Status Quo and Quo Vadis KISS

Petra Gastmeier

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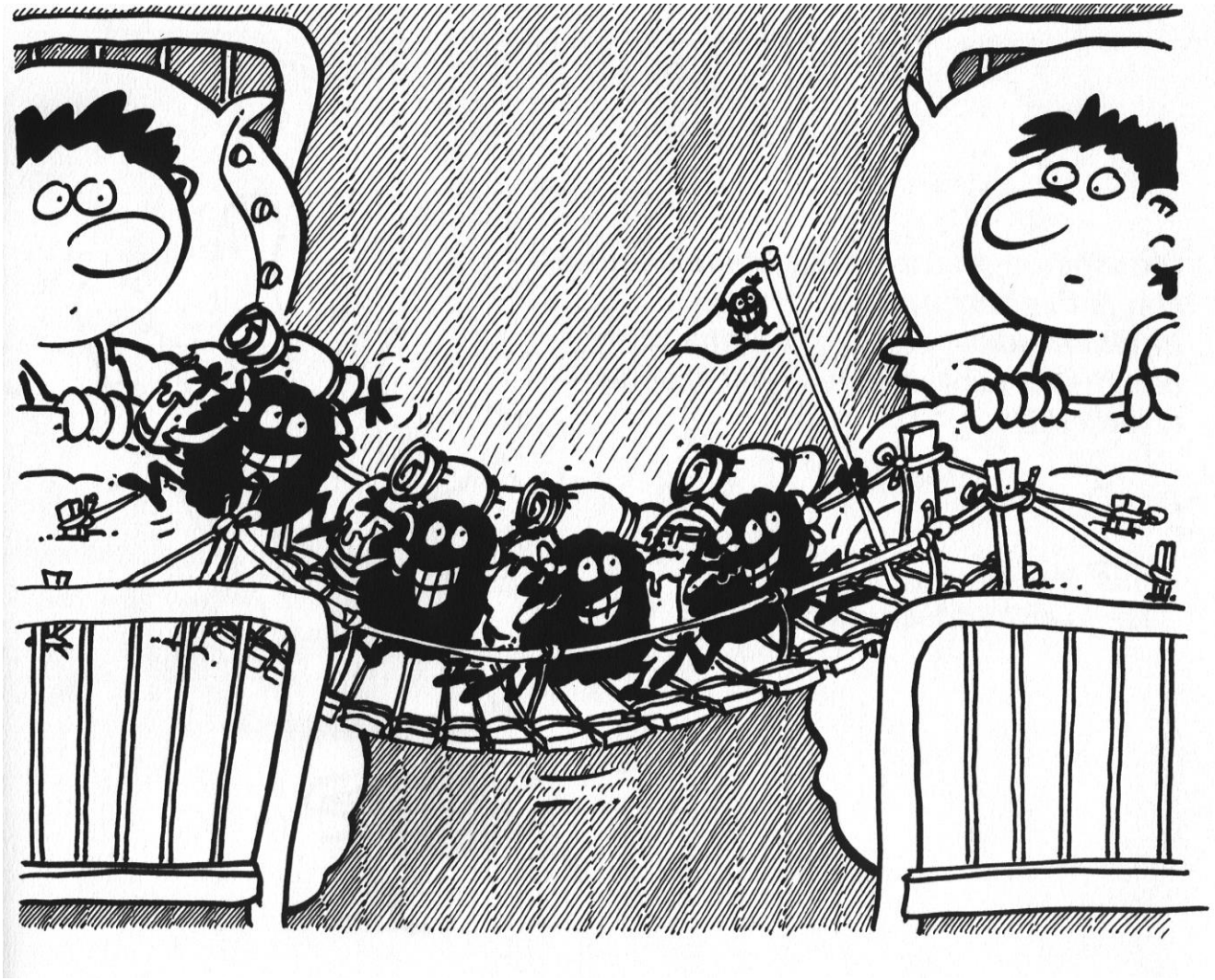
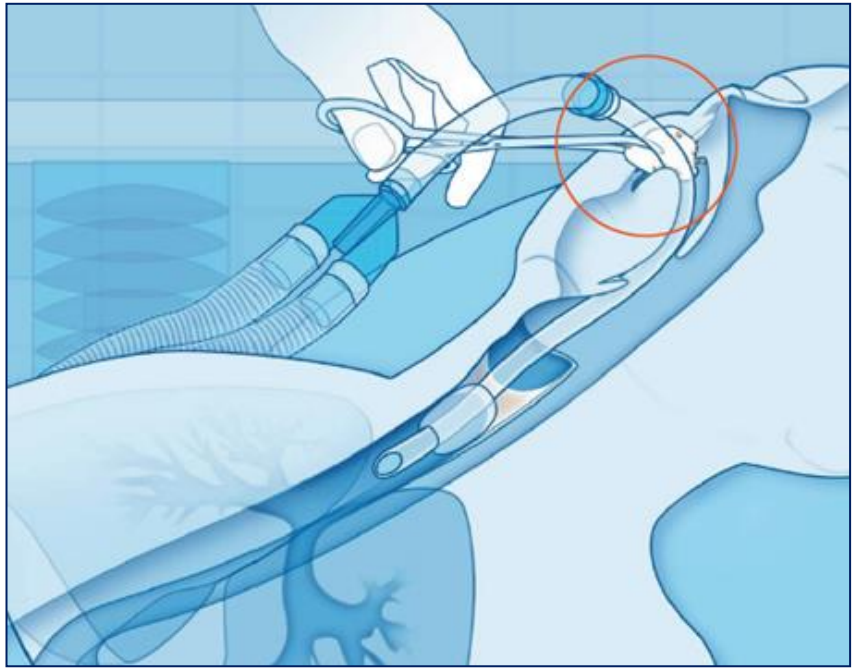
National Reference Center for Surveillance of nosocomial infections

