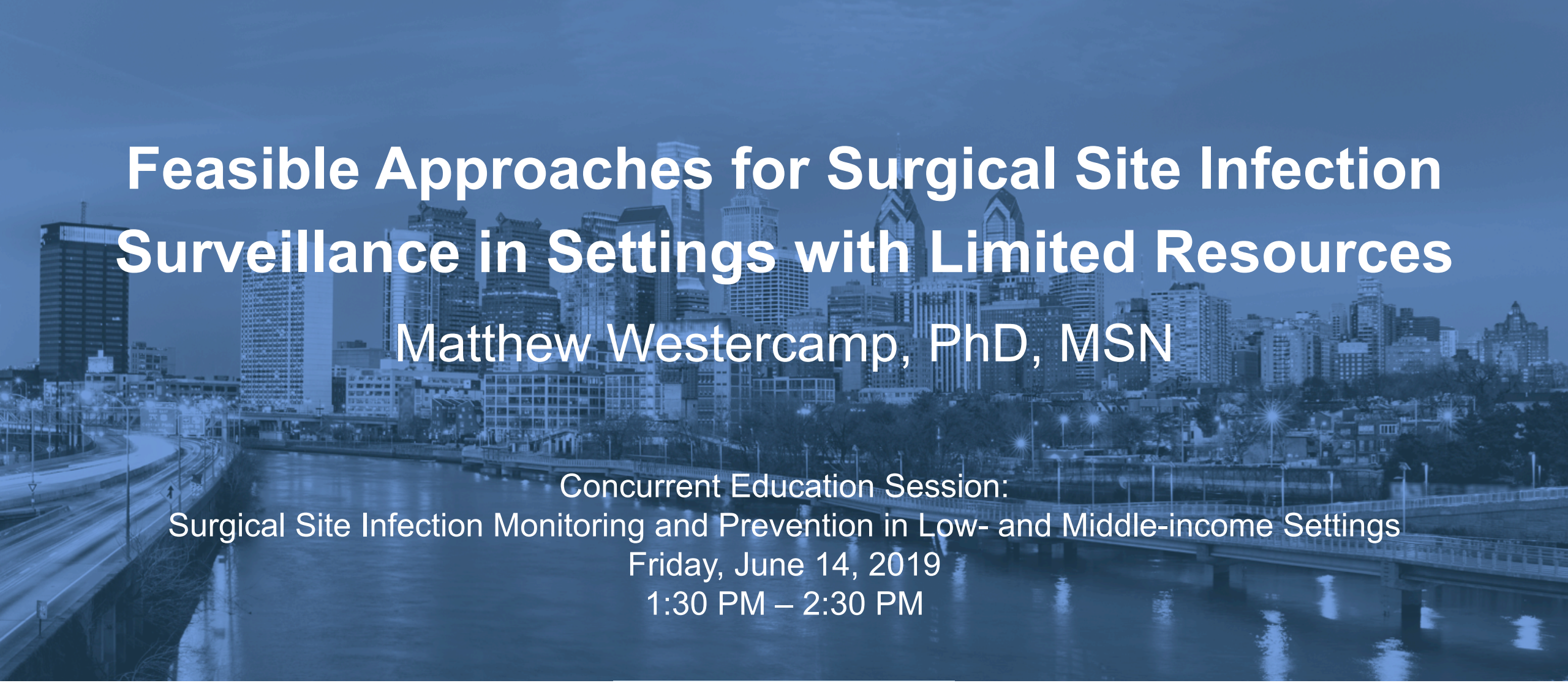

Feasible Approaches for Surgical Site Infection Surveillance in Settings with Limited Resources

Matthew Westercamp, PhD, MSN

Concurrent Education Session:
Surgical Site Infection Monitoring and Prevention in Low- and Middle-income Settings
Friday, June 14, 2019
1:30 PM – 2:30 PM

