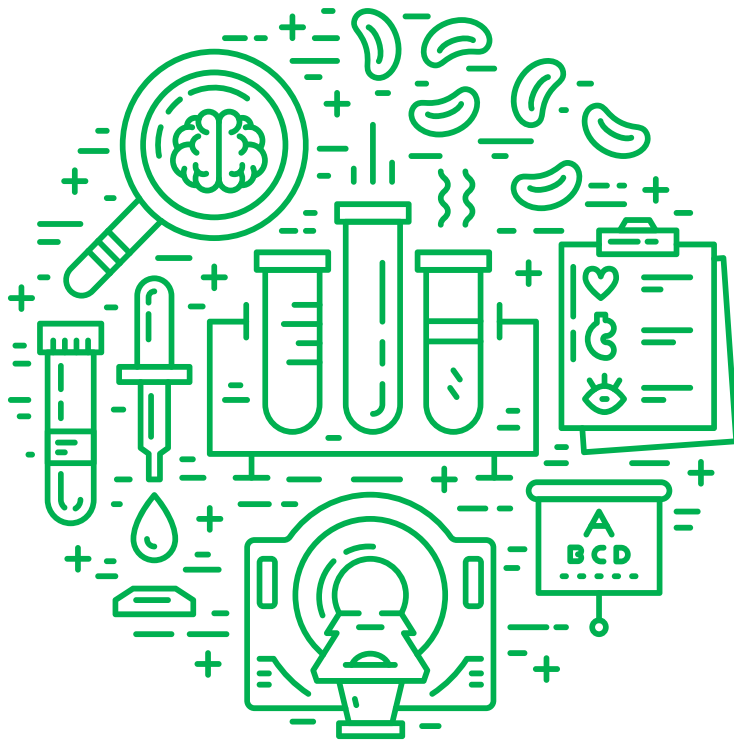
Annotate as we go along – or use chat

- **Big beak vs big feet**



Infection
Prevention

Hospital Onset Bacteremia





Disclosures

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Employee of Medline Industries



