



CLABSI ELIMINATION PROJECT: Targeting zero

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Impact of CLABSI

- In the US it has been estimated that **80,000** central line-associated bloodstream infections (CLABSIs) occur in intensive care units (ICUs) each year ¹.
- However, if patients outside of ICUs are also included, the estimate increases to **250,000 cases** of CLABSI each year².
- A mortality rate due to CLABSI **12-25%**
- A more recent report from the CDC showed some encouraging improvement in these numbers³

¹Mermel, An. Int. Med 2000. ²Maki et al., Mayo Clin Proc 2006.

³MMWR Vital Signs, Mar 2011 (<http://www.cdc.gov/mmwr/pdf/wk/mm6008.pdf>)

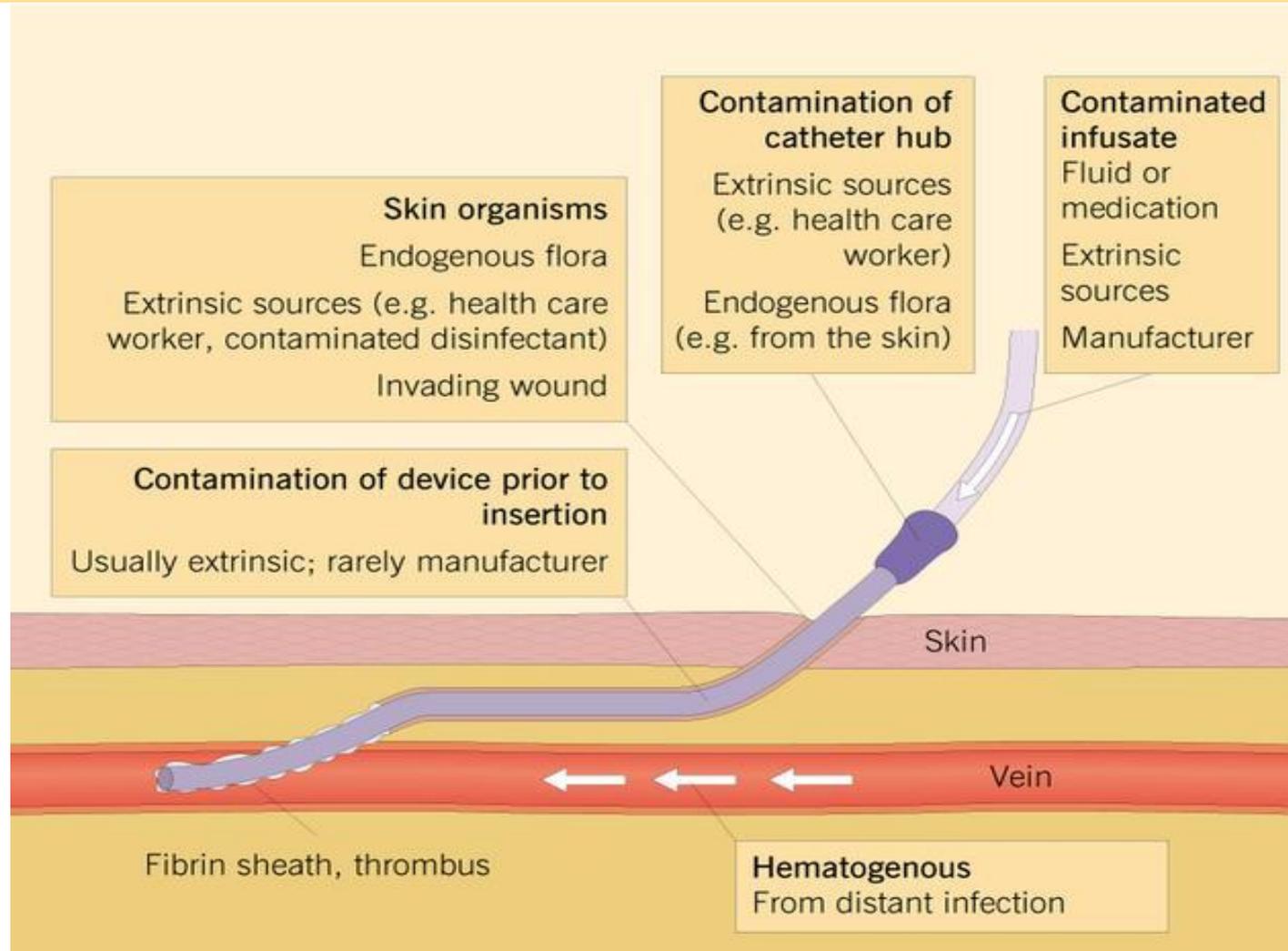
CLABSI reduction Initiative USA¹:

