Krankenhauskeime – Eintrag von Außen oder residente Flora

BfR
Berlin, 23. November 2011

Walter Popp

Universitätsklinikum Essen

Häufige Krankenhauskeime	**Vorkommen**	**Multiresistenz**
Staphylokokken	Mensch	+
Klebsiella	Mensch	+
Enterokokken	Mensch	+
E. coli	Mensch	+
Pseudomonas	Umwelt	+

Die meisten Keime werden vom Menschen mitgebracht.
Konzentration auf Multiresistente Keime.

MRSA:

- Residente Flora im Krankenhaus?
- MRSA im Krankenhaus erworben oder mitgebracht?
- Chancen der Sanierung
- Situation außerhalb des Krankenhauses

Andere MRE

Occurrence of Skin and Environmental Contamination with Methicillin-Resistant Staphylococcus aureus before Results of Polymerase Chain Reaction at Hospital Admission Become Available

S. Chang, A.K. Sethi, U. Stiefel, J.L. Cadnum, C.J. Donskey

Infect Control Hosp Epidemiol 2010, 31, 607-612

Abstract
BACKGROUND. …
OBJECTIVE….

METHODS. We conducted a 6-week prospective study of patients who were identified by use of polymerase chain reaction (PCR) at hospital admission as having nasal MRSA colonization….

RESULTS. There were 116 patients identified by PCR screening as having nasal MRSA colonization during the period from mid-April to May 2008, of whom 83 (72%) were enrolled in our study. Overall, MRSA was detected on the skin of 38 (51%) of 74 patients and in the environment of 37 (45%) of 83 patients. Of 83 environmental culture samples, 63 (76%) were obtained within 7 hours after PCR results became available, and 73 (88%) were obtained before wards were notified of PCR results. Of the 83 MRSA-colonized patients, 15 (18%) had contaminated their environment 25 hours after admission, and 29 (35%) had contaminated their environment 33 hours after admission….. The median interval from admission to PCR result was 20 hours, and the median interval from PCR result to notification was 23 hours. An increased quantity of MRSA cultured from a nasal sample was significantly associated with contamination.

CONCLUSIONS. …

Table 1: Persistence of clinically relevant bacteria on dry inanimate surfaces.

Type of bacterium	Duration of persistence (range)	Reference(s)
Acinetobacter spp.	3 days to 5 months	[18, 25, 28, 29, 87, 88]
Bordetella pertussis	3 – 5 days	[89, 90]
Campylobacter jejuni	up to 6 days	[91]
Clostridium difficile (spores)	5 months	[92–94]
Chlamydia pneumoniae, *C. trachomatis*	≤ 30 hours	[14, 95]
Chlamydia psittaci	15 days	[90]
Corynebacterium diphtheriae	7 days – 6 months	[90, 96]
Corynebacterium pseudotuberculosis	1–8 days	[21]
Escherichia coli	1.5 hours – 16 months	[12, 16, 17, 22, 28, 52, 90, 97–99]
Enterococcus spp. including VRE and VSE	5 days – 4 months	[9, 26, 28, 100, 101]
Haemophilus influenzae	12 days	[90]
Helicobacter pylori	≤ 90 minutes	[23]
Klebsiella spp.	2 hours to > 30 months	[12, 16, 28, 52, 90]
Listeria spp.	1 day – months	[15, 90, 102]
Mycobacterium bovis	> 2 months	[13, 90]
Mycobacterium tuberculosis	1 day – 4 months	[30, 90]
Neisseria gonorrhoeae	1 – 3 days	[24, 27, 90]
Proteus vulgaris	1 – 2 days	[90]
Pseudomonas aeruginosa	6 hours – 16 months; on dry floor: 5 weeks	[12, 16, 28, 52, 99, 103, 104]
Salmonella typhi	6 hours – 4 weeks	[90]
Salmonella typhimurium	10 days – 4.2 years	[15, 90, 105]
Salmonella spp.	1 day	[52]
Serratia marcescens	3 days – 2 months; on dry floor: 5 weeks	[12, 90]
Shigella spp.	2 days – 5 months	[90, 106, 107]
Staphylococcus aureus, including MRSA	7 days – 7 months	[9, 10, 16, 52, 99, 108]
Streptococcus pneumoniae	1 – 20 days	[90]
Streptococcus pyogenes	3 days – 6.5 months	[90]
Vibrio cholerae	1 – 7 days	[90, 109]

Research article Open Access

How long do nosocomial pathogens persist on inanimate surfaces? A systematic review

Axel Kramer*[1], Ingeborg Schwebke[2] and Günter Kampf[1,3]

Address: [1]Institut für Hygiene und Umweltmedizin, Ernst-Moritz-Arndt Universität, Greifswald, Germany, [2]Robert-Koch Institut, Berlin, Germany and [3]Bode Chemie GmbH & Co. KG, Scientific Affairs, Hamburg, Germany

Email: Axel Kramer* - kramer@uni-greifswald.de; Ingeborg Schwebke - schwebkei@rki.de; Günter Kampf - guenter.kampf@bode-chemie.de

* Corresponding author

Published: 16 August 2006

BMC Infectious Diseases 2006, 6:130 doi:10.1186/1471-2334-6-130

Received: 26 April 2006

Accepted: 16 August 2006

Table 1: Persistence of clinically relevant bacteria on dry inanimate surfaces.