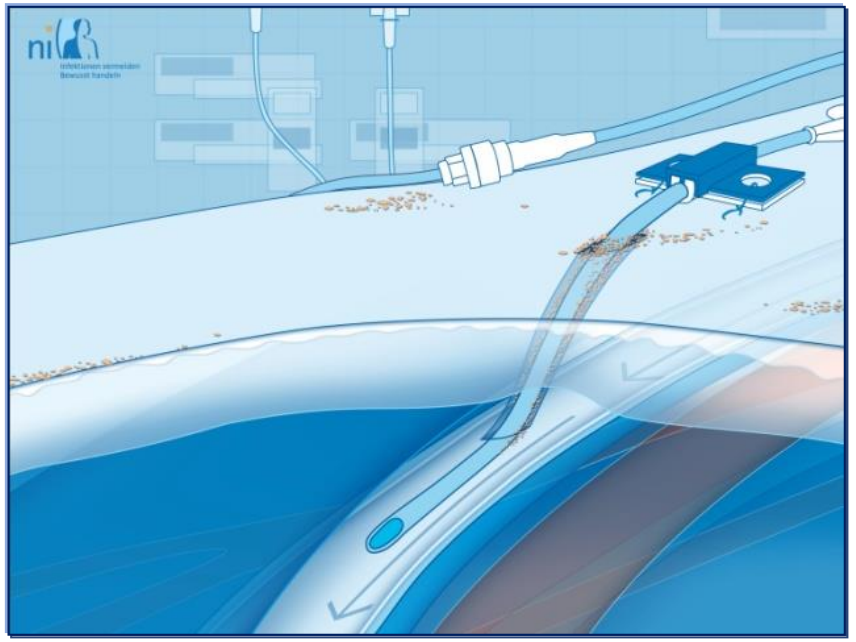
CHARITÉ

Most nosocomial infections are not due to transmission between patients

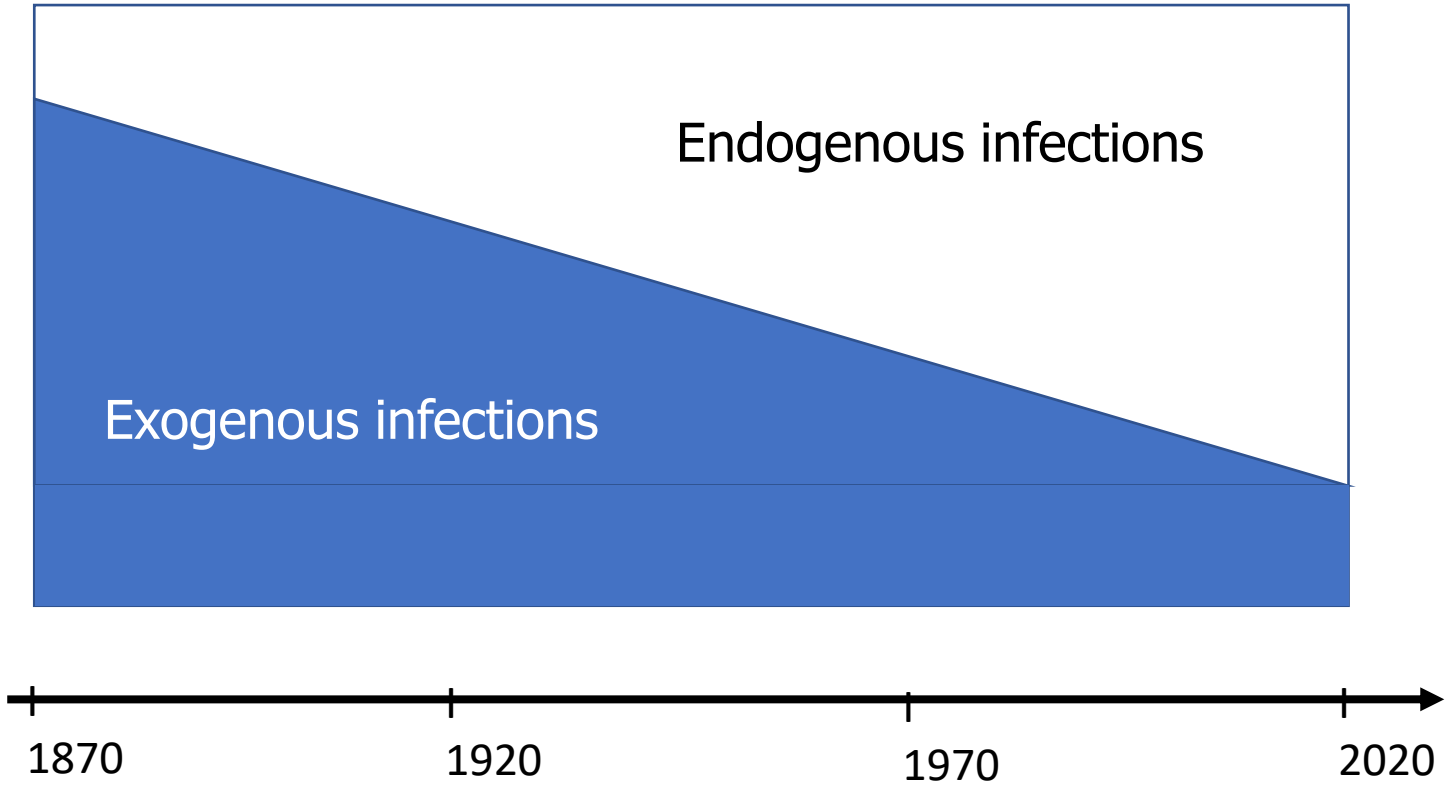


Most nosocomial infections come from the own microbiome





Development in the last 150 years



Zero infection is not possible, but reduction

Surveillance + feedback of data
-> start of communication

Reference data are very useful

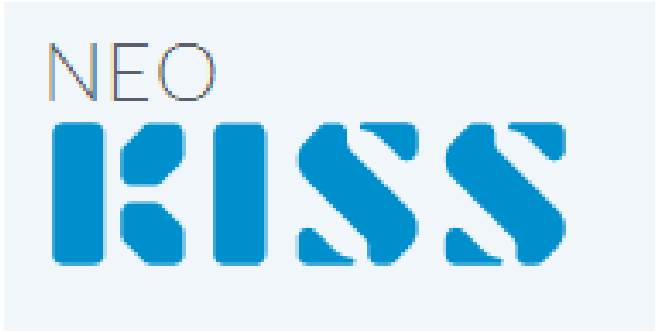
Das **Nationale Referenzzentrum für Surveillance von nosokomialen Infektionen** (NRZ) stellt für Krankenhäuser die zentrale Referenzdatenbank für nosokomiale Infektionen (KISS) zur Verfügung. Diese Infektionsdaten erlauben gezielte Risikofaktorenanalysen und stellen die Grundlage für wichtige Entscheidungen zur Infektionsprävention in Deutschland dar.

Alle Infos zur Teilnahme am Krankenhaus-Infektions-Surveillance-System (KISS) ▶

Die KISS-Module im Überblick
Referenzdaten, Surveillanceprotokolle und Erfassungsbögen ▶

Aktuelle Meldungen

KISS components



www.nrz-hygiene.de

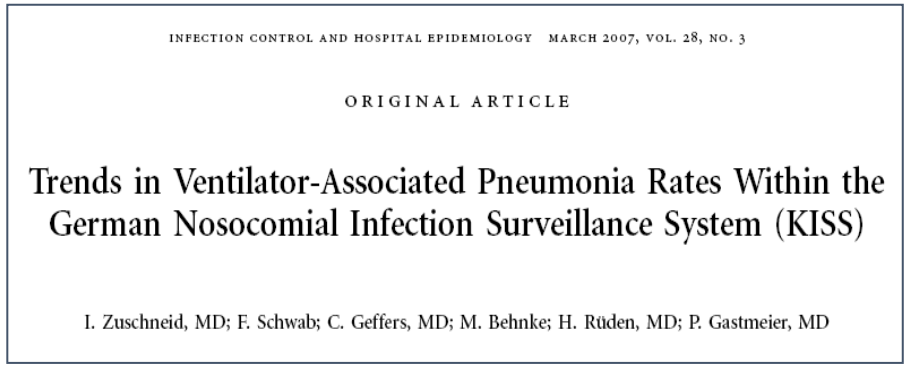
Active KISS participants 2021

Component	Departments/ Wards	Hospitals
ICU KISS	1138	
OP KISS	1199	
Non ICU KISS	452	
NEO KISS	221	
ONKO KISS	21	
MRSA KISS		526
CDI KISS		515
HAND KISS		880

Objectives of KISS

Main objective:
Providing reference data for benchmarking for many infection types and patient groups

Secondary objectives:
- Description of the national situation
- Research

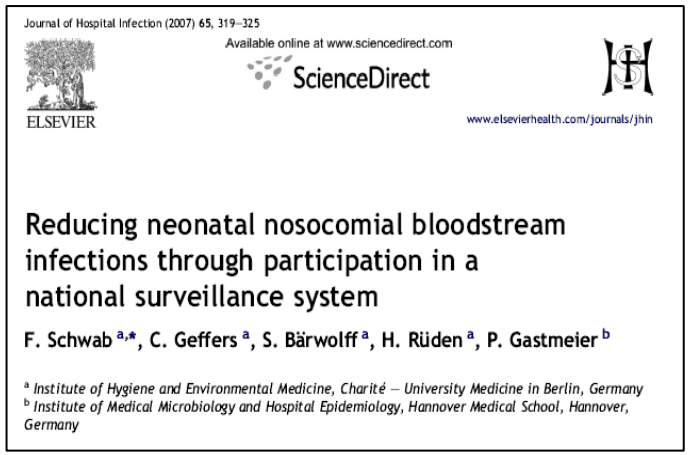


INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MARCH 2007, VOL. 28, NO. 3