- A 70% reduction in CLABSI was demonstrated in the large-scale regional and statewide projects:
 - The Pittsburgh Regional Healthcare Initiative
 - The Michigan Keystone Project
- How was this achieved ?
 - Adherence to recommended best-practices
 - Financial and leadership support
 - Improved education
 - Packaging prevention recommendations into practice bundles
 - Increased data monitoring and feedback
 - Improvement of the safety culture in health-care, and
 - local and statewide collaborative prevention efforts.
 - Setting goals

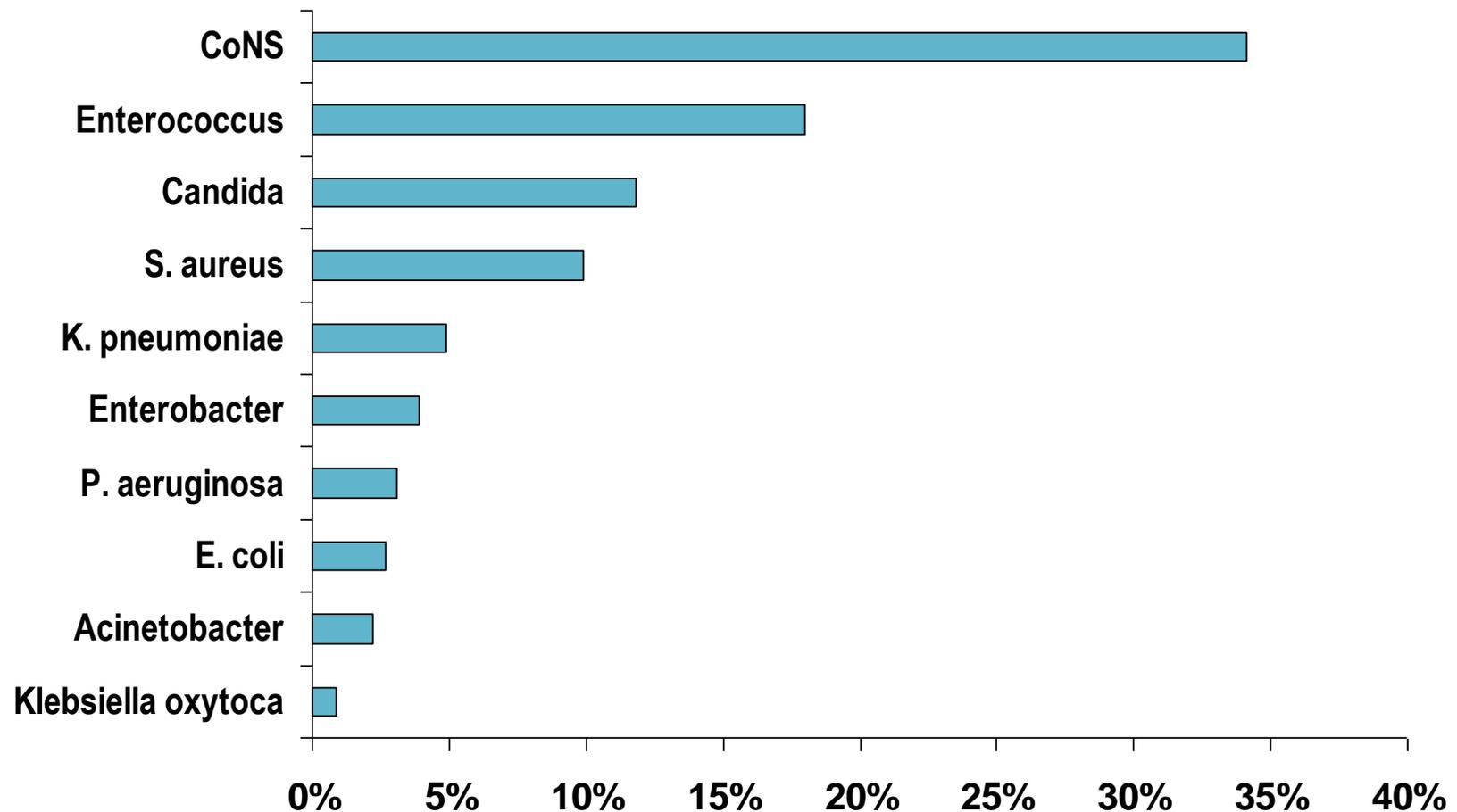
¹MMWR Vital Signs, Mar 2011 (<http://www.cdc.gov/mmwr/pdf/wk/mm6008.pdf>)