Type of bacterium	Duration of persistence (range)	Reference(s)
Acinetobacter spp.	3 days to 5 months	[18, 25, 28, 29, 87, 88]
Bordetella pertussis	3 – 5 days	[89, 90]
Campylobacter jejuni	up to 6 days	[91]
Clostridium difficile (spores)	5 months	[92–94]
Chlamydia pneumoniae, *C. trachomatis*	≤ 30 hours	[14, 95]
Chlamydia psittaci	15 days	[90]
Corynebacte		
Corynebacte		
Escherichia		
Enterococc		
Haemophilu		
Helicobacte		
Klebsiella s		
Listeria spp		
Mycobacter		
Mycobacter		
Neisseria g		
Proteus vulg		
Pseudomon		
Salmonella		
Salmonella		
Salmonella		
Serratia ma		
Shigella spp		
Staphyloco		
Streptococcus pneumoniae	1 – 20 days	[90]
Streptococcus pyogenes	3 days – 6.5 months	[90]
Vibrio cholerae	1 – 7 days	[90, 109]

Acinetobacter	3 Tage – 5 Monate
Clostridium diff. (Sporen)	5 Monate
E. coli	1,5 Stunden – 16 Monate
Enterococcus spp. einschließlich VRE	5 Tage – 4 Monate
Pseudomonas	6 Stunden – 16 Monate
Staphylococcus aureus einschl. MRSA	7 Tage – 7 Monate

Research article

Open Access

How long do nosocomial pathogens persist on inanimate surfaces? A systematic review

Axel Kramer*[1], Ingeborg Schwebke[2] and Günter Kampf[1,3]

Address: [1]Institut für Hygiene und Umweltmedizin, Ernst-Moritz-Arndt Universität, Greifswald, Germany, [2]Robert-Koch Institut, Berlin, Germany and [3]Bode Chemie GmbH & Co. KG, Scientific Affairs, Hamburg, Germany

Email: Axel Kramer* - kramer@uni-greifswald.de; Ingeborg Schwebke - schwebkei@rki.de; Günter Kampf - guenter.kampf@bode-chemie.de

* Corresponding author

Published: 16 August 2006

BMC Infectious Diseases 2006, 6:130 doi:10.1186/1471-2334-6-130

Received: 26 April 2006

Accepted: 16 August 2006

Epidemiologisches Bulletin

18. April 2011 / Nr. 15 AKTUELLE DATEN UND INFORMATIONEN ZU INFEKTIONSKRANKHEITEN UND PUBLIC HEALTH

Zum Umgang mit MRSA-Patienten in deutschen Krankenhäusern

Ergebnisse einer Umfrage der DGKH und des BVÖGD im Herbst 2010

	täglich		seltener als täglich		keine Angabe	
patientennahe Flächen	867	97,1%	10	1,1%	16	1,8%
Fußboden	800	89,6%	48	5,4%	45	5,0%
Sanitärbereich	855	95,7%	16	1,8%	22	2,5%

Tab. 3: Häufigkeit der Durchführung von Desinfektionsmaßnahmen im Zimmer von MRSA-Patienten (Umfrage DGKH und BVÖGD Oktober 2010)

Folgerung:
Residente Flora auf Krankenhausoberflächen sollte kein großes Problem sein.

Aber: Besiedlung des Personals?

MRSA-Trägerraten bei Krankenhauspersonal

1 % (11 von 1.018, Uniklinik, 1994) (Dietze 1996),

5,3 % (17 von 324, Chirurgische Abteilung, Uniklinik, 2001/02) (Kaminski und Muhr 2007, Kaminski et al. 2007),

2,8 % (bundesweite Fragebogen-Aktion, vor allem an Unikliniken, 2004) (Witte et al. 2005),

3,2 % (11 von 334, Uniklinik Marburg 2004) (Witte et al. 2005) und 4 % (2 von 48) (Joos 2009).

MRSA als Berufskrankheit (BGW)		
Jahr	**BK-Anzeigen**	**BK-Anerkennungen**
2006	114	1
2007	88	5
2008	98	11
2009	102	7

MRSA-Eintages-Prävalenzabfrage in Essen				
	Mai 2009	November 2009	Mai 2010	November 2010
Krankenhäuser	2,2 %	1,8 %	2,0 %	1,8 %
Alten- und Pflegeheime	2,0 %	1,9 %	1,3 %	2,3 %
Niedergelassene Ärzte	0,4 %	0,3 %	0,3 %	0,4 %
Ambulante Pflege	1,0 %	1,0 %	0,7 %	1,0 %
Rettungsdienste	4,3 %	4,7 %	0,9 %	4,2 %

Saarland:

- Aufnahme-Screening von 20.000 Patienten: 2,2 %

Siegen-Wittgenstein:

- Aufnahmescreening bei 7.000 Patienten: 1,4 %

Sachsen-Anhalt:

- Eintages-Prävalenz bei 13.000 Patienten: 1,1 %

Kreis Höxter:

- Eintages-Screening: 3,4 %

Netzwerk Euregio MRSA-net, Münster:

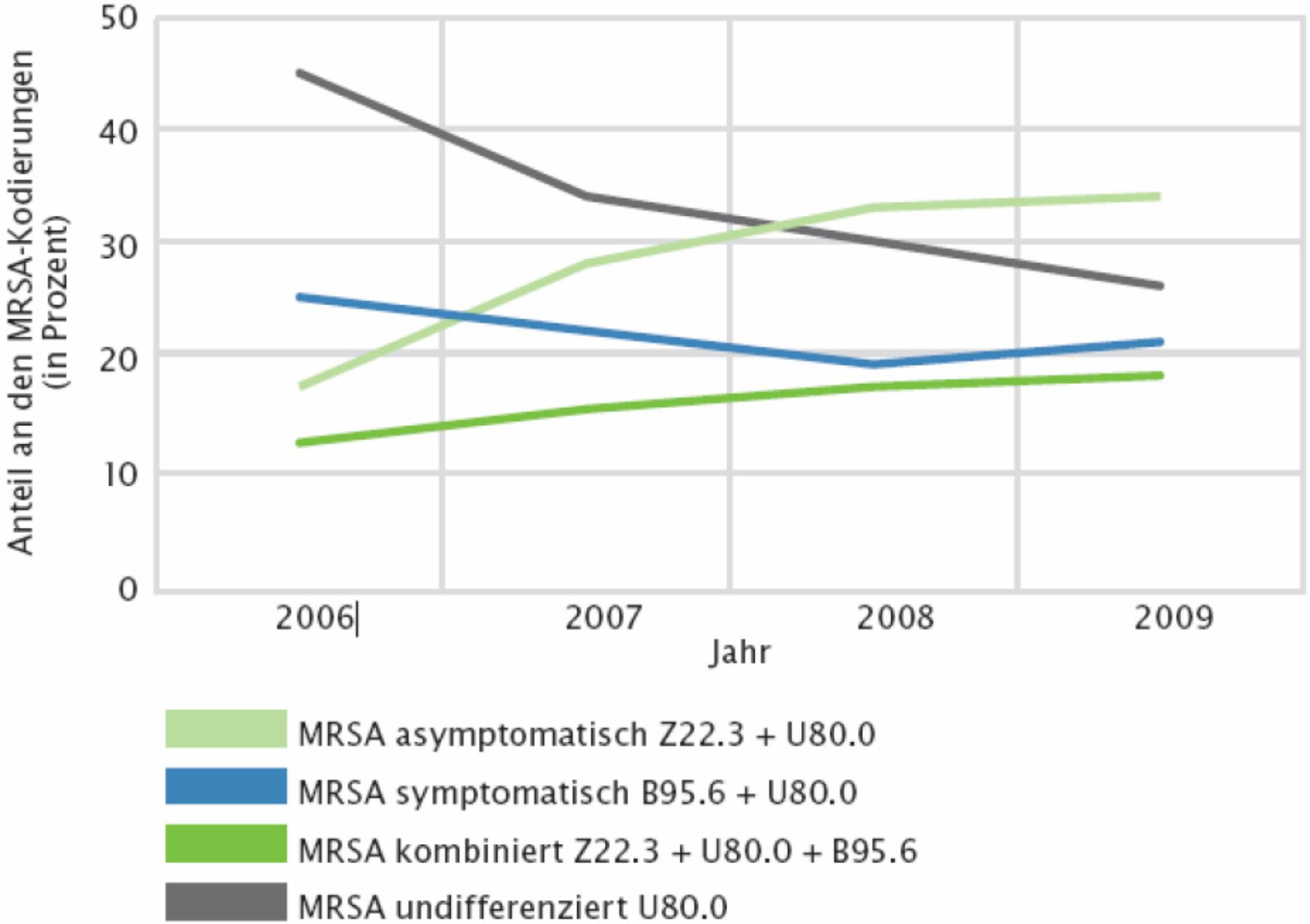
- Aufnahme-Screening: 1,6 %

Gelsenkirchen:

- Aufnahme-Screening, 5.300 Patienten: 2,5 %
- 1 Klinik:
  - 5,6 % bei Aufnahme positiv
  - 2 % positiv bei Entlassung, die bei Aufnahme negativ waren

Universitätsklinikum Essen: Screening aller stationären Aufnahmen seit Juni 2010										
Anzahl stationärer Patienten mit MRSA-Nachweis										
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011, 1-6
Alle Patienten	147	202	196	289	316	458	474	341	451	404
Erstnachweis	124	182	184	243	231	284	325	311	415	225*
* Nosokomial: 59										

Symptomatische und asymptomatische Keimträger



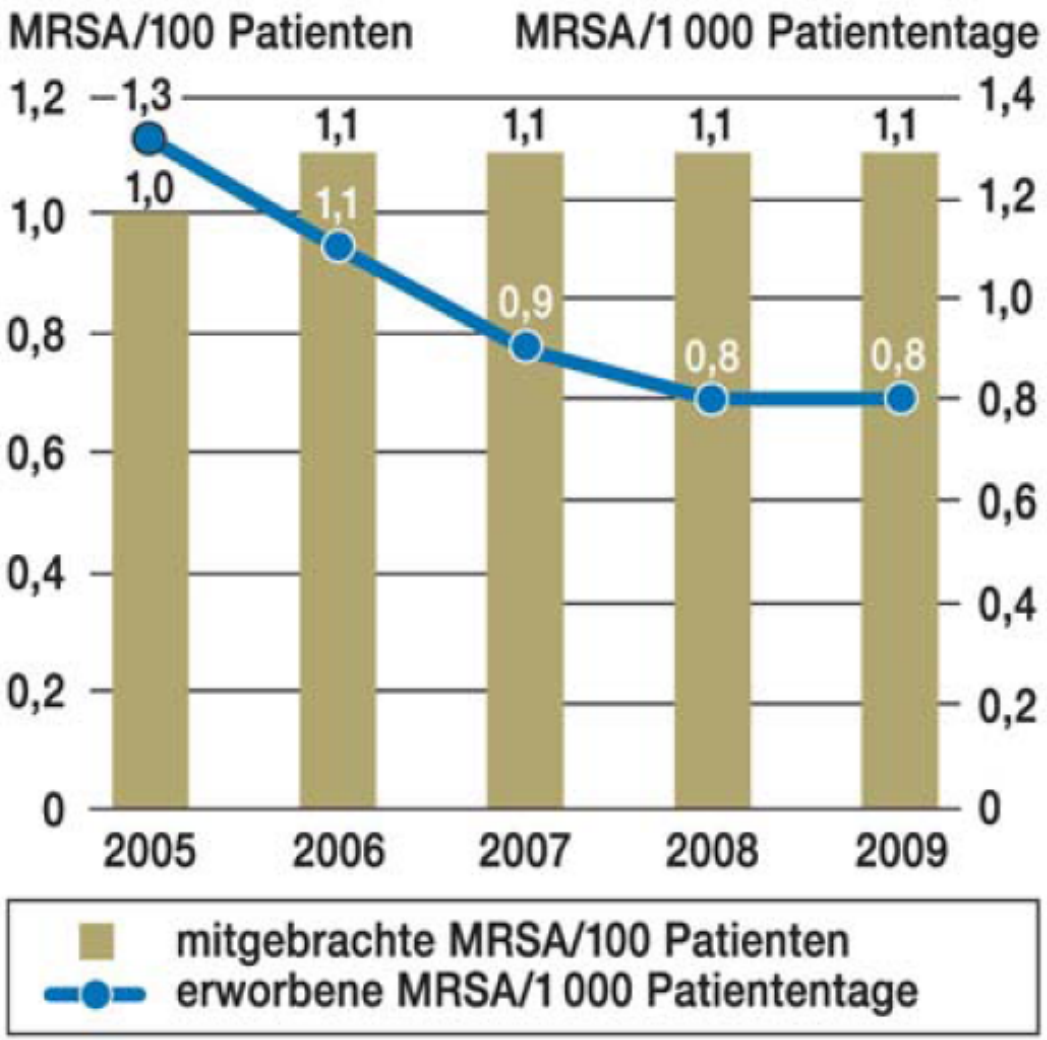
Quelle: BARMER-Daten 2006 bi

Barmer GEK: Gesundheitswesen aktuell 2011

Zitierweise
Geffers C, Gastmeier P: Nosocomial infections and multidrug-resistant organisms in Germany—epidemiological data from KISS (The Hospital Infection Surveillance System). Dtsch Arztebl Int 2011; 108(6): 87–93.
DOI: 10.3238/arztebl.2011.0087