ORIGINAL ARTICLE

Trends in Ventilator-Associated Pneumonia Rates Within the German Nosocomial Infection Surveillance System (KISS)

I. Zuschneid, MD; F. Schwab; C. Geffers, MD; M. Behnke; H. Rüden, MD; P. Gastmeier, MD



Journal of Hospital Infection (2007) 65, 319–325

Available online at www.sciencedirect.com

ScienceDirect

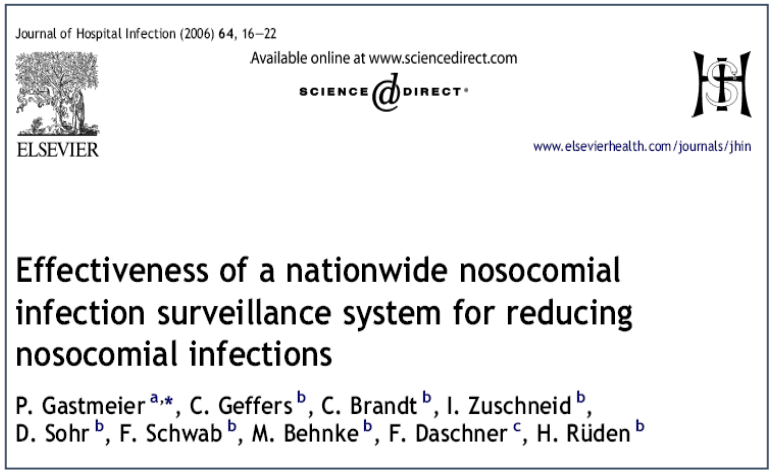
ELSEVIER

www.elsevierhealth.com/journals/jhin

Reducing neonatal nosocomial bloodstream infections through participation in a national surveillance system

F. Schwab [a,*], C. Geffers [a], S. Bärwolff [a], H. Rüden [a], P. Gastmeier [b]

[a] Institute of Hygiene and Environmental Medicine, Charité – University Medicine in Berlin, Germany
[b] Institute of Medical Microbiology and Hospital Epidemiology, Hannover Medical School, Hannover, Germany



Journal of Hospital Infection (2006) 64, 16–22

Available online at www.sciencedirect.com

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www.elsevierhealth.com/journals/jhin

Effectiveness of a nationwide nosocomial infection surveillance system for reducing nosocomial infections

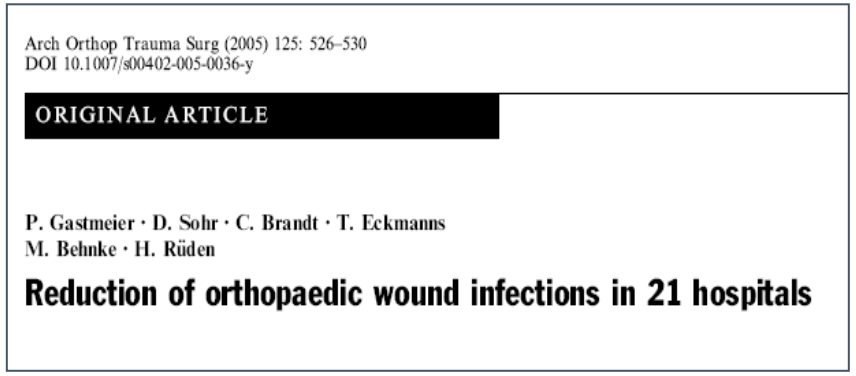
P. Gastmeier [a,*], C. Geffers [b], C. Brandt [b], I. Zuschneid [b], D. Sohr [b], F. Schwab [b], M. Behnke [b], F. Daschner [c], H. Rüden [b]

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY DECEMBER 2006, VOL. 27, NO. 12

ORIGINAL ARTICLE

Reduction of Surgical Site Infection Rates Associated With Active Surveillance

C. Brandt, MD; D. Sohr, PhD; M. Behnke; F. Daschner, MD; H. Rüden, MD; P. Gastmeier, MD



Arch Orthop Trauma Surg (2005) 125: 526–530
DOI 10.1007/s00402-005-0036-y

ORIGINAL ARTICLE

P. Gastmeier · D. Sohr · C. Brandt · T. Eckmanns
M. Behnke · H. Rüden

Reduction of orthopaedic wound infections in 21 hospitals

Journal of Hospital Infection (2006) 64, 156–161

Available online at www.sciencedirect.com

ScienceDirect

ELSEVIER

www.elsevierhealth.com/journals/jhin

Reduction of surgical site infections after Caesarean delivery using surveillance

S. Bärwolff [a,d,*], D. Sohr [a,d], C. Geffers [a,d], C. Brandt [a,d], R.-P. Vonberg [b,d], H. Halle [c], H. Rüden [a,d], P. Gastmeier [b,d]

[a] Institute of Hygiene and Environmental Medicine, Charité – University Medicine Berlin, Germany
[b] Institute for Medical Microbiology and Hospital Epidemiology, Medical School Hannover, Germany
[c] Department of Obstetrics and Gynaecology, Charité – University Medicine Berlin, Germany
[d] German National Reference Centre for the Surveillance of Nosocomial Infections

Success stories

Kramer *et al. BMC Infectious Diseases* (2021) 21:766
https://doi.org/10.1186/s12879-021-06427-7