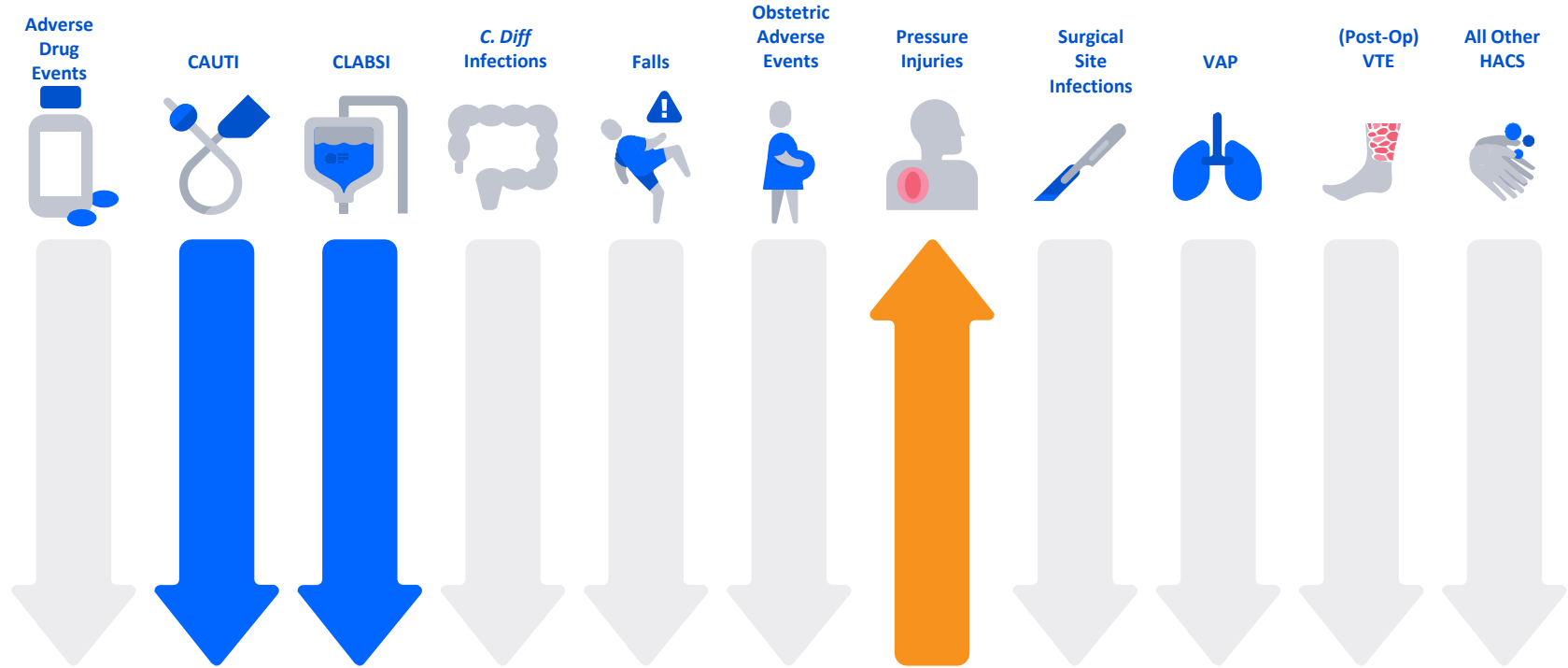


Objectives

- Understand the origins and impact of HOB
- Detail why HOB as a quality Measure
- Identify sources for infection not reportable but causing sepsis
- Discuss the costs and prevention of HOB



Post-Pandemic: 2022 – Today



Moving Towards HOB

Hospital Onset Bacteremia (HOB)

The growth of recognized bacterial or fungal pathogen from blood culture
specimen Obtained $\geq$ Day 3 of admission^{1,8}

Annotate or Chat



1. My facility is : (pick no more than 2)

Please select at most 2 options.

- 1 ☐ Tracking HAI's
- 2 ☐ Tracking HOB
- 3 ☐ Talking about HOB
- 4 ☐ None of the above
- 5 ☐ All of the above

Origins of HOB



Central Access



Arterial
Catheters



PIV



Complications of
Infections
(Pneumonia,
Meningitis)



Surgical Wounds



CAUTI



IV Drug Abuse



Dental
Procedures



Patient's common
microbiome



Why HOB as a Quality Measure?



- Broader Focus and Evidence
- Straightforward Methodology to collect data
- Clinically impactful to patients and systems across all care
- Objective / measurable
- All patient areas to be included
- Prevalence- One study found a median rate of HOB at 0.124/100 admissions¹

HOB: By the Numbers



Estimated at least
4x higher than CLABSI rates

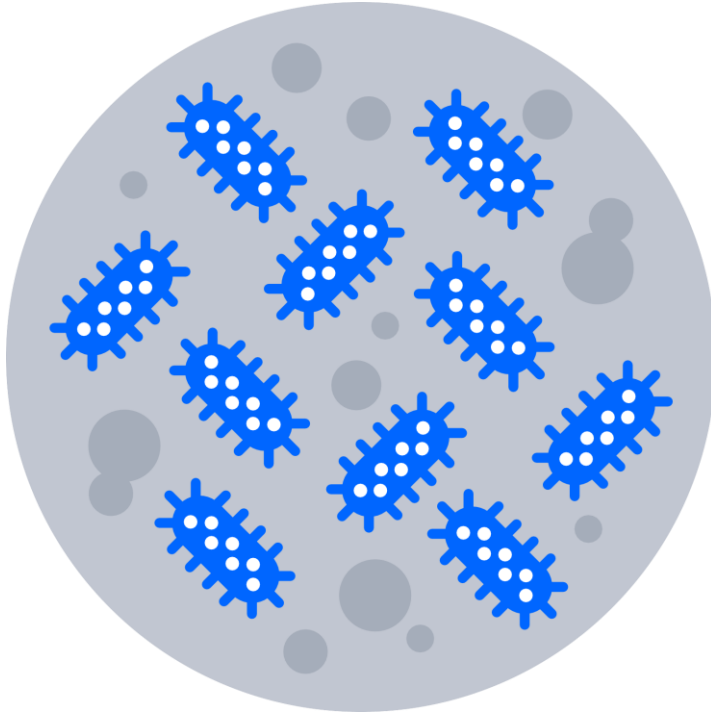


HOB events have a **3x** higher mortality rate in patients with ICU stay, a higher risk of readmission, higher costs, and significantly longer LOS