APIC 2019
June 12-14 • Philadelphia, PA

Presentation Overview

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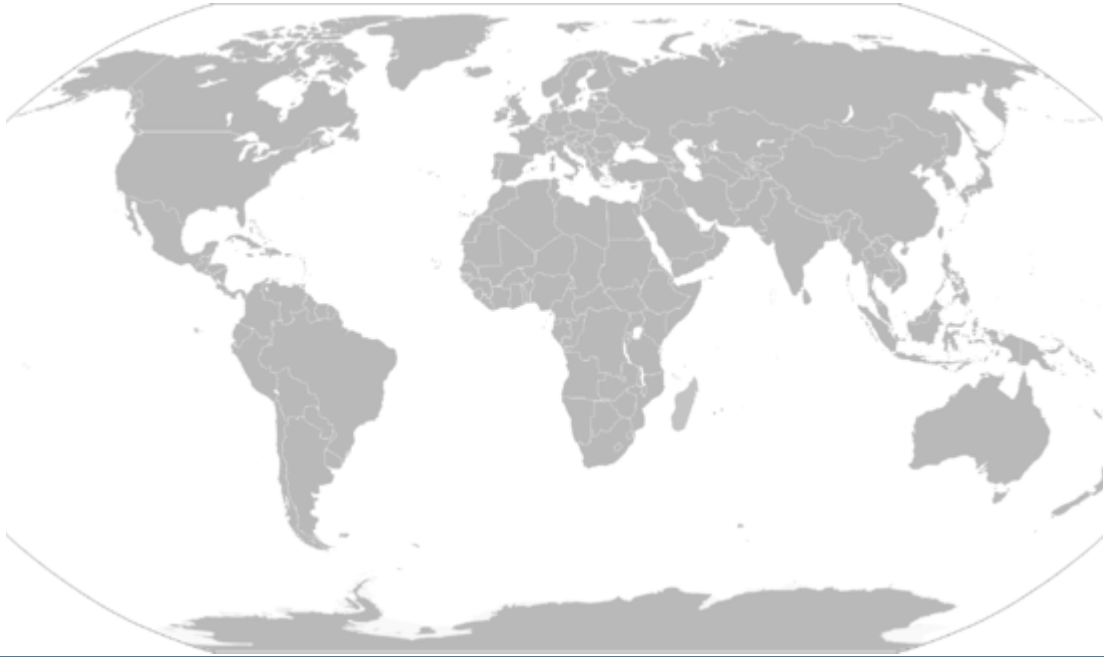
- Presentation Goal: Present Surgical Site Infection Surveillance as an ideal initial healthcare-associated infection (HAI) surveillance implementation in settings with very limited resources and little facility-level surveillance experience.

1. Discuss the importance of SSIs and SSI surveillance
2. Suggest strategies for simplified SSI surveillance that are valuable and realistic in any facility performing surgery



Healthcare-Associated Infections Globally

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- Healthcare-associated infection (HAI) is an infection occurring in a patient during the process of care in a health care facility which was not present or incubating at the time of admission.
- Every day, HAI results in prolonged hospital stays, long-term disability, increased resistance of microorganisms to antimicrobials, massive additional costs for health systems, high costs for patients and their family, and unnecessary deaths.
- Although HAI is the most frequent adverse event in health care, its true global burden remains unknown because of the difficulty in gathering reliable data: most countries lack surveillance systems for HAI, and those that do have them struggle with the complexity and the lack of uniformity of criteria for diagnosing it.

Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis - The Lancet, 2010

Surgical Site Infection (SSI)

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Surgical Site Infections (SSI)

An SSI is an HAI that occurs after surgery (30-90 days) in the part of the body where the surgery took place

SSI Surveillance

The systematic, ongoing collection, management, analysis, and interpretation of data relevant to the prevention or quantification of SSI followed by the dissemination of these data to prompt action