BMC Infectious Diseases

RESEARCH ARTICLE Open Access

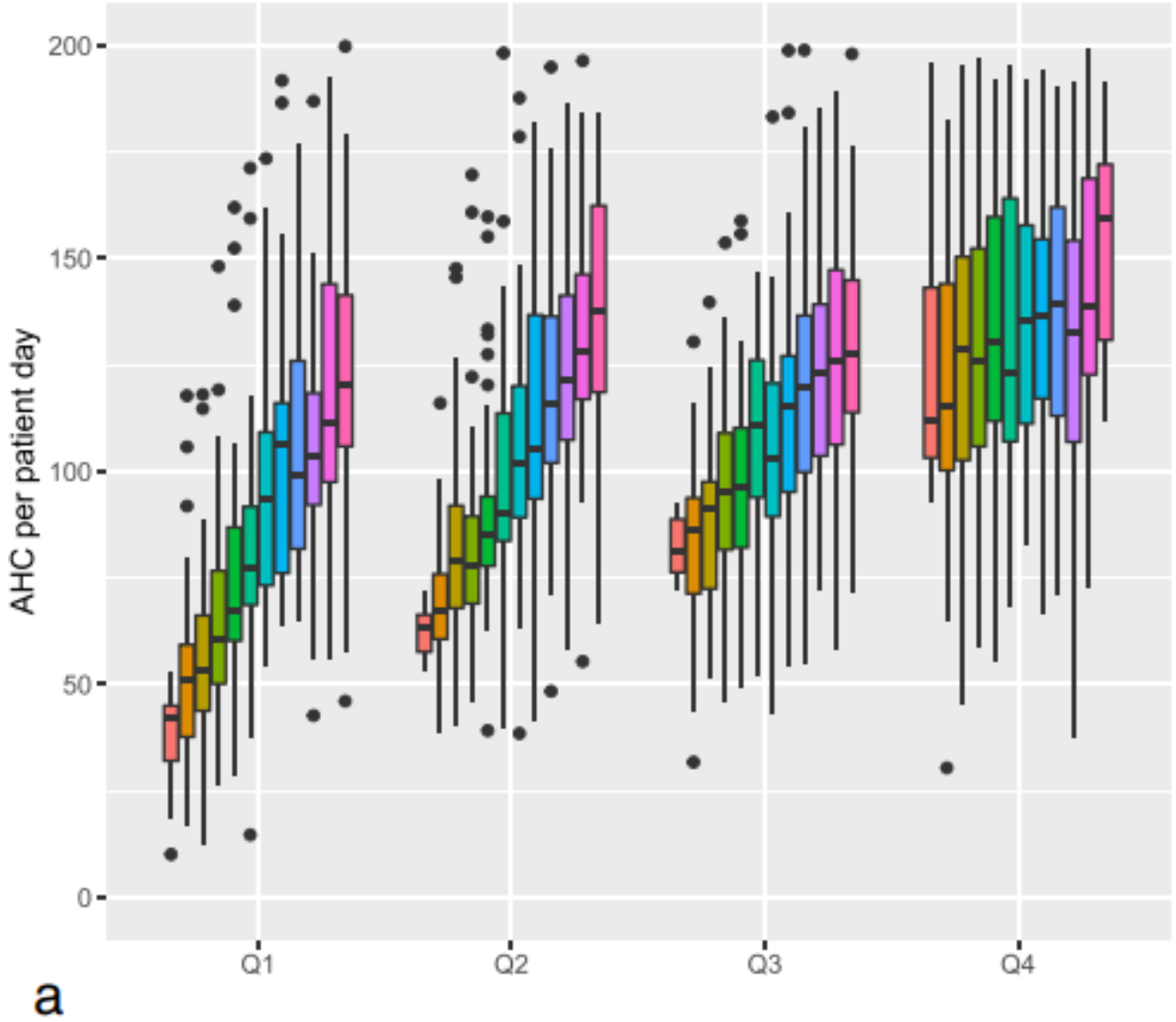
Increase in consumption of alcohol-based hand rub in German acute care hospitals over a 12 year period

Tobias Siegfried Kramer[1,2,3*†], Janine Walter[1,2,3†], Christin Schröder[1,2], Michael Behnke[1,2], Jörg Clausmeyer[1,2], Christiane Reichardt[1,2,3], Petra Gastmeier[1,2,3] and Karin Bunte[1,2,3]

In 2018, 75.2% of acute care hospitals in Germany (n = 1.460) participated

Kramer et al. BMC Infect Dis 2021: 21: 766

Hand rub consumption in intensive care units 2007-2018

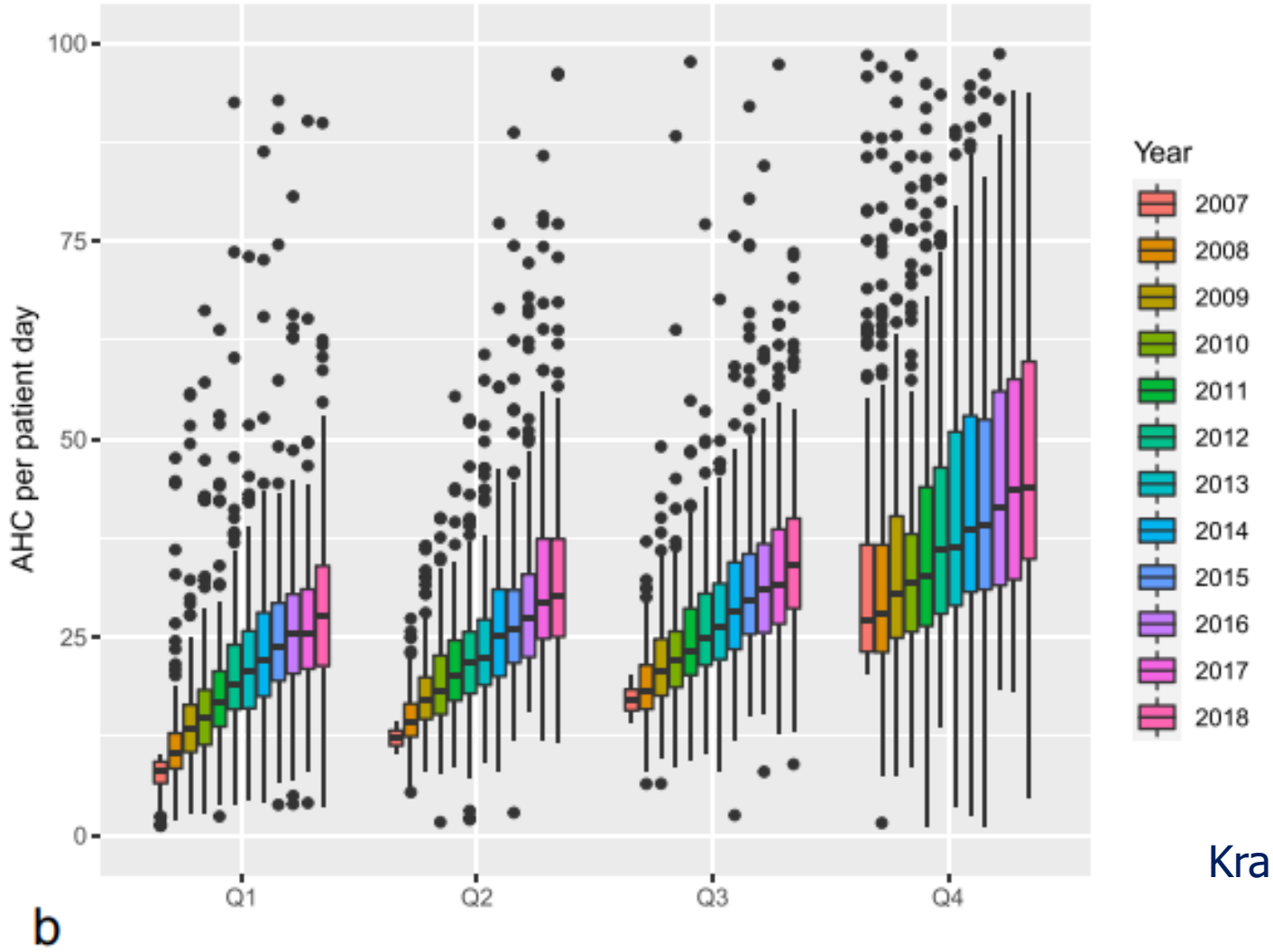


n = 1998
mean AHC increased 1.74 fold p < .0001)

from 79 ml/PD in 2007
to 137 ml/PD in 2018

Kramer et al. BMC Infect Dis 2021: 21: 766

Hand rub consumption in regular wards 2007-2018



n = 14,857
AHC increased 1.7 fold
($p < .0001$)

From 19 ml/PD in 2007
to 33 ml/PD in 2018

Kramer et al. BMC Infect Dis 2021: 21: 766

Reduction of antibiotic usage in neonatal ICUs

- Surveillance of antibiotic usage data since 2013
- Analysis of the development between 2013 and 2019
- 59 411 VLBW infants in this period
- Endpoint: day of antibiotic treatment (DOT)
- Ntibiotic usage decreased from 474 DOT/1000 patient days to 382 DOT/1000 patient days (-19.5%)

Kramer et al. J Infect 2022

Objectives of KISS

Main objective:
Providing reference data for benchmarking for many infection types and patient groups

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- Description of the national situation
- Research

Increase of healthcare associated infections reported from the NHSN 2021

Change of standardized infection ratios (SIR) of healthcare associated infections in acute care hospitals in 2020 in comparison to 2019 in %.