MRSA-Prävalenz bei Aufnahme auf ITS (MRSA-Patienten/100 Patienten) als Säulen; Inzidenzdichte auf ITS erworbener MRSA (Patienten mit nosokomialen MRSA/1 000 Patiententage) als Linie im zeitlichen Verlauf 2005 bis 2009

GRAFIK 3



Zitierweise
Geffers C, Gastmeier P: Nosocomial infections and multidrug-resistant organisms in Germany—epidemiological data from KISS (The Hospital Infection Surveillance System). Dtsch Arztebl Int 2011; 108(6): 87–93.
DOI: 10.3238/arztebl.2011.0087

GRA

nos

0,5

0,4

0,3

0,2

0,1

0

CDAD und 0,75 für MRSA. Es handelt sich bei den pro Jahr in Krankenhäusern behandelten Fällen von Patienten mit MRSA zu 75 % um mitgebrachte MRSA-Besiedlungen/Infektionen, bei denen der MRSA entweder bereits in vorangegangenen Aufenthalten, aus anderen Krankenhäusern oder medizinischen Einrichtungen oder über andere Wege erworben war. Dagegen dreht sich dieses Verhältnis für CDAD mit einem Anteil von 70 % nosokomialer Fälle nahezu um. Während eines Krankenhausaufenthaltes ist die Gefahr, an CDAD zu erkranken, fast doppelt so hoch wie das Risiko eines Neuerwerbs von MRSA

Folgerung:

Es werden immer mehr MRSA-Infektionen bzw. –Kolonisationen mitgebracht von außen.

Ca. 20 – 30 % von MRSA-Keimträgern entwickeln eine Infektion innerhalb eines Jahres.

Datta, Huang: CID 2008, 47, 176
Huang, Platt: CID 2003, 36, 281

E. Murphy, S. J. Spencer, D. Young, B. Jones, M. J. G. Blyth:

MRSA colonisation and subsequent risk of infection despite effective eradication in orthopaedic elective surgery

Journal of Bone and Joint Surgery 2011, 93-B, 548-551.

….
We screened 5933 elective orthopaedic in-patients for MRSA at pre-operative assessment. Of these, 108 (1.8%) were colonised with MRSA and 90 subsequently underwent surgery. Despite effective eradication therapy, six of these (6.7%) had an SSI within one year of surgery. Among these infections, deep sepsis occurred in four cases (4.4%) and superficial infection in two (2.2%). The responsible organism in four of the six cases was MRSA
. …

Long-term persistence of MRSA in re-admitted patients

F. Mattner, F. Biertz, Ziesing, P. Gastmeier, I. F. Chaberny

Infection 2010, 38, 363-371

Abstract

Background …

Patients and methods

Between January 2002 and October 2005 all MRSA-positive patients admitted to the university hospital of Hannover Medical School were assessed at first admission and all subsequent re-admissions. …

Results

A total of 1,032 patients who had tested positive at least once for MRSA were admitted to our hospital during the study period, accounting for 2,038 admissions. Of these patients, 403 (39.1%) were admitted more than once (from two times to 21 times), and 238 (59.1%) of the re-admitted patients remained MRSA positive during all subsequent admissions. Fifty-five (13.6%) patients tested MRSA negative at their last admission, and 61 (15.1%) tested MRSA negative at at least two consecutive admissions. In 27 (6.7%) patients, the MRSA status differed more than once between subsequent admissions. Overall, the half-life time (HLT) of MRSA persistence was 549 days, with the duration of persistence dependent on the colonisation of different anatomical sites …

Journal of Antimicrobial Chemotherapy Advance Access published June 30, 2011

J Antimicrob Chemother
doi:10.1093/jac/dkr243

Journal of Antimicrobial Chemotherapy

Eradication of carriage with methicillin-resistant *Staphylococcus aureus*: effectiveness of a national guideline

Heidi S. M. Ammerlaan[1]*, Jan A. J. W. Kluytmans[2,3], Hanneke Berkhout[4], Anton Buiting[5], Els I. G. B. de Brauwer[6], Peterhans J. van den Broek[7], Paula van Gelderen[2], Sander (A.) C. A. P. Leenders[8], Alewijn Ott[9], Clemens Richter[10], Lodewijk Spanjaard[11], Ingrid J. B. Spijkerman[2], Frank H. van Tiel[12], G. Paul Voorn[13], Mireille W. H. Wulf[14], Jan van Zeijl[15], Annet Troelstra[1] and Marc J. M. Bonten[1,16] on behalf of the MRSA Eradication Study Group†

Background: We evaluated the effectiveness of eradication of methicillin-resistant *Staphylococcus aureus* (MRSA) carriage in the Netherlands after the introduction of a guideline in 2006. The guideline distinguishes complicated (defined as the presence of MRSA infection, skin lesions, foreign-body material, mupirocin resistance and/or exclusive extranasal carriage) and uncomplicated carriage (not meeting criteria for complicated carriage). Mupirocin nasal ointment and chlorhexidine soap solution are recommended for uncomplicated carriers and the same treatment in combination with two oral antibiotics for complicated carriage.

Methods: A prospective cohort study was performed in 18 Dutch centres from 1 October 2006 until 1 October 2008.

Results: Six hundred and thirteen MRSA carriers underwent one or more decolonization treatments during the study period, mostly after hospital discharge. Decolonization was achieved in 367 (60%) patients with one eradication attempt and ultimately 493 (80%) patients were decolonized, with a median time until decolonization of 10 days (interquartile range 7–43 days). [illegible]red and twenty-seven (62%) carriers were treated according to the guideline, which was associated with an absolute increase in treatment success of 20% [from 45% (91/203) to 65% (214/327)].