Impact and Burden of SSI Globally

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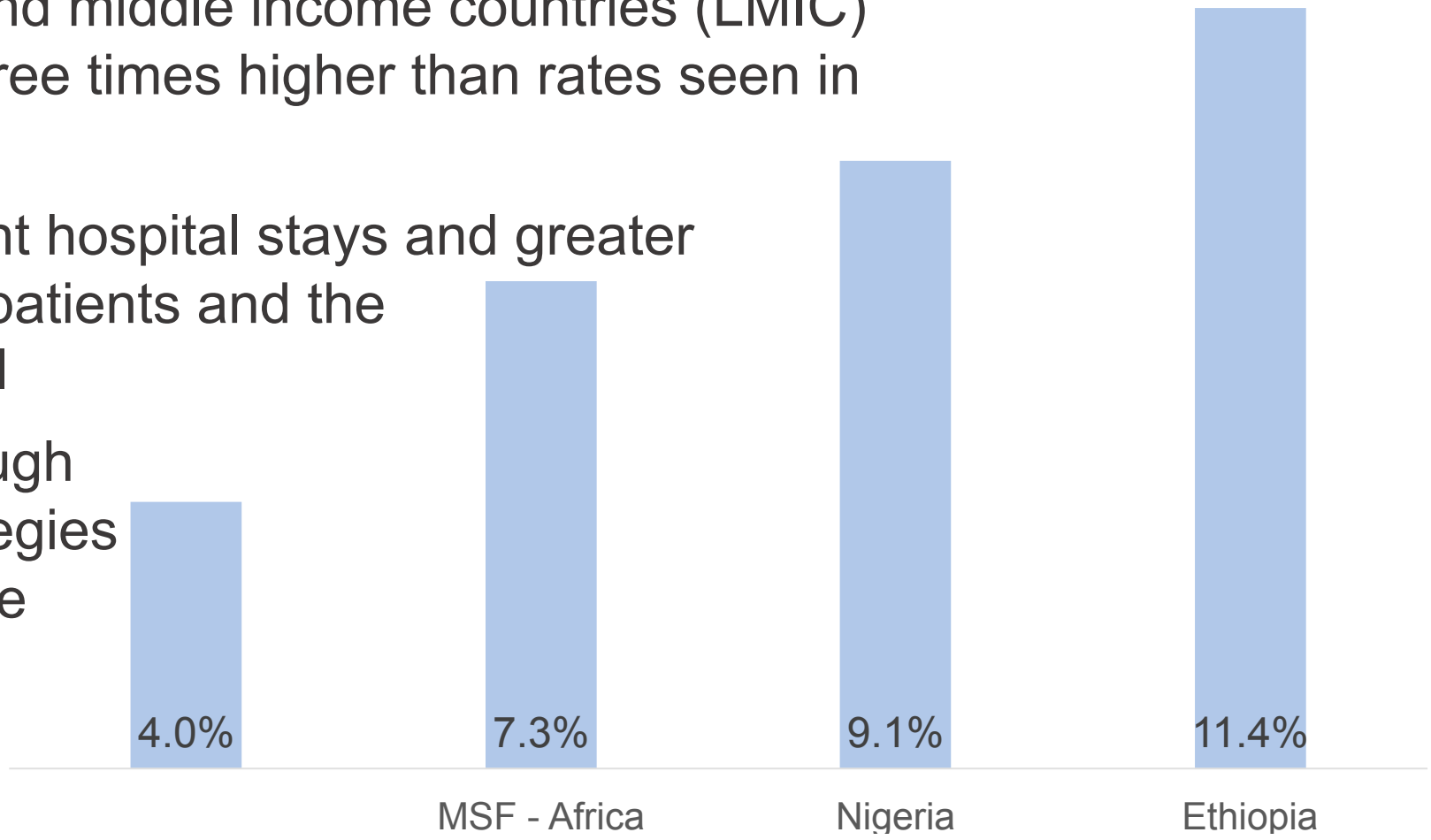
- SSI are among the most common healthcare-associated infections (HAIs) in low and middle income countries (LMIC) with an incidence over three times higher than rates seen in developed nations
- SSI result in longer patient hospital stays and greater healthcare costs to both patients and the healthcare system overall
- SSI are preventable through infection prevention strategies and good surgical practice



Use and Benefits of SSI Surveillance

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- Identify at-risk populations/procedures
- Planning prevention measures
- Monitoring impact of prevention measures
  - Compare SSI incidence/rates over time and with other similar facilities/ populations (if appropriate and feasible)
- SSI Surveillance with results feedback to staff can be an effective intervention for decreasing SSI risk
- Provides experience with systematic data collection and HAI surveillance

Feasible HAI Surveillance

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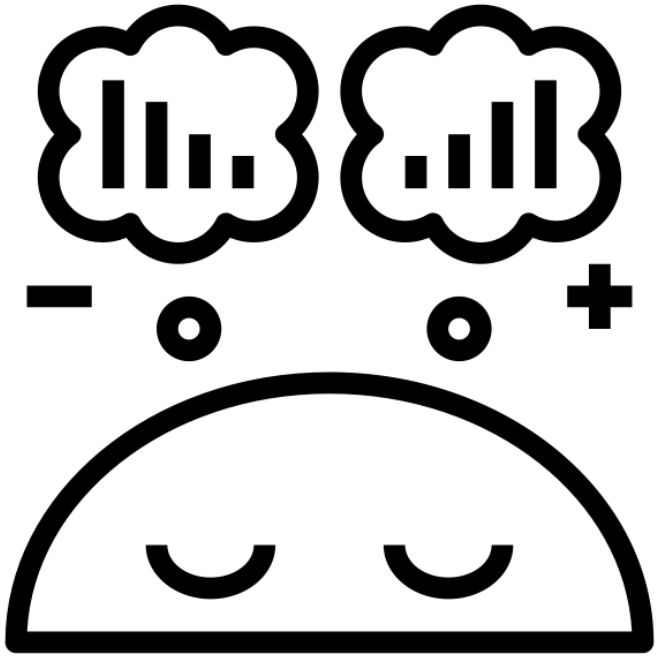
- Plan for success
  - Start small and build on success
  - Recognize the primacy of data quality
- Minimally Invasive
  - Do not disrupt existing work flow
  - Do not add to current workload
- Data / Information results are used
- Limit required linkage between data systems
- Limit training requirements
  - Staff turnover