Sources for CLABSIs

Potential routes of infection



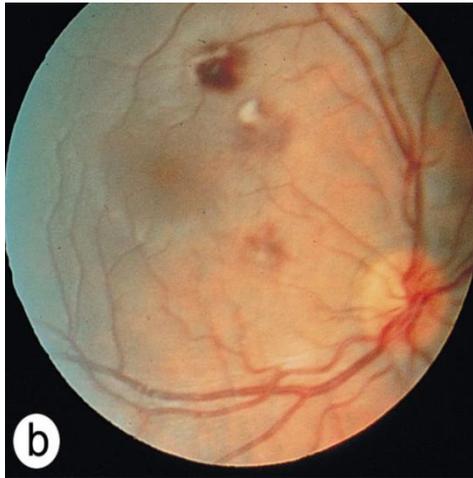
PATHOGENS ASSOCIATED WITH CLA-BSIs: NHSN, 2006-2007



COMPLICATIONS OF CLABSIS

- Local infection
 - Tunnel infection, pocket infection
- Sepsis
- Remote site infection
 - Osteomyelitis
 - Meningitis
- Endovascular infection
 - Endocarditis
 - Mycotic aneurysms (septic thrombophlebitis)

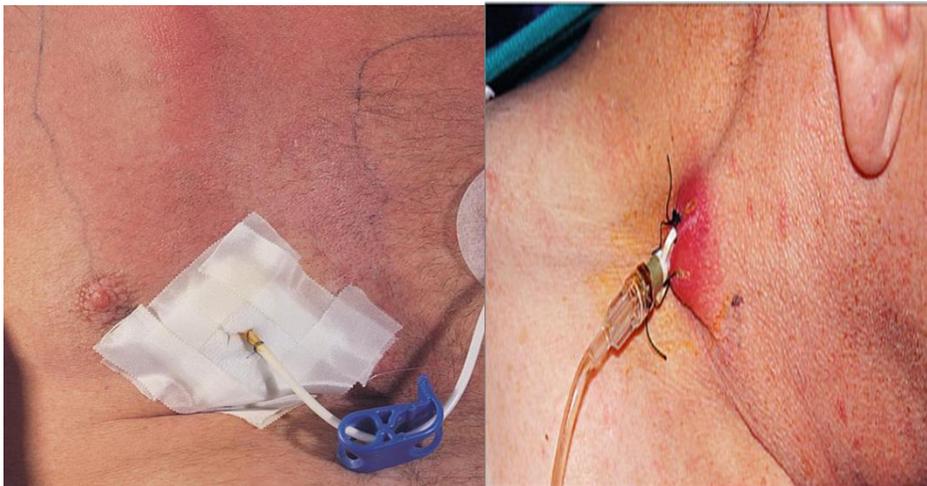
Emboli to the retina



Gangrene



cellulitis



Peripheral emboli to the skin



Riyadh KAMC

The National Guard Initiative

Crude estimate of ICU CLABSI at KAMC-R

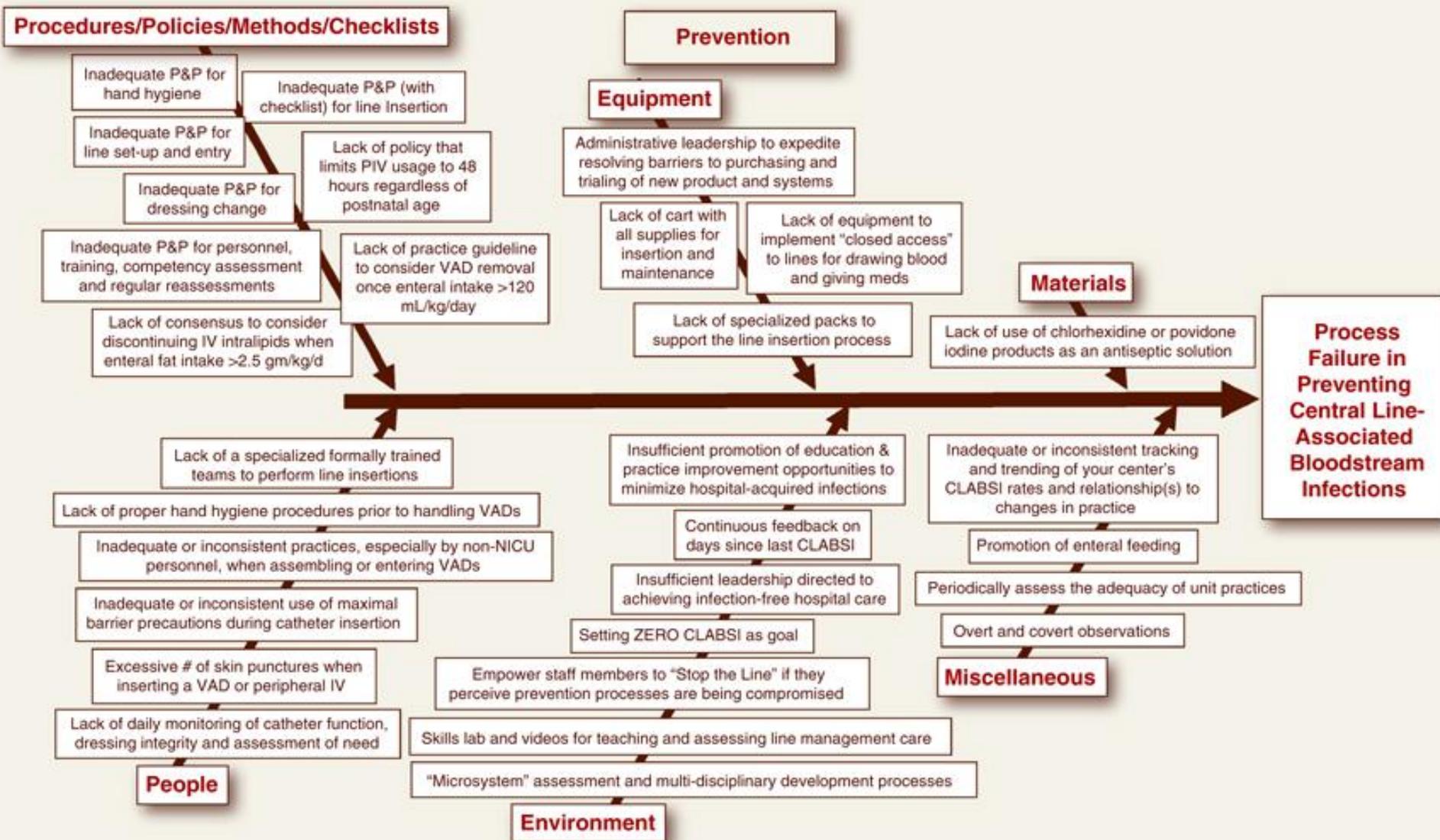
- During a period of 15 months, **25 CLABSIs** were encountered.
- In reference to APIC's "burden of HAIs model", the burden of these 25 CLABSIs would result in:
 - **Additional 175 ICU days**
 - **Additional cost of 3,425,454 SAR (915,900 \$)**

CLABSI: Targeting Zero.....