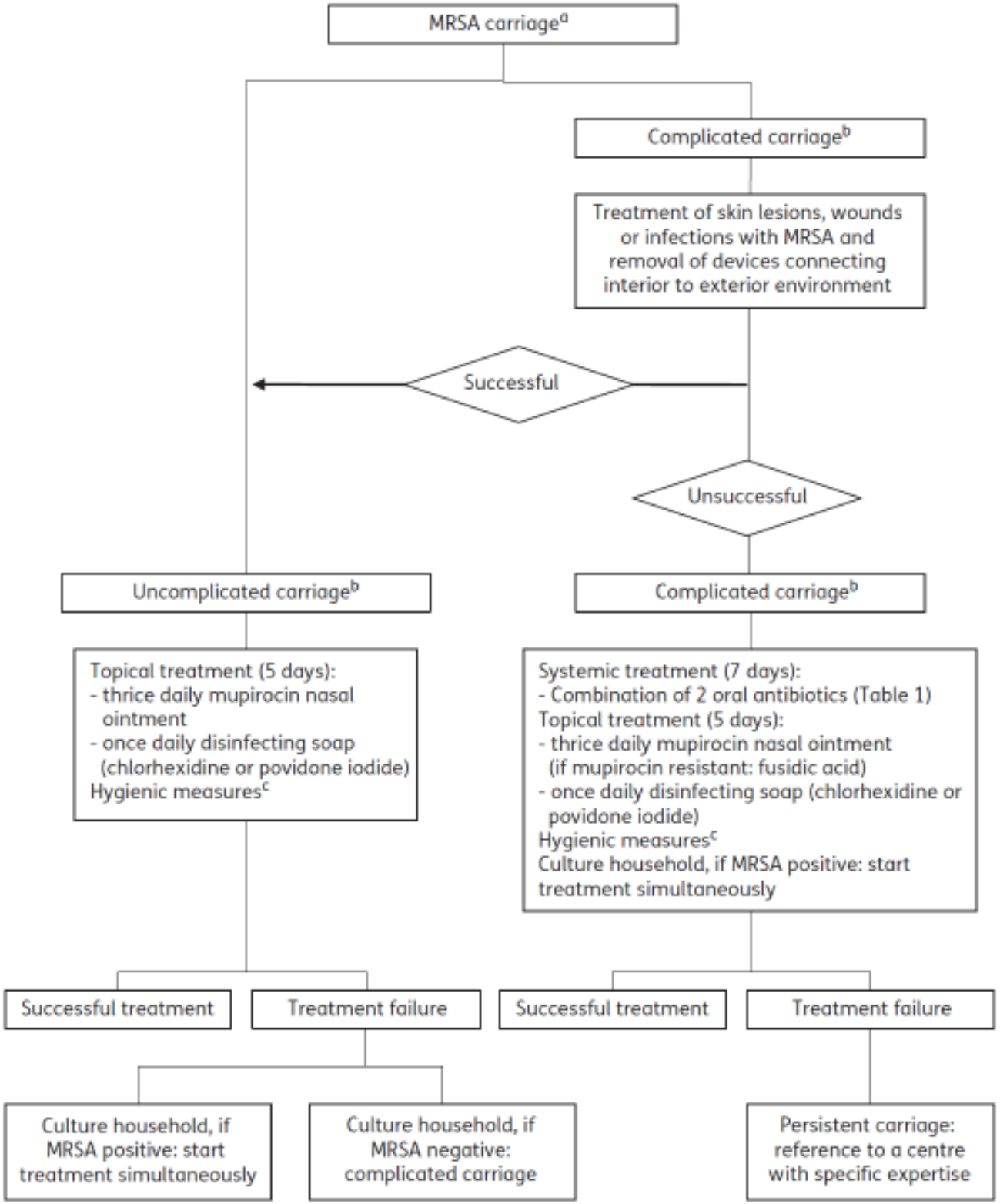
Conclusions: Sixty percent of MRSA carriers were successfully decolonized after the first eradication attempt and 62% were treated according to the guideline, which was associated with an increased treatment success.

Journal of Antimicrobial Chemotherapy Advance Access published June 3

J Antimicrob Chemother
doi:10.1093/jac/dkr243

Eradication of carriage with methicillin-resistant *Staphylococcus aureus*: effectiveness of a national gui

Heidi S. M. Ammerlaan[1]*, Jan A. J. W. Kluytmans[2,3], Hanneke Berkhout[4], Anton Buiting[5], Els I. C
Peterhans J. van den Broek[7], Paula van Gelderen[2], Sander (A.) C. A. P. Leenders[8], Alewijn Ott[9], C
Lodewijk Spanjaard[11], Ingrid J. B. Spijkerman[2], Frank H. van Tiel[12], G. Paul Voorn[13], Mireille
Jan van Zeijl[15], Annet Troelstra[1] and Marc J. M. Bonten[1,16] on behalf of the MRSA Eradicatio



Journal of Antimicrobial Chemotherapy Advance Access published June 30, 2011

J Antimicrob Chemother
doi:10.1093/jac/dkr243

Journal of Antimicrobial Chemotherapy

Eradication of carriage with methicillin-resistant *Staphylococcus aureus*: effectiveness of a national guideline

Heidi S. M. Ammerlaan[1]*, Jan A. J. W. Kluytmans[2,3], Hanneke Berkhout[4], Anton Buiting[5], Els I. G. B. de Brauwer[6], Peterhans J. van den Broek[7], Paula van Gelderen[2], Sander (A.) C. A. P. Leenders[8], Alewijn Ott[9], Clemens Richter[10], Lodewijk Spanjaard[11], Ingrid J. B. Spijkerman[2], Frank H. van Tiel[12], G. Paul Voorn[13], Mireille W. H. Wulf[14], Jan van Zeijl[15], Annet Troelstra[1] and Marc J. M. Bonten[1,16] on behalf of the MRSA Eradication Study Group†

Table 1. Oral combination therapy for eradication of MRSA carriage in complicated carriage according to the SWAB guideline[14]

Guideline	Antibiotic 1	Antibiotic 2
Recommended	200 mg of trimethoprim twice daily *or* 200 mg of doxycycline once daily	600 mg of rifampicin twice daily
Alternative[a]	600 mg clindamycin thrice daily *or* 500 mg of clarithromycin twice daily *or* 750 mg of ciprofloxacin twice daily *or* 500 mg fusidic of acid thrice daily	500 mg of fusidic acid thrice daily