	2020 Q1	2020 Q2	2020 Q3	2020 Q4
CLABSI	↓ −11.8%	↑ 27.9%	↑ 46.4%	↑ 47.0%
CAUTI	↓ −21.3%	No Change[1]	↑ 12.7%	↑ 18.8%
VAE	↑ 11.3%	↑ 33.7%	↑ 29.0%	↑ 44.8%
SSI: Colon surgery	↓ −9.1%	No Change[1]	↓ −6.9%	↓ −8.3%
SSI: Abdominal hysterectomy	↓ −16.0%	No Change[1]	No Change[1]	↓ −13.1%
Laboratory-identified MRSA bacteremia	↓ −7.2%	↑ 12.2%	↑ 22.5%	↑ 33.8%
Laboratory-identified CDI	↓ −17.5%	↓ −10.3%	↓ −8.8%	↓ −5.5%

no change =
no significant
increase/decrease

CLABSI = CVC assoc. bloodstream infections
CAUTI = Catheter-assoc urinary tract infections
VAE = Ventilator assoc. events (LRTI)
SSI = surgical site infections

Weiner-Lastinger et al., Infect Control Hosp Epidemiol 2021;43:12-25

Geffers *et al.*
Antimicrobial Resistance & Infection Control (2022) 11:67
https://doi.org/10.1186/s13756-022-01108-9

Antimicrobial Resistance
and Infection Control

RESEARCH Open Access

No increase of device associated infections in German intensive care units during the start of the COVID-19 pandemic in 2020

Christine Geffers[1,2*], Frank Schwab[1,2], Michael Behnke[1,2] and Petra Gastmeier[1,2]

Development in German ICUs during the pandemic

Data from 982 ICUs participating in 2019 und 921 ICUs participating in 2020 (6,2 % Reduction)

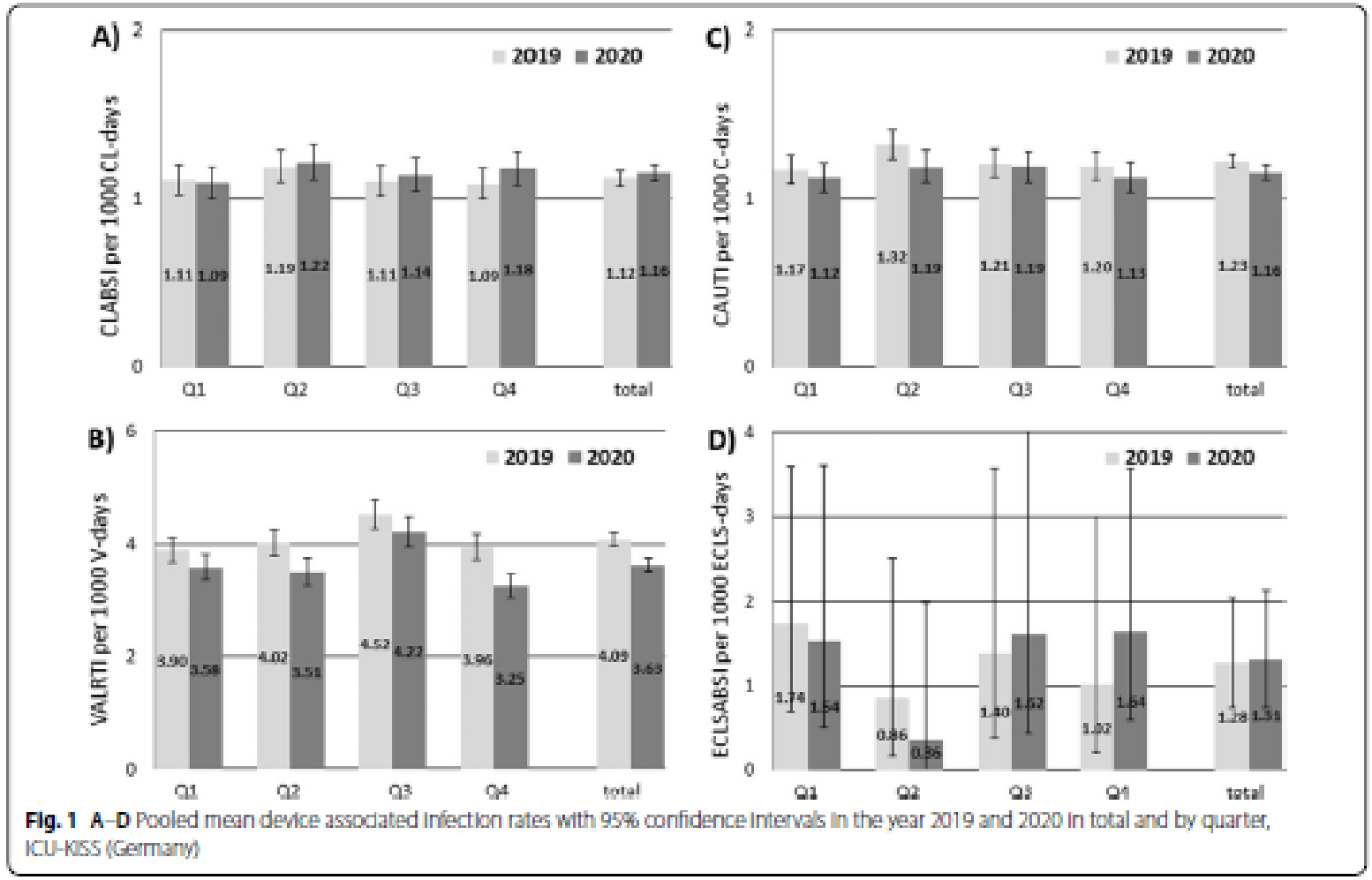
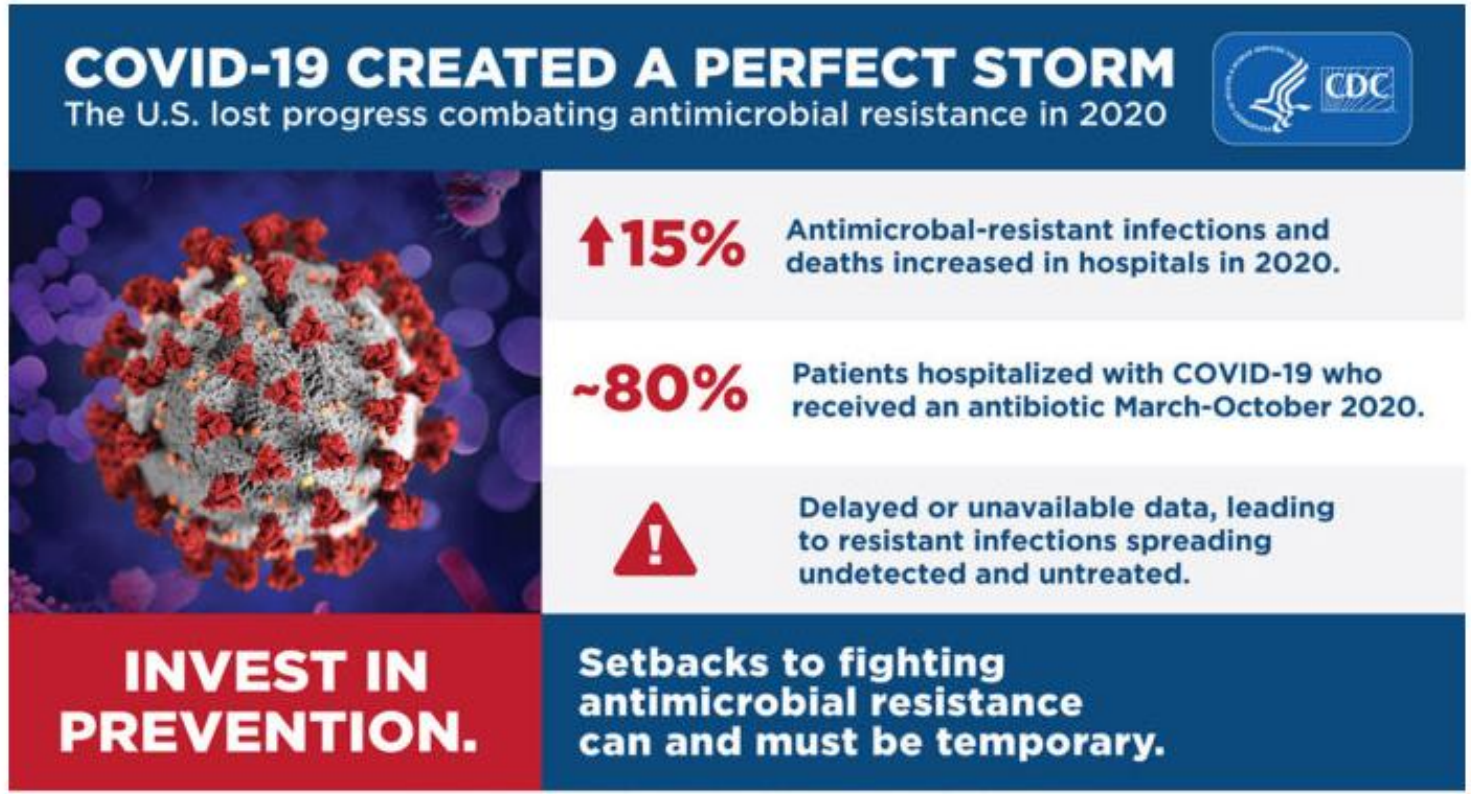