#1 Cause of HOB **Respiratory**

HOB as a Reportable Measure



-  Intended to be fully automated
-  Reduced surveillance burden for IP
-  Based on standards, measurement science, and clinical science
-  Collected on all positive blood cultures
-  Manual reporting will not be an option

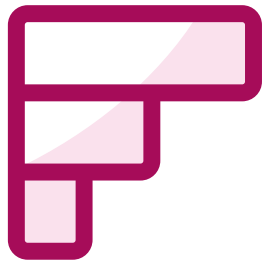
HOB: The Next Frontier in Hospital Acquired Infections

Testing Sites from CMS CoLab Group



Site	Site Name	EHR Vendor*	Measures	Site Leads
1	Billings Clinic	Oracle/Cerner	Glycemic Control	Randy Thompson, MD Lisa Ranes, RD, LN, CDCES
2	Geisinger	Epic	CDI/HOB, RPS	Mark Shelly, MD
3	HCA Healthcare	Meditech, Allscripts, Oracle/Cerner	CDI/HOB, Glycemic Control	Kenneth Sands, MD, MPH William Gregg, MD, MS, MPH
4	Mass General Brigham	Epic	Sepsis	Sayon Dutta, MD, MPH Chanu Rhee, MD, MPH
5	Michigan Medicine	Epic	Glycemic Control, CDI/HOB, HA-VTE	Michael Lanham, MD
6	Nebraska Medicine	Epic	Glycemic Control	Andjela Drincic, MD Ron Carson
7	University of California, Davis Medical Center	Epic	Glycemic Control	Greg Maynard, MD, MS, MHM Yauheni Solad, MD, MHS, MBA
8	University of North Carolina Hospitals	Epic	CDI/HOB, RPS	Lisa Stancill, MPH
9	University of Oklahoma Health Sciences Center	Epic	HA-VTE	Aaron Wendelboe, PhD Justin Dvorak, PhD
10	University of Rochester Medical Center	Epic	CDI/HOB	Brenda Tesini, MD
11	Yale New Haven Health	Epic	Glycemic Control	Nitu Kashyap, MD, FAMIA Hyung Paek, MD, MSEE

Annotate or Chat



2. Our biggest infection concern is: (pick one)

- 1 ☐ Central lines
- 2 ☐ PIV's
- 3 ☐ Arterial lines
- 4 ☐ Surgical Infections
- 5 ☐ CAUTI
- 6 ☐ Respiratory
- 7 ☐ None of the above



2024 IPPS Rules : Open Comments on HOB and Fungemia



What We Assume:

- Voluntary for at last 2 cycles
- Baseline data benchmarks established
- Data collection for potential penalty phase