Is it feasible?

1. CLABSI can be prevented through proper management of the central line. These techniques are addressed in the CDC's Healthcare Infection Control Practices Advisory Committee (CDC/HIPAC)
 - Guidelines for the Prevention of Intravascular Catheter Related Infections"
2. Keystone report ¹: demonstrated phenomenal reduction in CLA-BSI in ICUs in 48 Michigan hospitals (med 2.7 to 0/1,000).
3. In 2010 we had achieved success in reaching zero in our NICU²

Examples of fishbone diagrams to help us better understand CLABSI event



STRATEGIES TO PREVENT CLABSI IN ACUTE CARE HOSPITALS

■ Best practices (At insertion)

- Use a catheter checklist (B-II)
- Perform hand hygiene before catheter insertion (B-II)
- Avoid the femoral for access (A-I)
- In adults, preferentially use the subclavian vein (A-I)
- Use an all-inclusive catheter kit or cart (B-II)
- Use maximal sterile barrier precautions (mask, cap, sterile gown, sterile gloves; cover patient with a large sterile drape)(A-I)
- Use CHG antiseptic (CHG-alcohol) for skin preparation (A-I)

STRATEGIES TO PREVENT CLABSI IN ACUTE CARE HOSPITALS

- Approaches that should not be considered routine
 - Do not use antimicrobial prophylaxis for short-term or tunneled catheters (A-I)
 - Do not routinely replace CVCs or arterial catheters (A-1)
 - Do not routinely use positive-pressure needleless connectors with mechanical valves (B-II)
- Unresolved issues
 - Nurse-to-patient ratio in the ICU
 - IV therapy teams for reducing CLABSI rates
 - Surveillance of other types of catheters

Maintenance

- Low compliance with **hub decontamination**
- Unnecessary CL
- Inappropriate dressing technique
- Needle free **mechanical valve** – PP

Risk factors

- LOS
- Co-Morbidity illnesses
- **Tremendous** use of broad spectrum antibiotics

High
CLABSI
rates

- Non-optimal **site selection** without justification
- Some HCWs are afraid to stop a physician not adhering to aseptic technique
- Emergency situation without aseptic technique
- Inappropriate sterile drape
- improper use of PPE
- Poor preparation for CVL insertion
- Poor technique