Fig. 1 A–D Pooled mean device associated infection rates with 95% confidence intervals in the year 2019 and 2020 in total and by quarter, ICU-KISS (Germany)

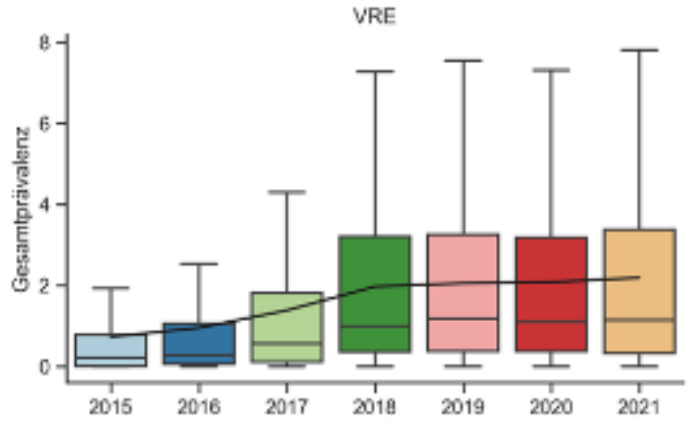
Geffers et al., ARIC 2022; 11:67

CDC reports that COVID-19 Reversed Progress in Fight Against Antimicrobial Resistance in United States

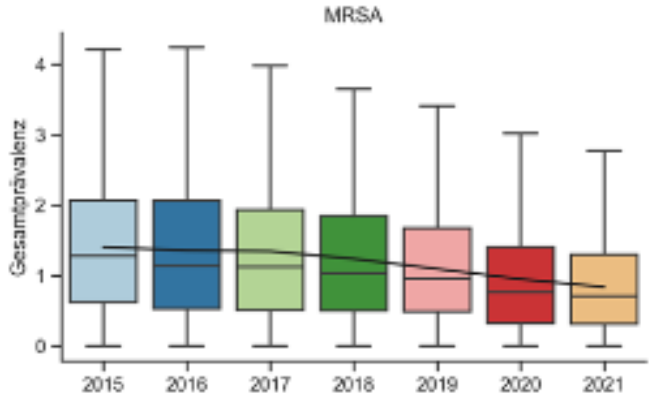
By **News Staff** Monday, July 18, 2022



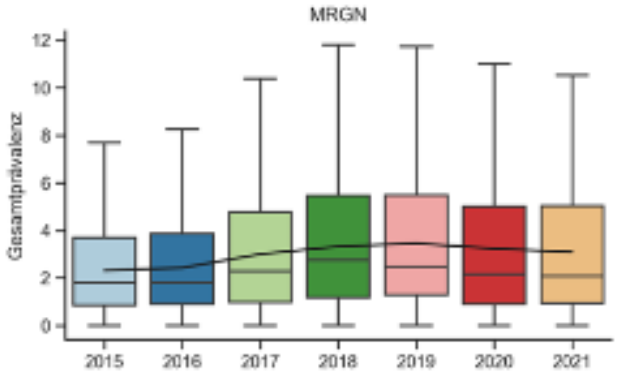
Development of overall prevalence of MDRO in German intensive care units 2015-2021



VRE



MRSA



Gram negative MDRO

ITS KISS

Unpublished information, September 2022

What is the explanation for this difference?

- US hospitals
  Increase of nosocomial infections mainly due to overload of hospitals by CIOVID-19 ICU patients and concurrent staff shortage

- Germany
  Only 7% of ICU patients in 2020 were COVID-19 patients
  Admission stop for elective patients
  -> change of patient mix
  and high number of ICU beds per 100 000 inhabitants

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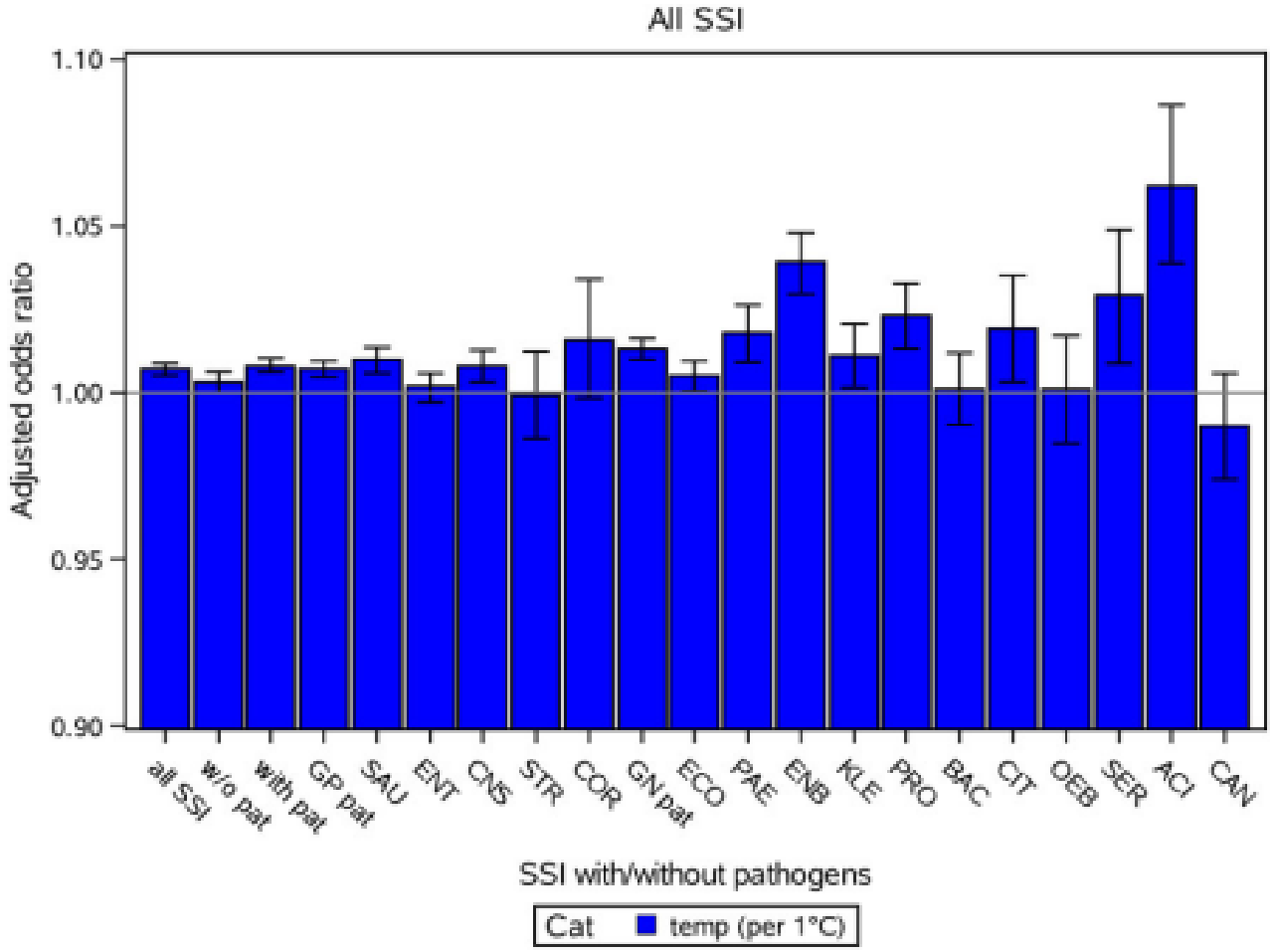
- Research