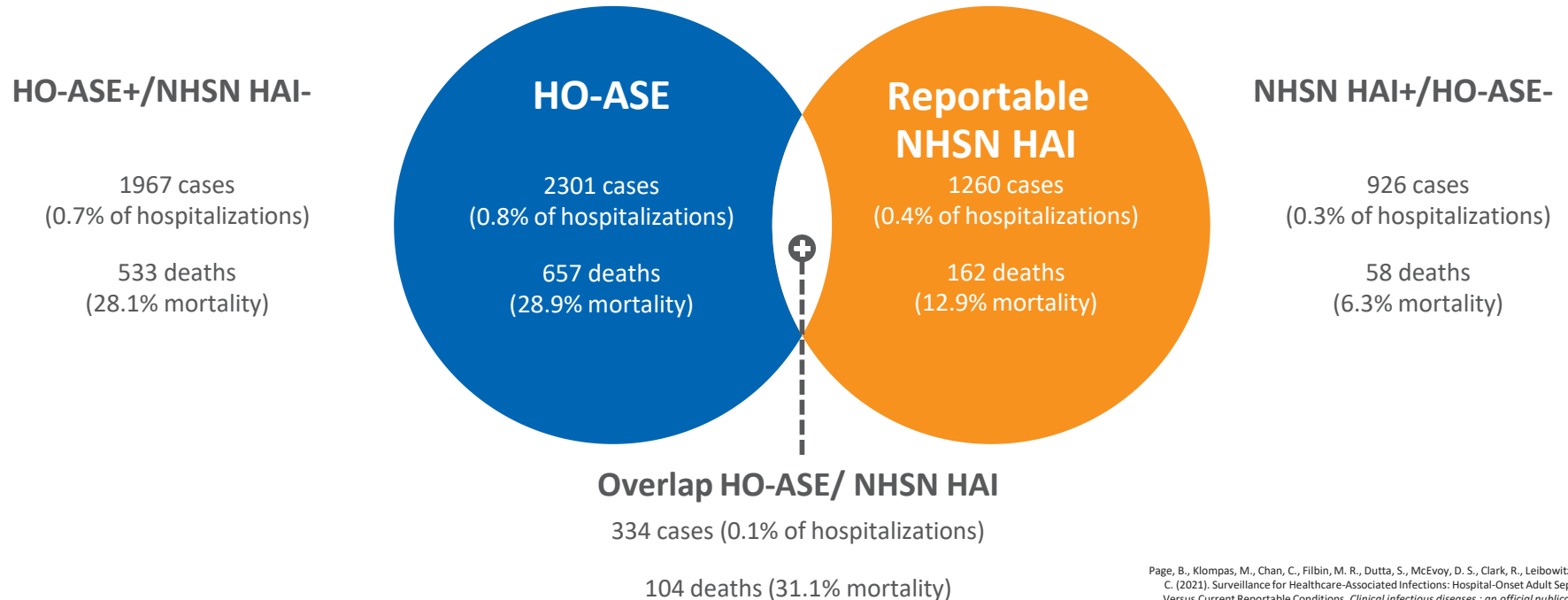


What We Need Answered:

- How will other measures be looked at
- How will workflows be changed
- How will staff be burdened

What is being missed?

**Adult Sepsis Event =
Presumed Serious Infection + Acute Organ Dysfunction (eSOFA)**



Non-Reportable Sources Causing Sepsis

110 of the HO-ASEs manually chart reviewed found that current surveillance for HAIs required for reporting to NHSN detected **only 15% of Hospital Onset ASE, and that mortality rates associated far exceeded those for HAIs.**

This finding supports recent data showing the majority of Hospital Onset Bacteremia cases are **NOT associated with an HAI that is currently reported to NHSN.**

Non-ventilator HAP was one of the most common causes.

Infectious Syndrome	No. of Cases of Infection (%)
Pneumonia	43 (39.1)
Ventilator-associated pneumonia	15 (13.6)
Urinary tract infection	8 (7.3)
Catheter-associated urinary tract infection	7 (6.4)
Bloodstream infection	19 (17.3)
Central line-associated	2 (1.8)
Non-central line endovascular source	3 (2.7)
Oral/gastrointestinal source	6 (5.5)
Urogenital source	1 (0.9)
Skin source	1 (0.9)
Unknown source	6 (5.5)
Clostridioides difficile	3 (2.7)
Intra-abdominal infection (other than <i>C. difficile</i>)	16 (14.5)
Skin and soft tissue infection	7 (6.4)
Pleural space/intrathoracic infection	2 (1.8)
Obstetric/gynecologic source	1 (0.9)
Febrile neutropenia without clear source	15 (13.6)
Unknown source	10 (9.1)

HOB: The Next Frontier in Hospital Acquired Infections

Identifying HOB



HOB: The Next Frontier in Hospital Acquired Infections

Identifying HOB



HOB demographics information	N (%)
Average Charlson comorbidity index	4.97
Average age	56
Average LOS (days)	29.23
Died/In-hospital mortality	93 (23.7%)
Average BMI	29.3 (9.2)
ID consult obtained	233 (59.4%)
Transferred from OSH	165 (42.0%)
CVC POA	106 (27.0%)
NHSN-reported CLABSIs	59 (15.0%)
Arterial Line Present	65 (16.6%)
Foley present	110 (28.0%)
1 PIV present	264 (67.3%)
2 PIV present	171 (43.6%)
3 PIV present	74 (18.9%)
4 PIV present	24 (6.1%)