Insertion

Figure 1. Time Distribution of CLABSI: Pennsylvania NHSN Facilities 2010

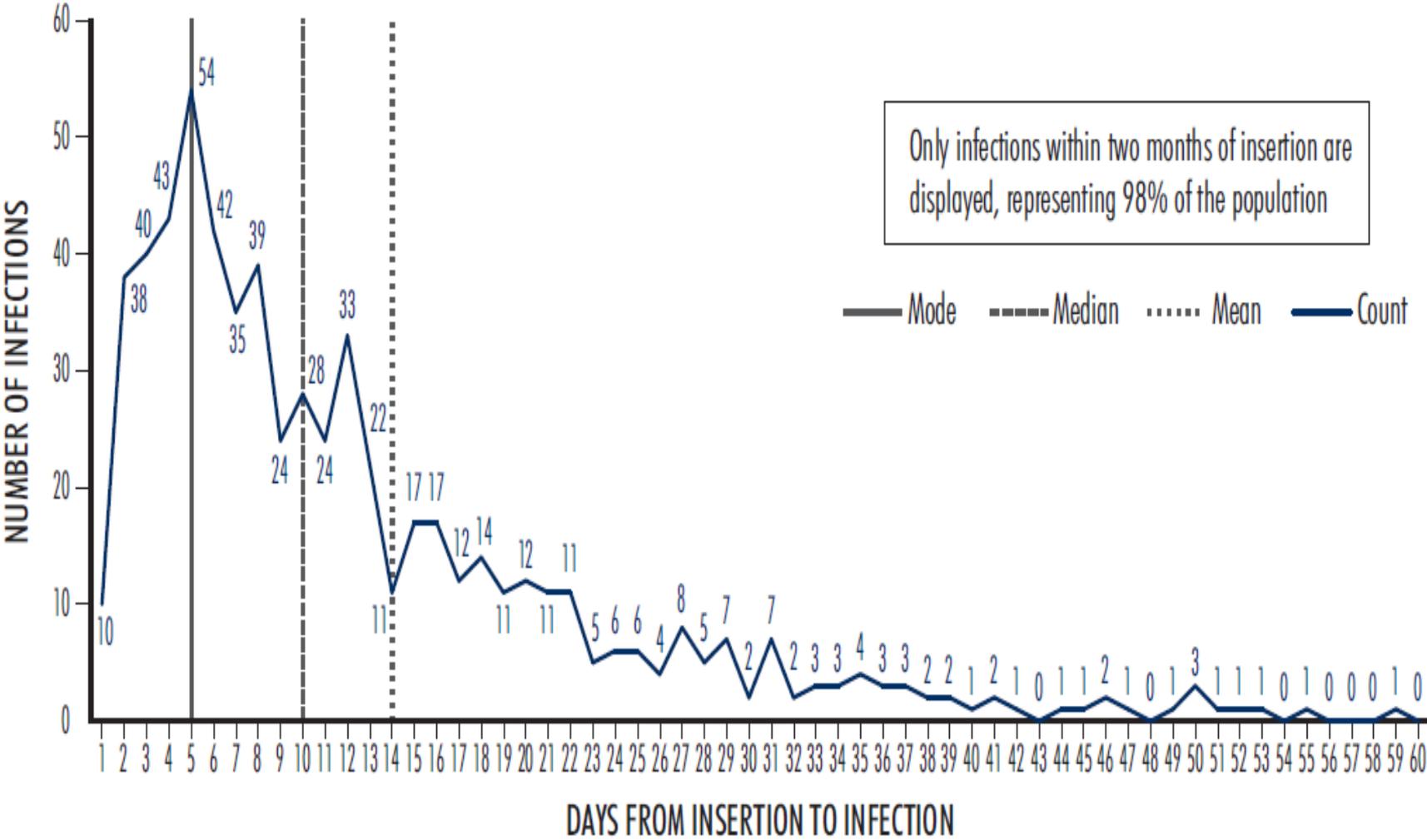
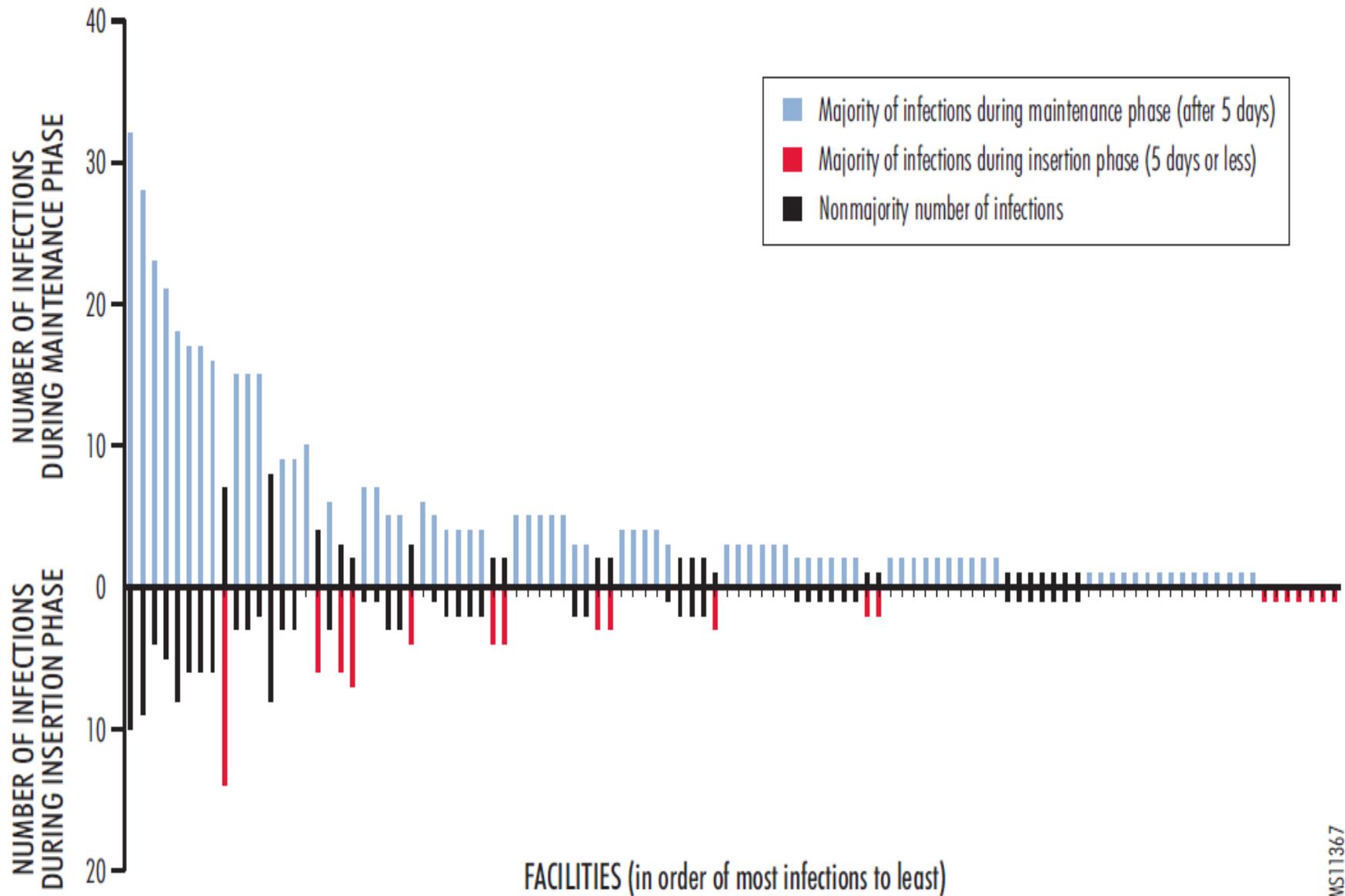