Increase of surgical site infections caused by gramnegative bacteria in warmer temperatures

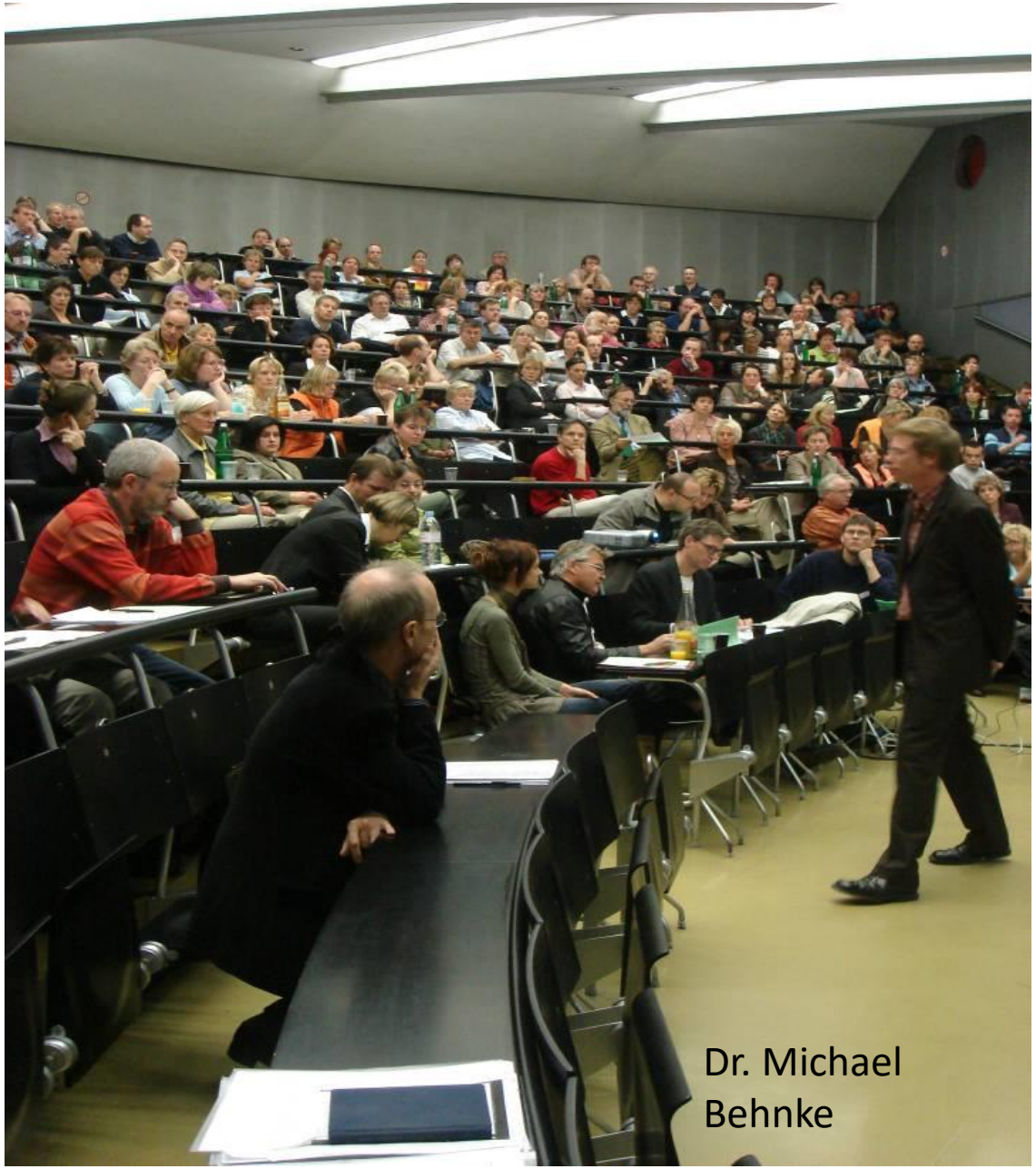


About 32 000 SSI from
> 2 Mio procedures

Aghdassi SJS et al. Infect Control Hosp Epidemiol. 2021; 42:417-424

Quo vadis KISS ?

Annual introductory courses



Dr. Michael Behnke

Prof. Christine Geffers

Surveillance license for Infection control staff to improve data quality

MOOC for new participants and regular update every two years

- Short video tutorials with questions
- Only those passing the examination will receive the licence
- Hospitals can send data to KISS only is the IC staff has the licence

- General MOOCs:
  Basic principles of KISS, data management, use of data for feedback
- Specific MOOCs:
  ICU KISS, OP KISS, NEO KISS etc.

Automated surveillance

In the past: snail`s pace

Main reasons:

- Substantial variation of hospital information systems
- Substantial variation in laboratory information systems
- Data protection issues
- Definition of healthcare associated infections which are not very suitable for automatization