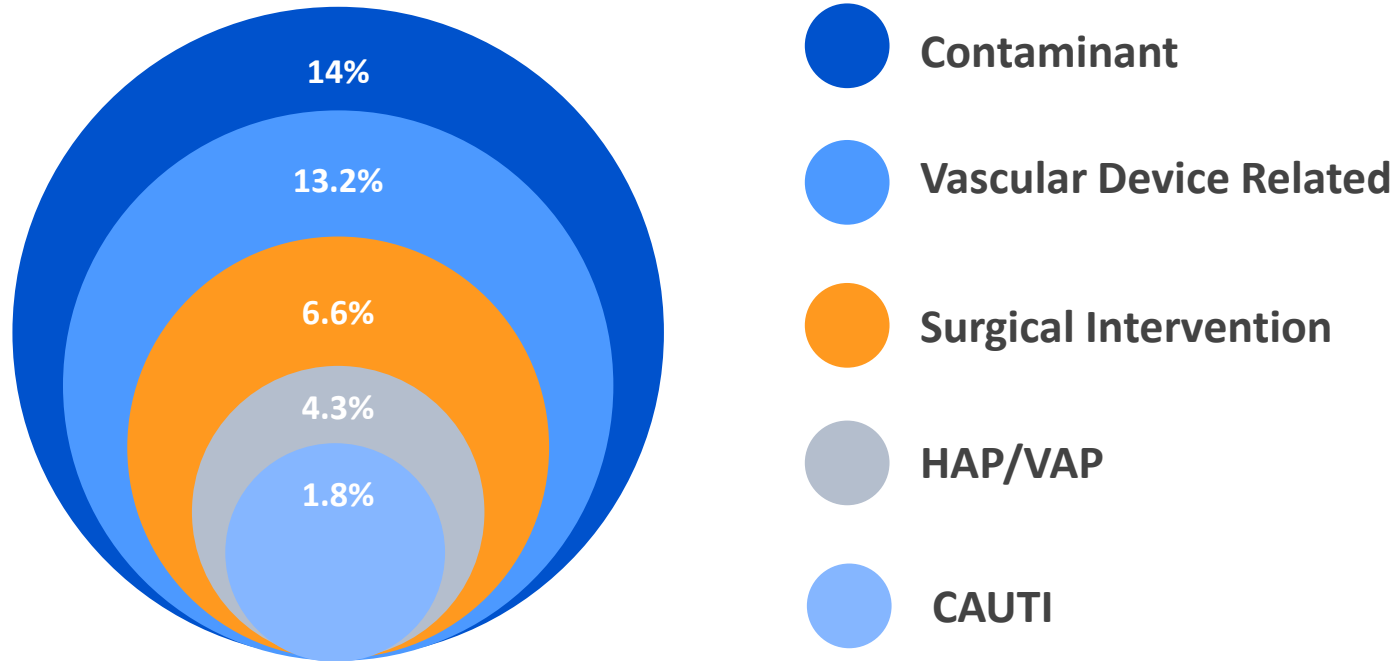
NSHN-reported CLABSI- 15%

Arterial Lines- 16.6%

1 PIV-67.3%

HOB: The Next Frontier in Hospital Acquired Infections

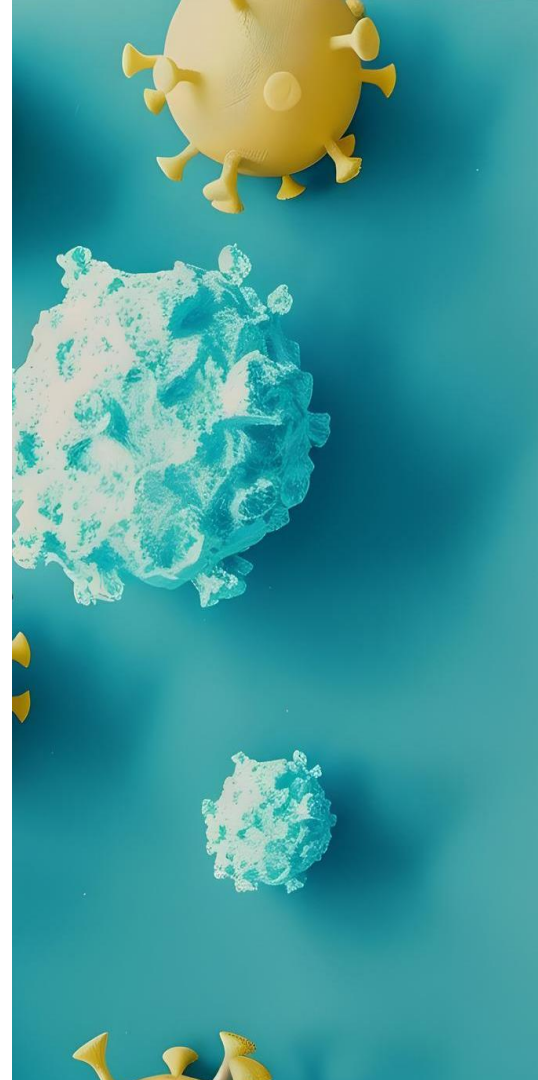
Preventable HOB

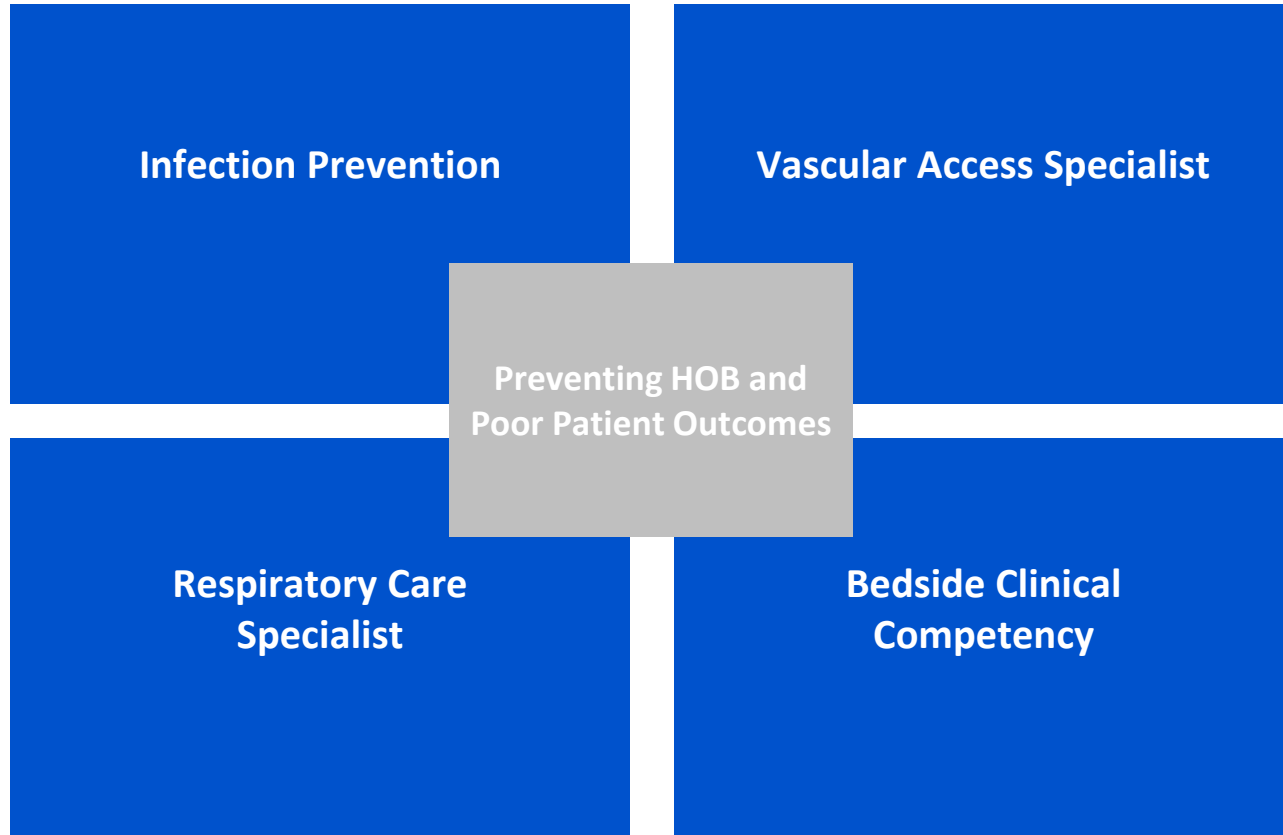


1. 3.3% Misc or unknown cause

HOB: The Next Frontier in Hospital Acquired Infections

Addressing Hospital Onset Bacteremia







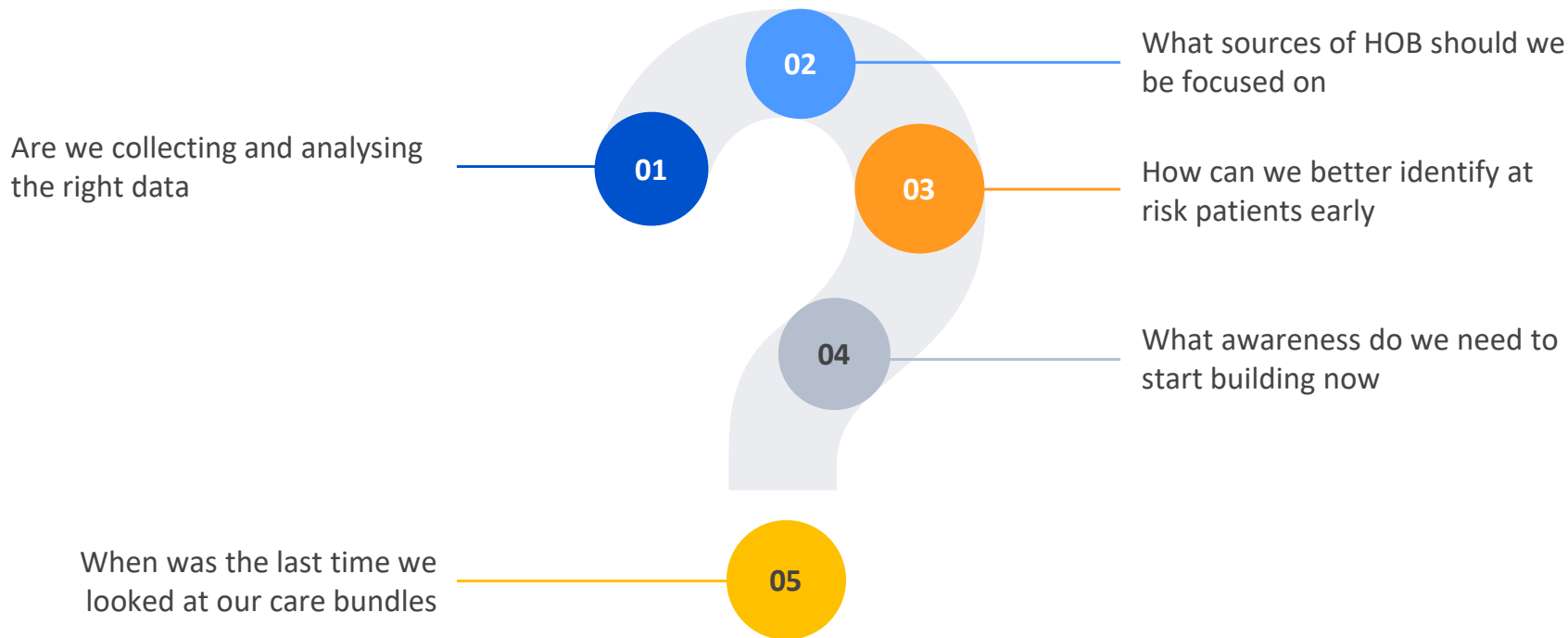
Changes in Infection Preventionist World

- Once Primarily nurses and usually with a good bit of bedside experience
 - One study shows over an 8% drop in nursing discipline for IPs from 2017 to 2020.
 - Post Covid large % of nursing IP experience retired or left the profession.
- Microbiology professionals made up the bulk of alternative disciplines becoming IPs
- Introduction of MPH as IP specialists.
- How does this impact clinical practice support? Improvement in data driven measures but what does this mean for application clinically at the bedside?





Prevention is the Best Intervention



Definition of a Bundle – IHI

A small set of evidence-based interventions for a defined patient segment/population and care setting that, when implemented together, will result in significantly better outcomes than when implemented individually.