Figure 2. Time to CLABSI as Reported by Pennsylvania NHSN Facilities in 2010: Insertion versus Maintenance



Concerns for the future

- Further efforts to identifying RF for CLABSI.
- Identifying best practices to maintain success stories in keeping low rates or even better no CLABSI.
- Evaluating the possibility of CLABSI eradication in non ICU areas:
 - There were 23,000 CLABSIs in non-ICU inpatient wards, which supports the on-going concern that the majority of CLABSIs are occurring outside of ICUs.
 - CDC also estimates that, in 2008 alone, 37,000 CLABSIs occurred among patients receiving outpatient hemodialysis.¹

¹ MMWR Vital Signs, Mar 2011.

Concerns for the future and how to start.....

Institute for healthcare improvement IHI white paper
15 : Execution of strategic improvement initiatives-15



August 2013 reassessment

Activities/interventions at KAMC evolved around 3 areas:

1. Assessing the culture: perception surveys were conducted
2. Assess the infrastructure: required materials, tools, equipment, carts, etc...
3. Redesigning the system to help reach our goals

Acknowledgment

- To all members of the ICD
- All members of the ICU care
- All involved nursing staff
- Members of the CLABSI eradication team in Riyadh
- Special thanks to
- IC coordinator and team leader of CLABSI team
- ICPs
- To our CEO, CMO, Medical Directors, Nursing Directors and operations department

Thank you for your attention