Recent literature review

Journal of Hospital Infection 122 (2022) 35–43

Available online at www.sciencedirect.com

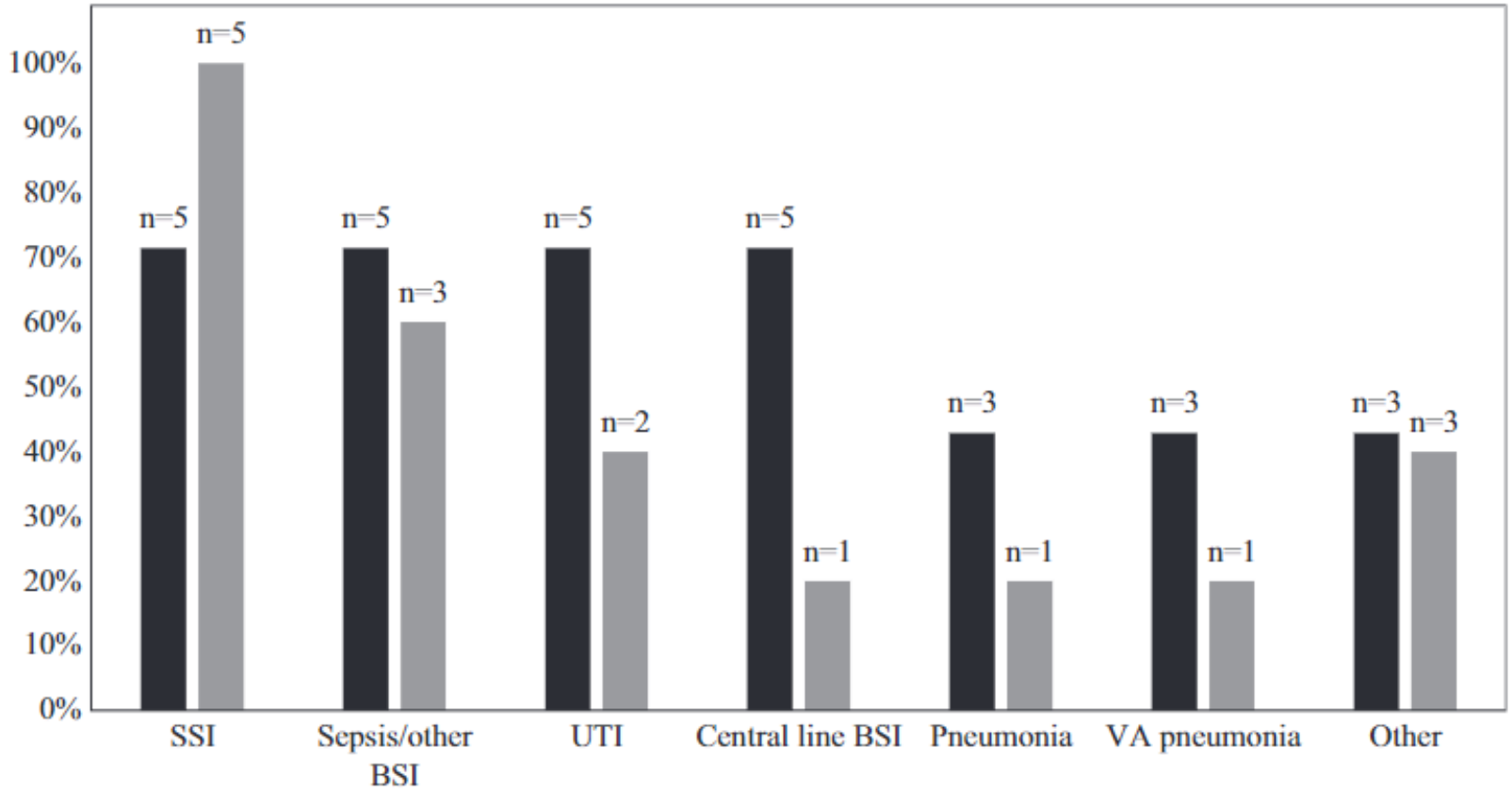
Journal of Hospital Infection

journal homepage: www.elsevier.com/locate/jhin

Automated surveillance systems for healthcare-associated infections: results from a European survey and experiences from real-life utilization

J.D.M. Verberk [a,b,c,*,†], S.J.S. Aghdassi [d,e,†], M. Abbas [f], P. Nauclér [g,h], S. Gubbels [i], N. Maldonado [j], Z.R. Palacios-Baena [j], A.F. Johansson [k], P. Gastmeier [d], M. Behnke [d], S.M. van Rooden [b,c], M.S.M. van Mourik [a]

Existing automated surveillance systems and infection types under surveillance



Grey: In a network
Black: On the hospital level

Figure 1. Healthcare-associated infections under surveillance in existing automated surveillance systems at the surveillance network (grey bars, $N = 5$) and hospital level (black bars, $N = 7$). BSI, bloodstream infection; SSI, surgical site infection; UTI, urinary tract infection; VA, ventilator-associated.

Verberk et al. J Hosp Infect 2022; 122: 35-43

Clinical Microbiology and Infection 27 (2021) S3–S19

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Original Article

PRAISE: providing a roadmap for automated infection surveillance in Europe☆

Maaike S.M. van Mourik [1,*], Stephanie M. van Rooden [2,3], Mohamed Abbas [4], Olov Aspevall [5], Pascal Astagneau [6], Marc J.M. Bonten [1,2], Elena Carrara [7], Aina Gomila-Grange [8], Sabine C. de Greeff [3], Sophie Gubbels [9], Wendy Harrison [10], Hilary Humphreys [11], Anders Johansson [12], Mayke B.G. Koek [3], Brian Kristensen [13], Alain Lepape [14], Jean-Christophe Lucet [15], Siddharth Mookerjee [16], Pontus Naucler [17], Zaira R. Palacios-Baena [18], Elisabeth Presterl [19], Miquel Pujol [8], Jacqui Reilly [20], Christopher Roberts [10], Evelina Tacconelli [21,7], Daniel Teixeira [4], Thomas Tängdén [22], John Karlsson Valik [17], Michael Behnke [23], Petra Gastmeier [23], on behalf of the PRAISE network

Objective: Supporting and harmonizing the activities in Europe

Clinical Microbiology and Infection 27 (2021) S20–S28

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Original Article

Governance aspects of large-scale implementation of automated surveillance of healthcare-associated infections☆

Stephanie M. van Rooden [1, 2, *], Olov Aspevall [3], Elena Carrara [4], Sophie Gubbels [5], Anders Johansson [6], Jean-Christophe Lucet [7], Siddharth Mookerjee [8], Zaira R. Palacios-Baena [9], Elisabeth Presterl [10], Evelina Tacconelli [4, 11], Mohamed Abbas [12], Michael Behnke [13], Petra Gastmeier [13], Maaike S.M. van Mourik [14], on behalf of the PRAISE network[†]

Clinical Microbiology and Infection 27 (2021) S29–S39

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

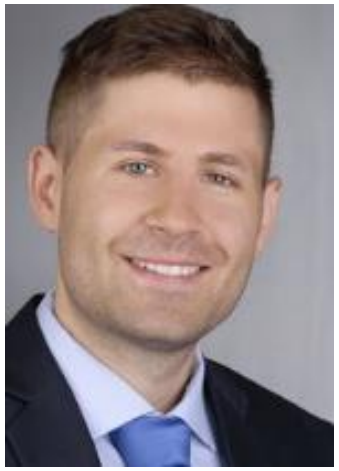
journal homepage: www.clinicalmicrobiologyandinfection.com

Original Article

Information technology aspects of large-scale implementation of automated surveillance of healthcare-associated infections☆

Michael Behnke [1, *], John Karlsson Valik [2], Sophie Gubbels [3], Daniel Teixeira [4], Brian Kristensen [5], Mohamed Abbas [4], Stephanie M. van Rooden [6, 7], Petra Gastmeier [1], Maaike S.M. van Mourik [8] on behalf of the PRAISE network[*]

Hospital onset bacteraemia as a new surveillance indicator at Charité



Dr. Seven Aghdassi

Dr. Michael Behnke

Institut für Hygiene und Umweltmedizin, Charité-Universitätsmedizin Berlin

Summary

- The main objective of HAI surveillance systems is to provide appropriate benchmarking data to stimulate further IPC measures
- Surveillance measures should be regularly updated and adapted to the needs of the IPC staff in the participating hospitals
- The quality of surveillance data should be regularly validated and education of IPC staff is a key
- Surveillance data should also be used to describe the national epidemiology and to perform research in the field of IPC