Bundles

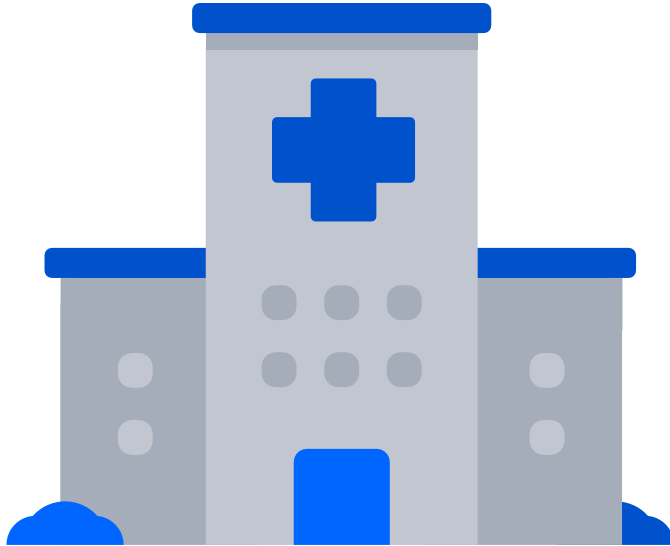
Bundles are supported and recommended in most clinical standards and guidelines:

- INS, SHEA, ONS, APIC and CDC
- Small, straightforward interventions
- 3-5 interventions at most
- Creates consistency



How can we make it easy to do the right thing every time?

Cost Impact and Prevention



Reimbursement + Penalties + Lost Cost to Treat

Resources required to prevent HAIs/HACs

- People
- Process
- Products

Are we doing enough BEFORE the measure goes into effect?



Pre-Assessment for HOB Practices

[illegible]

N=3300+



Retrospectively review your data

- 21 % choose RIJ Primary and Femoral Secondary
- Half that use Femoral as Primary – Residents
- Arterial lines 61% sutured + 22% CDI
- CHG scrub
 - 47% motion
 - 25% moist time
 - 87% dry time
- 36% IJ sites CDI
- CVAD + PIV - 40.3% of PIVs were in use
- 50% of PIVs not in use had 0 CVAD lumens in use
 - 9% of CVADs were not CDI

*CDI= Clean, Dry and Intact





Where are the opportunities

Device & Site
Selection
Algorithm

Insertor
Training

Arterial
Securement

PIV utilization

Following IFU

Blood Culture
Stewardship

Final Thoughts



- HOB is the future of outcomes surveillance and P4P metrics
- Preparation is key to mitigate the impact
- Proactive tools and resources will reduce operational costs
- Collaboration internally and with healthcare industry partners is key



HOB: The Next Frontier in Hospital Acquired Infections

Sources



1. Yu, Kalvin, et. al; Infection Control & Hospital Epidemiology. Hospital-onset bacteremia and fungemia: An evaluation of predictors and feasibility of benchmarking comparing two risk-adjusted models among 267 hospitals. (2022) 43; 1317-1325.
2. Federal Register Vol. 88 No 165/ Monday, August 28, 2023/Rules and Regulations pg 59109-59114.
3. Page, B., Klompas, M. et.al; Clinical Infectious Diseases. Surveillance for Healthcare-Associated Infections: Hospital-Onset Adult Sepsis Events Versus Current Reportable Conditions. (2021) 73 15 September; 1013-1019.
4. Garcia, R.; Journal of Infusion Nursing. Moving Beyond Central Line-Associated Bloodstream Infections: Enhancement of the Prevention Process. July/Aug 2023. Vol 46: No 4, pg 217-222
5. Dantes, R., Abbo, L. Et.al; Infection Control Hosp Epidemiology. Hospital Epidemiologists' and infection preventionists' opinions regarding hospital-onset bacteremia and fungemia as a potential healthcare-associated infection metric. 2019- May; 40(5); 536-540.
6. AHRQ Paper. Estimated the Additional Hospital Inpatient Cost and Mortality Associated with Selected Hospital-Acquired Conditions. Created November 2017. www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/pfp/hac-cost-report2017.pdf
7. Haque, M. McKimm, J. et. Al; Risk Management and Healthcare Policy. Strategies to Prevent Healthcare-Associated Infections: A Narrative Overview. 2020:13 1765-1780.
8. Stack, M. Dbeibo, L. , Et. al.; American Journal of Infection Control. Etiology and Utility of Hospital-Onset Bacteremia as a Safety Metric for Targeted Harm Reduction. (2024) 52; 195-199.