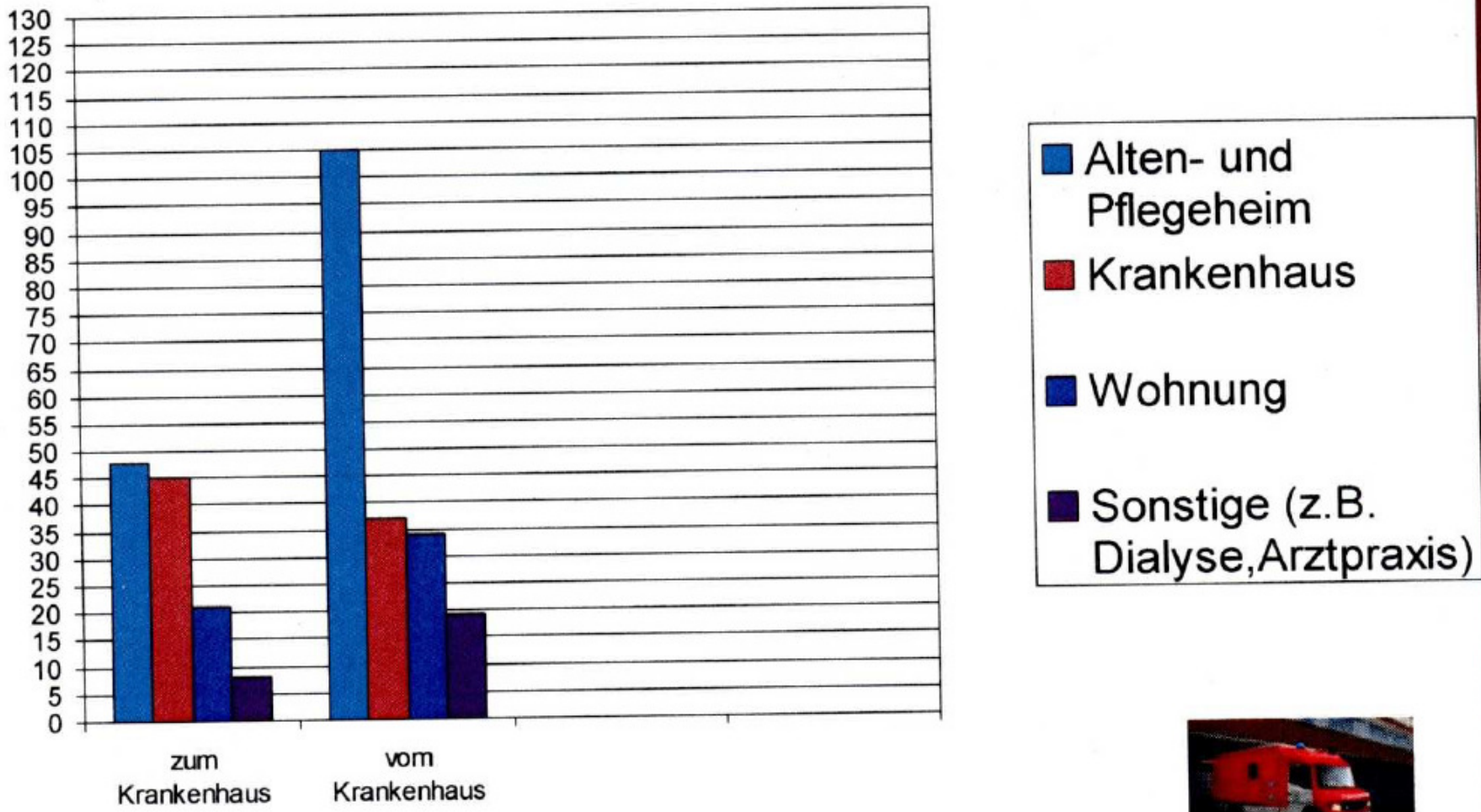
All treatments are prescribed preferably by means of tablets. The dosages in this table are the recommended dosages for an adult patient of about 70 kg. Combination therapy is preferred because of better effectiveness and a decreased chance of developing resistance.
[a]Alternative options should only be used when there is a contraindication (e.g. *in vitro* resistance, intolerance) for the recommended options.

Folgerung:

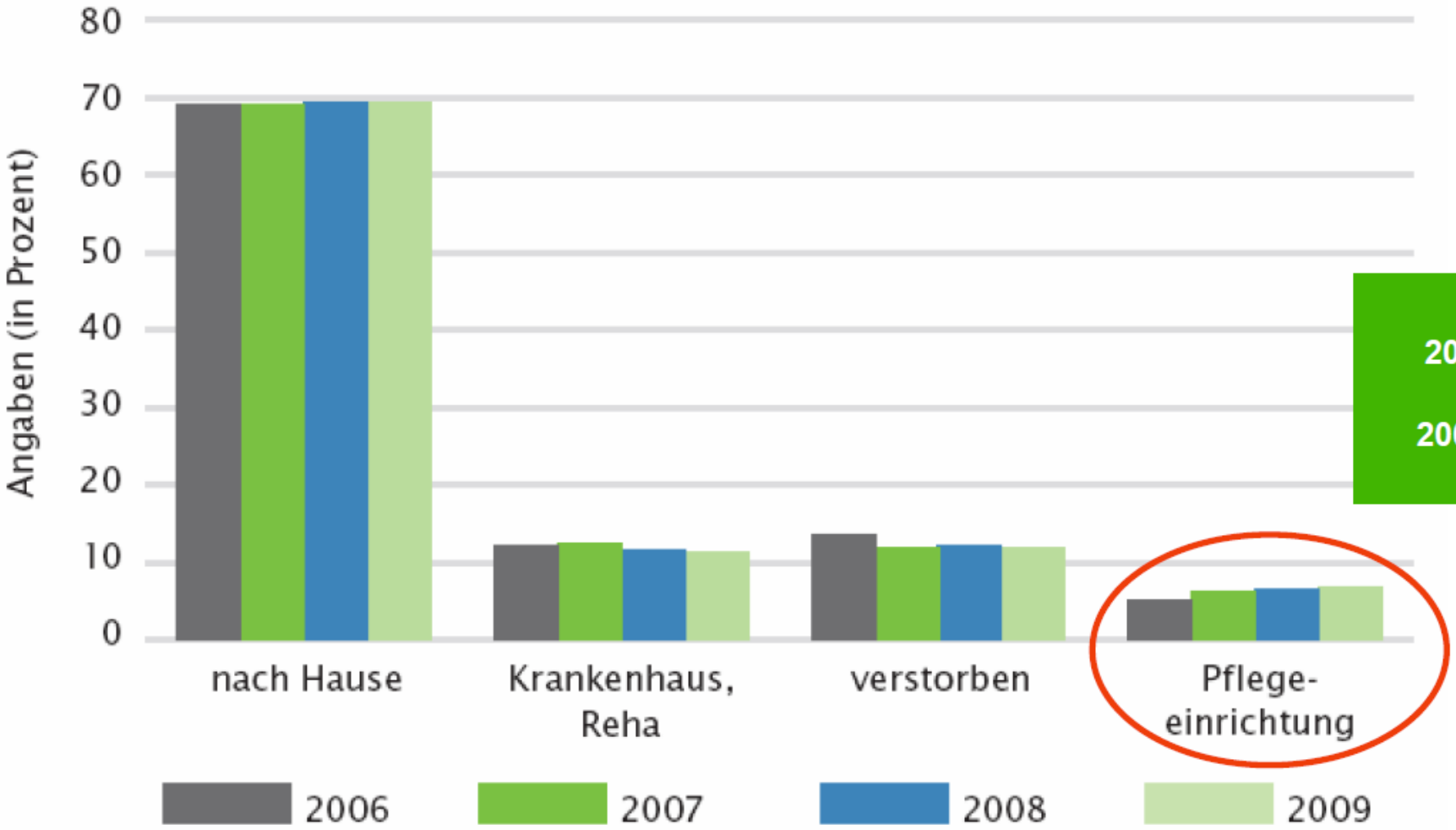
Bezüglich der Sanierung im Krankenhaus ist das deutsche Schema dem holländischen unterlegen.

Transportaufkommen von MRSA- Patienten im
Krankentransport – und Rettungsdienst bezogen auf das Krankenhaus XXXX
(1. KW – 52. KW 2010)

Transportbewegungen Gesamt: 317



Poststationäre Weiterbehandlung



2006: 400 Verl.

2009. 1200 Verl.

Quelle: BARMER-Daten 2006 bis 2009

MRSA-Prävalenz in Alten- und Pflegeheimen

Braunschweig:	7,6 %
München:	1,9 %
Berlin:	8,7 %
Frankfurt:	11,8 %
Höxter:	2,3 %
NRW:	3,1 %

Bundesgesundheitsbl 2011 · 54:1153–1160
DOI 10.1007/s00103-011-1360-8
Online publiziert: 22. Oktober 2011

D. Hansen[1] · B. Ross[1] · M. Hilgenhöner[1] · R. Loss[3] · M. Grandek[2] · T. Blättler[2] · W. Popp[1]
[1] Krankenhaushygiene, Universitätsklinikum Essen, Essen
[2] Unfallkasse-NRW, Essen
[3] Department of Public Health, University of Verona, Istituti Biologici II, Verona

Umgang mit Wäsche und Abfall in Alten- und Pflegeheimen

Eine Erfassung in 22 Heimen

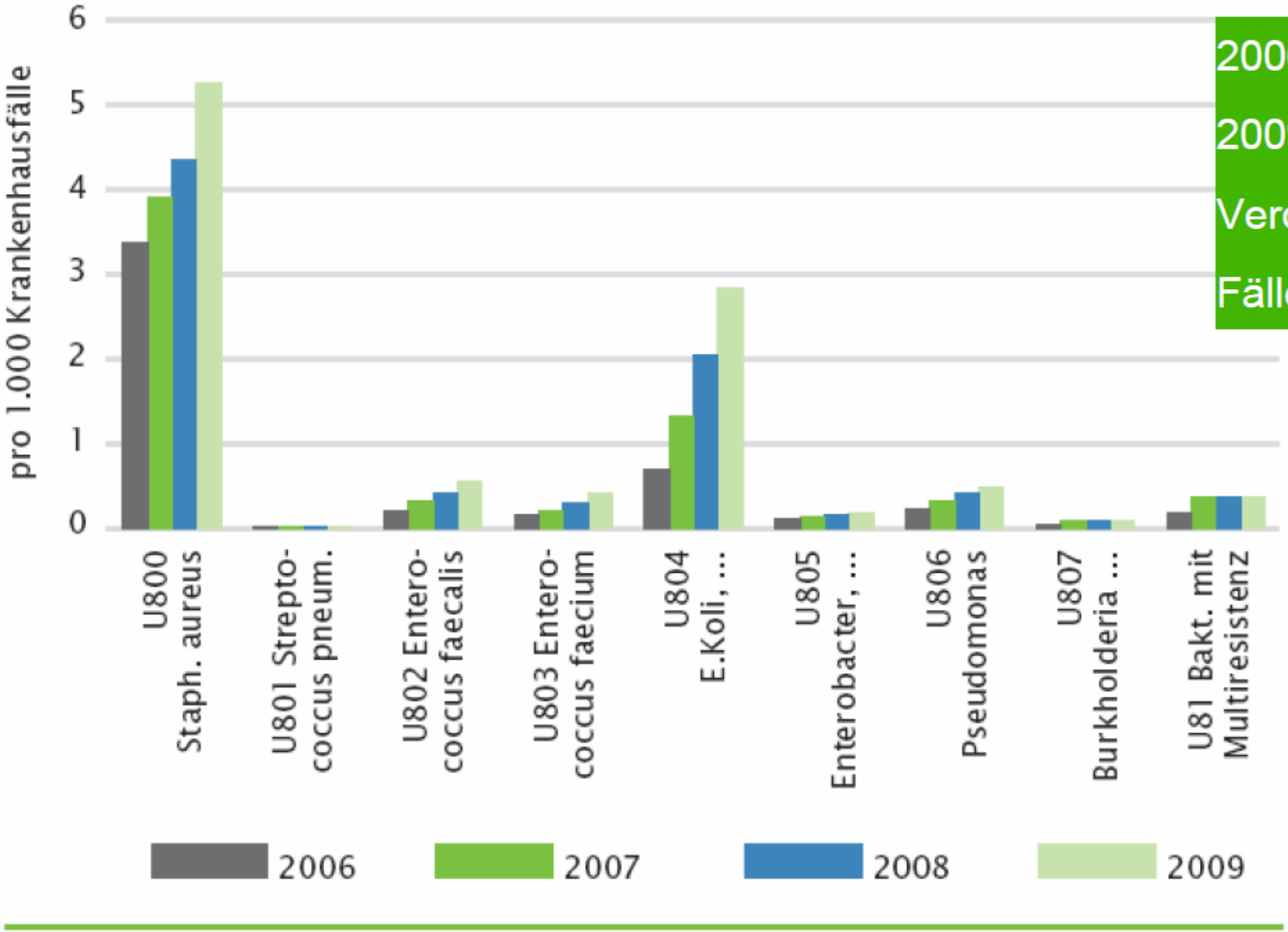
22 Heime
20 Regelungen zu MRSA
15 Schutzkittel
12 Mundschutz
16 Handschuhe
12 Sanierungsversuche
3 keine Isolierung
7 Teilnahme am Gemeinschaftsleben; 5 keine Teilnahme
6 – 70 Hausärzte

