

A. Introduction

The object of this page is to enable English speaking users to access German Nosocomial Infection Surveillance System (KISS) reference data.

In 1997 we initiated a nationwide nosocomial infection surveillance system so as to create a database for hospital infections throughout Germany, "KISS" being an acronym for "Krankenhaus-(=Hospital)-Infektions-Surveillance-System". The number of hospitals participating has since been increasing continuously.

B. General principles

Participation is on a voluntary basis and individual results from each hospital are handled strictly confidentially. Before embarking on surveillance staff have to attend an introductory course and then participate in subsequent annual meetings in which the experiences of other hospitals are discussed.

The participating hospitals receive their own standardized and stratified infection rates on a regular basis in order to be able to compare this data with data from the national data pool fed in by all the other hospitals participating. Once a year a meeting of these hospitals is organized for the discussion of methodological points and exchanging the participants' experience with using such data for infection control.

In the majority of hospitals infection control personnel are responsible for recording data and dispatching it to the KISS data centre.

C. Surveillance components

The definitions and methods can be traced back to the U.S. National Nosocomial Infection Surveillance (NNIS) system with, however, some modifications. For instance, different surveillance components have self-contained surveillance protocols, each focused on a particular group of patients. These protocols are unfortunately not yet available in English. Every hospital participating in KISS chooses one or more components. Up till now the following components have been established:

C1. ICU surveillance component (= "ITS-KISS")

This component focuses on lower respiratory tract infections (pneumonia and bronchitis), blood stream and urinary tract infections in intensive care units. National

reference data are generated for device associated infection rates. This surveillance component is unit based.

C2. Surgical patient surveillance component (= “OP-KISS”)

The surveillance of surgical site infections (SSI) is concentrated in about 20 operative procedure categories (= “Indikator-Operationen”), which may differ from NNIS categories. Voluntarily participating surgical departments select those procedures they wish to follow up from the KISS operative procedure list. This surveillance component is patient based.

Infection rates are stratified according to the NNIS system.

A risk point is attributed to patients if

- the patient’s general condition, as measured by the ASA score, is 3 or worse,
- the wound contamination class is classified as contaminated or dirty/infected,
- the operation lasted longer than 75 % of all other operations of the same type. (i.e., the cut-off time is calculated in minutes from the actual German data instead of using the NNIS cut-off time)

These three factors are considered as being of equal significance. The NNIS risk index score ranges from 0 to 3, that is the number of risk points.

KISS operative procedure category list (= “Liste der Indikator-OP”):

Most of the KISS operative procedure categories are identical to NNIS procedure categories or differ only in detail, however, some procedures don’t correspond to NNIS. The KISS operative procedure categories are defined by their OPS-301-codes, which is a specific German modification of the WHO’s ICPM-procedure codes. The following are the operative procedures with the highest participation rates, for which reference data are published on the web twice yearly:

The entire list (with OPS-301-codes) in German is shown here: [LINK OP_LISTE](#)

Operative procedure category	Code (KISS)	corresponding NNIS code
Appendectomy	APPE	APPY
Knee arthroscopy	ART	-
Cholecystectomy (only fully endoscopically performed operations)	CHOL E	CHOL
Cholecystectomy (operations with laparotomy)	CHOL K	
Colon surgery	COLO	COLO
Coronary artery bypass with a graft harvested from an extremity	COBY L	CBGB
Coronary artery bypass with chest incision only	COBY T	CBGC
Vascular surgery	GC	VS
Herniorrhaphy	HERN	HER
Hip prosthesis (only procedures from orthopaedic departments, i.e. mostly elective surgery)	HPRO O	HPRO
Hip prosthesis (only procedures from traumatology departments, i.e. mostly indicated by trauma)	HPRO T	
Abdominal hysterectomy	HYST	HYST
Knee prosthesis	KPRO	KPRO
Mastectomy	MAST	MAST
Nephrectomy	NEPH	NEPH
Talocrural joint operation	OSG	-
Hip fracture without joint replacement	OSHF	-
Prostatectomy	PRST	PRST
Caesarean section	SECC	CSEC
Stripping of varicose veins	STRIP	-
Thyroidectomy (strumectomy)	STRUM	-

C3. Neonatal ICU component (= “NEO-KISS”)

Surveillance is restricted to very low birth weight infants (<1500 g) and includes pneumonia, blood stream infection and necrotizing enterocolitis (NEC). The number of device days (central / peripheral vascular catheter, mechanical ventilation / CPAP) and days with antibiotic treatment are registered for every patient.