Feasible SSI Surveillance

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Challenges

Case definition
- NHSN recognition and complexity
- Clinical based

Case finding methods
- Limited charting
- Post-discharge

Control of patient-level risk
- Limited charting

Control of procedure-level risk
- Limited charting

Usefulness of results
- Denominator

Proposed Solutions

Simplified case definition
- Single, objective, observable/reportable

Limited case finding activities
- Clinical wound checks
- Phone interview

Limit to procedures with low baseline infection risk
- C-section
- Inguinal Hernia Repair

Focus training on surveillance data management and using results
- Single IPC / surveillance focal person

Additional SSI Challenges

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- As much as 80% of infections present after discharge
- Clinical-based rather than lab-based case definition
- Surgeons and surgical teams can feel threatened
- Appropriate comparison between facilities is difficult
  - Often inappropriately done at national / regional levels
- Challenges are commonly underappreciated when planning
- The NHSN tyranny of competence

“Based on NHSN”

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Good

Defined surveillance methods and surveillance case definitions that are informed by (‘based on’) NHSN

Not so Good

Lack of defined surveillance methods and/or case definitions — thought to approximate (‘based on’) NHSN

Simplifed SSI Case Definition

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Considerations

- Sensitivity
- Specificity
- Complexity / Sustainability
- Criteria
  - Depth of Infection
  - Laboratory Criteria
  - Physician diagnosis
  - Treatment

Within 30 days of a surgical procedure, observed or reported by the patient:

A purulent (pus) **discharge in, or coming from, the wound** (including evidence of an abscess)

OR

Painful, spreading (worsening) **inflammation** (redness, swelling, heat) **surrounding the surgical site with evidence of fever** (either measured or by report of symptoms of a fever such as sweating, shivering)

WHO Practical Guide for Prevention of HAIs,
the UK Surgical Infection Study Group (SISG),
and the UK National Prevalence Survey Study (NPS)

Limiting Case Finding

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- When clinical documentation is poor and/or non-standardized
  - Limit to targeted surveillance/primary data collection
- When there is lack of centralized digital data and/or no unique patient id
  - Limit to a single data source
- When staff have limited availability and/or high turnover
  - Limit to a simple case definition based on observable objective criteria
- When including post-discharge case finding by interview
  - Limit to a single interview around day 30