D. How to find current reference data on the web

First go to the homepage www.nrz-hygiene.de, then to SURVEILLANCE and choose the surveillance component (as described above). The reference data at the bottom of the page are in PDF files called “Referenzdaten” .

Current reference data ICU component: [LINK ITS_KISS_Referenz](#)

Current reference data SSI component: [LINK OP_KISS_Referenz](#)

Current reference data NICU component: [LINK NEO_KISS_Referenz](#)

E. German – English glossary

The purpose of this chapter is to help the user to understand the most recent reference data, which is published twice a year on the website. A translation and short explanation are given for each surveillance component in the order of occurrence in the German reference data files:

E1. ICU component (= “ITS-KISS”)

Art der Intensivstation	ICUs are stratified in ICU types as follows:
chirurgisch	surgical
interdisziplinär	medical-surgical (mostly in smaller hospitals with only one ICU and where patients from different specialist medical departments are treated)
medizinisch	medical
neurochirurgisch	neurosurgical
pädiatrisch	paediatric (ICU for children <u>no longer of neonatal age</u> , surveillance for neonatal

	ICUs is performed in a special component: (NEO-KISS)
Anzahl der Intensivstationen	number of participating ICUs
Anzahl der Beobachtungsmonate	number of months under observation
Anzahl Patienten	number of patients included
Anzahl Patiententage	number of patient days included
Liegedauer (Tage)	average length of stay in the ICU in days

Device-Anwendungsraten über alle Intensivstationen dieser Art	device utilisation ratio for all ICU's of this type
HWK = Harnwegkatheter	urinary catheter
ZVK = zentral-venöser (oder -arterieller) Katheter	central venous/arterial catheter
Beatmung	mechanical ventilation
Anzahl Devicetage	number of device days
gepoolte Device-Anwendungsrate	pooled mean device utilisation ratios

Device-assoziierte Infektionsraten über alle Intensivstationen dieser Art	device associated infection for all ICU's of this type
Harnwegsinfektion *	urinary tract infection (UTI)
Sepsis	primary bloodstream infection
Pneumonie	pneumonia
Bronchitis	bronchitis (only those ICUs are considered in the denominator data, which have diagnosed at least one bronchitis, because not all ICUs distinguish pneumonia and bronchitis within lower respiratory tract infections.
Anzahl Devicetage	number of device days
Anzahl nosokomialer Infektionen	number of nosocomial infections (i.e., device associated)
Device-assoziierte nosokomiale Infektionsrate	rate of device associated nosocomial infections

* denominator data for UTI: ICUs are stratified in those with (= "mit") and without (= "ohne") routine urine screening for bacteria. The latter ones perform microbiological exams of urine only when clinically indicated.

E.2 SSI component (= OP-KISS)

Referenzdaten für chirurgische Abteilungen	reference data for surgical departments
Anzahl Abteilungen	number of operating departments participating
Operationsart	Operative procedure category (see separate list in section C2). These categories may be not identical with NNIS operative procedure categories
Risikokategorie	NNIS risk index category
Anzahl	number
gepoolte Wundinfektionsrate	pooled arithmetical mean surgical site infection rate (of all hospitals)
Wundinfektionen	surgical site infections (SSI)
Wundinfektionsart	type of surgical site infections (SSI), defined by the CDC criteria: <ul style="list-style-type: none"> • A1 = superficial • A2 = deep incisional • A3 = organ/space
Verteilung der standardisierten Wundinfektionsraten der Abteilungen (SIR)	distribution of the departments standardized SSI rate (SIR). The SIR is calculated in the following way: the number of cases of SSI in a given hospital is divided by the number of SSI cases, already expected for this hospital and based on the risk index distribution among that hospital's patients.
OP-Dauer (in Minuten)	cut off point for the duration of the operation (in minutes). If the patient's operation lasts for longer than this, a risk point is attributed. This cut off time represents the 75th percentile of the operations of the same type. (i.e., the cut-off time is calculated in