Post discharge Interview

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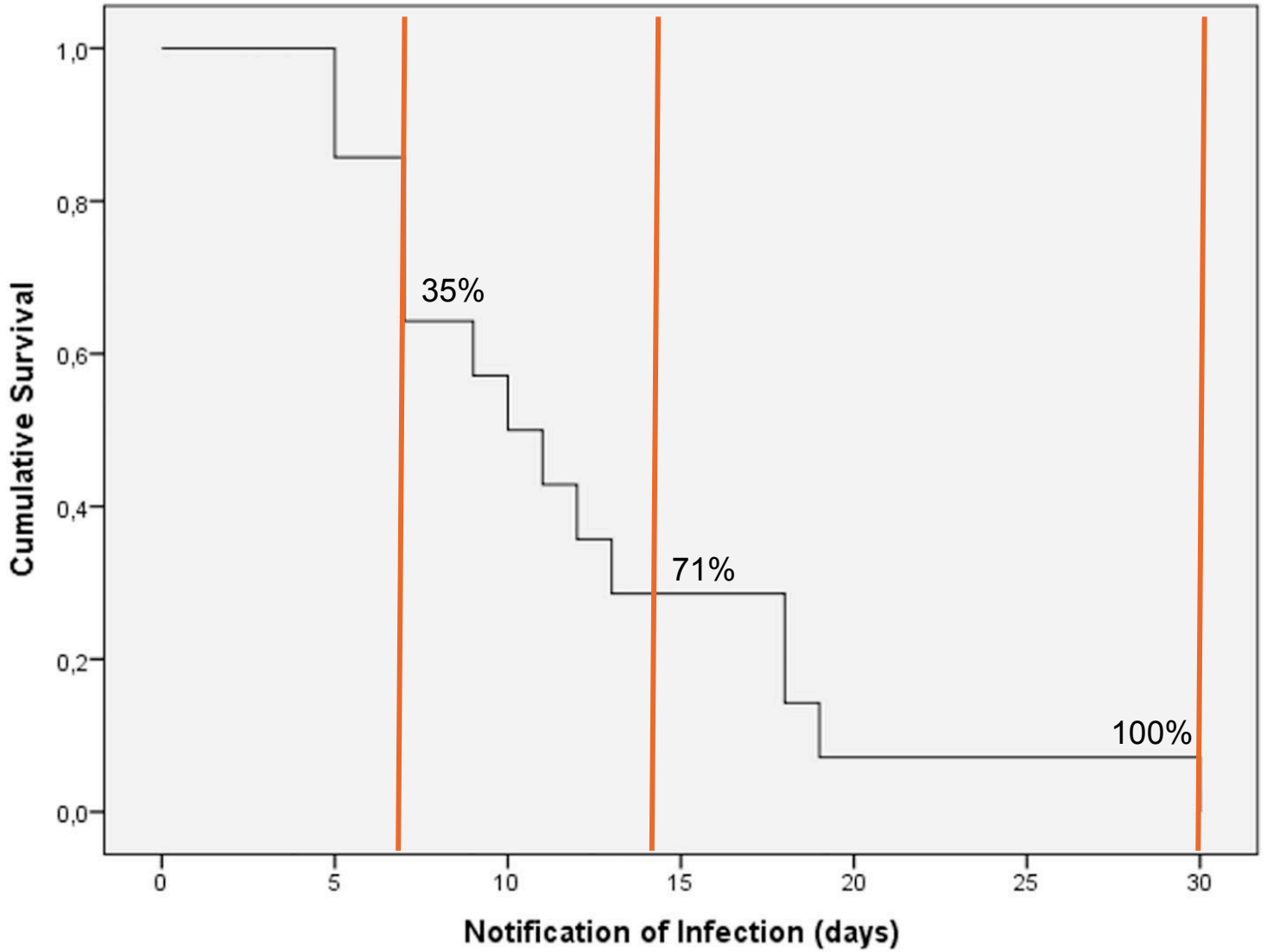

Post-discharge time of surgical site infection occurrence among patients who underwent cesarean deliveries in a referral hospital in Brazil, April 2013-May 2014.

Lima JL,, et al. (2016). "Surveillance of surgical site infection after cesarean section and time of notification." Am J Infect Control. **44**(3): 273-277

Procedures with Low Baseline Risk

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Benefits of Limited Focus

- Saves Resources
- Focuses implementation to help ensure success
- Ideal procedures:
  - High volume
  - Consistent low patient-level risk of infection (low ASA class)
  - Consistent low procedure-level risk of infection (clean wound type)

Example Procedures

- **C-Section**
  (emergent VS elective)
- Inguinal Hernia Repair
- Umbilical Hernia Repair
- Thyroid surgery
  (non-oncological)
- Open Fracture Reduction
  (no open wound)

Training

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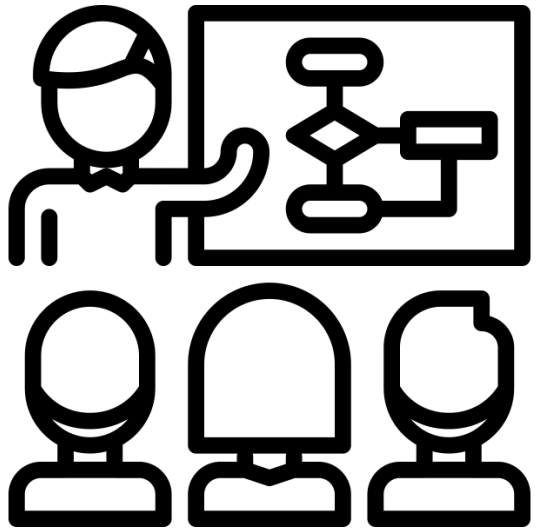
- A goal of this simplified strategy is to limit the need for extensive data collection training
  - Data collection often involves the greatest number of staff
  - Staff involved with data collection generally have higher turnover
- Focusing more intensive training on Data Management and Data Use
  - A common point of failure for new surveillance initiatives
  - Generally a more limited number of staff involved
  - Often higher-level staff with less turnover



Conclusions

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- SSI represent a serious, common, and largely preventable hospital associated infection
- Health facilities providing regular surgical services can (and should) perform some form of surgical site infection surveillance
- Feasible SSI surveillance requires careful consideration of the importance/ impact of SSI balanced to available resources — considering:
  - Surveillance Methods
  - Surveillance Limitations
  - Surveillance Data Use / Prevention

- feasibility by Nithinan Tatah from the Noun Project
- training by lastspark from the Noun Project

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