	minutes from the actual German data instead of using the NNIS cut-off time) and is recalculated every 6 month.
Wundklassifikation	wound contamination class (1 clean, 2 clean-contaminated, 3 contaminated, 4 dirty-infected)
Erklärung	explanation: <ul style="list-style-type: none">• Only hospitals performing at least 30 operation surveillances for each type are included in the reference data.• The number “-999” in a list means that this value is non-defined (i.e., calculation by zero error)

E3. Neo-KISS = component for neonatal ICUs (NICUs):

Surveillance is concentrated on very low birth weight (VLBW) neonates (<1500 g birth weight). These neonates are under surveillance for infections until they have reached a weight of 1800 g.

The results are stratified in 3 birth weight groups (= "Geburtsgewichtsklasse"): up to (= „bis“) 499g, 500 to (=“bis“) 999 g, 1000 to (=“bis“) 1499 g.

Anzahl Abteilungen	number of participating NICUs participating
Anzahl Patienten	number of patients included
Anzahl Patiententage zu erfassten Antibiotiktagen	number of patient days (denominator) and days with antibiotic treatment
Mittlere Liegedauer (Tage)	average length of stay on the NICU in days
gepoolte Wundinfektionsrate	pooled arithmetical mean surgical site infection rate (of all hospitals)

Device-Anwendungsraten (über alle Patienten in dieser Geburtsgewichtsklasse)	device utilisation ratio (throughout all patients of this birth weight group):
Devices	devices
ZVK = zentral-venöse (oder -arterieller) Katheter	central venous/arterial catheter
PVK = peripher venöser Katheter	peripheral venous catheter
Tubus	invasive mechanical ventilation
CPAP	non-invasivly administered continuous positive airway pressure [CPAP]
Antibiotika	antibiotics
Anzahl Device-Tage	number of device days
gepoolte Device-Anwendungsrate	pooled mean device utilisation ratios

Inzidenzdichten und Device-assoziierte Infektionsraten (über alle Patienten in dieser Geburtsgewichtsklasse)	device associated infection rates (throughout all patients of this birth weight group)
Sepsis	blood stream infection
Pneumonie	pneumonia
NEC	necrotizing enterocolitis
Anzahl Infektionen	number of infections (i.e. device associated and not device associated)
Inzidenzdichte	incidence density (= no. of infections ÷ no. of patient days x 1000)
Antibiotika	antibiotics
Anzahl Device-ass. Infektionen	number of device associated infections
Device-assoziierte Infektionsrate	rate of device associated infections (= no. of device associated infections ÷ no. of device days x 1000)

F. References in English:

1. Gastmeier P, Sohr D, Just HM, Nassauer A, Daschner F and Rüden H. How to survey nosocomial infections. *Infect Control Hosp Epidemiol* 2000;21:366-370
2. Gastmeier P, Sohr D, Geffers C, Nassauer A, Daschner F and Rüden H. Are nosocomial infection rates in intensive care units useful benchmark parameters? *Infection* 2000;28:346-350
3. Geffers C, Gastmeier P, Bräuer H, Daschner F and Rüden H. Surveillance of nosocomial infections in ICUs: is post discharge surveillance indispensable? *Infect Control Hosp Epidemiol* 2001;22:157-159
4. Coello R, Gastmeier P and de Boer AS. Surveillance of hospital acquired infection in England, Germany and The Netherlands: will international comparison of rates be possible? *Infect Control Hosp Epidemiol* 2001;22:393-397
5. Gastmeier P, Sohr D, Geffers C, Nassauer A, Dettenkofer M and Rüden H. Occurrence of methicillin resistant *Staphylococcus aureus* infections in German intensive care units. *Infection* 2002;30:198-202

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