Folgerungen: KRINKO-Empfehlungen unbefriedigend.
Berufskleidung unbefriedigend geregelt.

Folgerung:

Relevante Wege MRSA-positiver Patienten gehen in die Alten- und Pflegeheime und in das private Wohnumfeld.
Dort bricht überwiegend jede Sanierung und Betreuung zusammen.
Daten über die Weiterverbreitung dort liegen nicht vor.

Anstieg der Krankenhausfälle mit resistenten Erregern



2006: **6.700** Vers.

2009: **13.700** Vers.

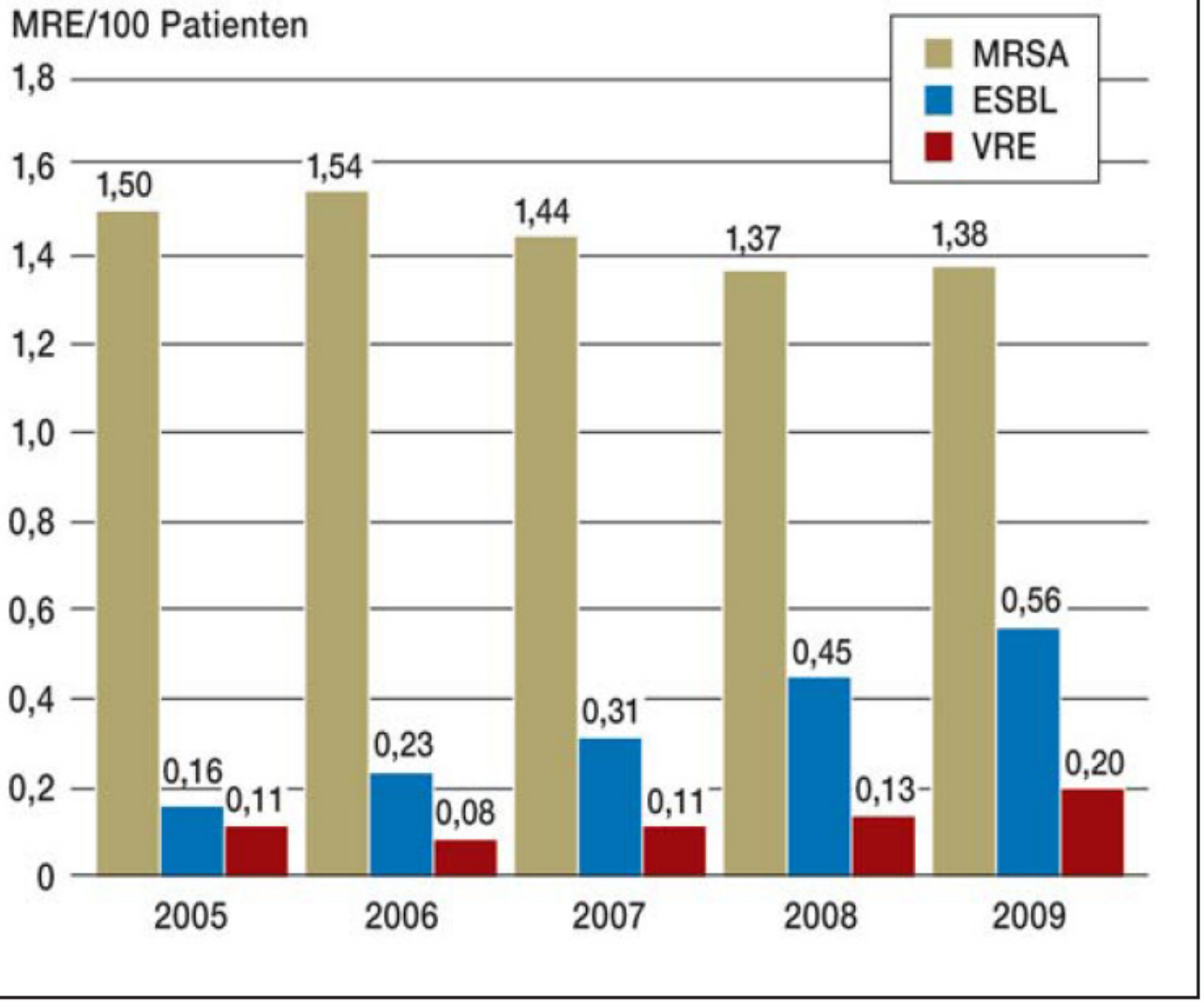
Verdoppelung der Fälle in vier Jahren

Quelle: BARMER-Daten 2006 bis 2009

Barmer GEK: Gesundheitswesen aktuell 2011

Zitierweise
Geffers C, Gastmeier P: Nosocomial infections and multidrug-resistant organisms in Germany—epidemiological data from KISS (The Hospital Infection Surveillance System). Dtsch Arztebl Int 2011; 108(6): 87–93.
DOI: 10.3238/arztebl.2011.0087

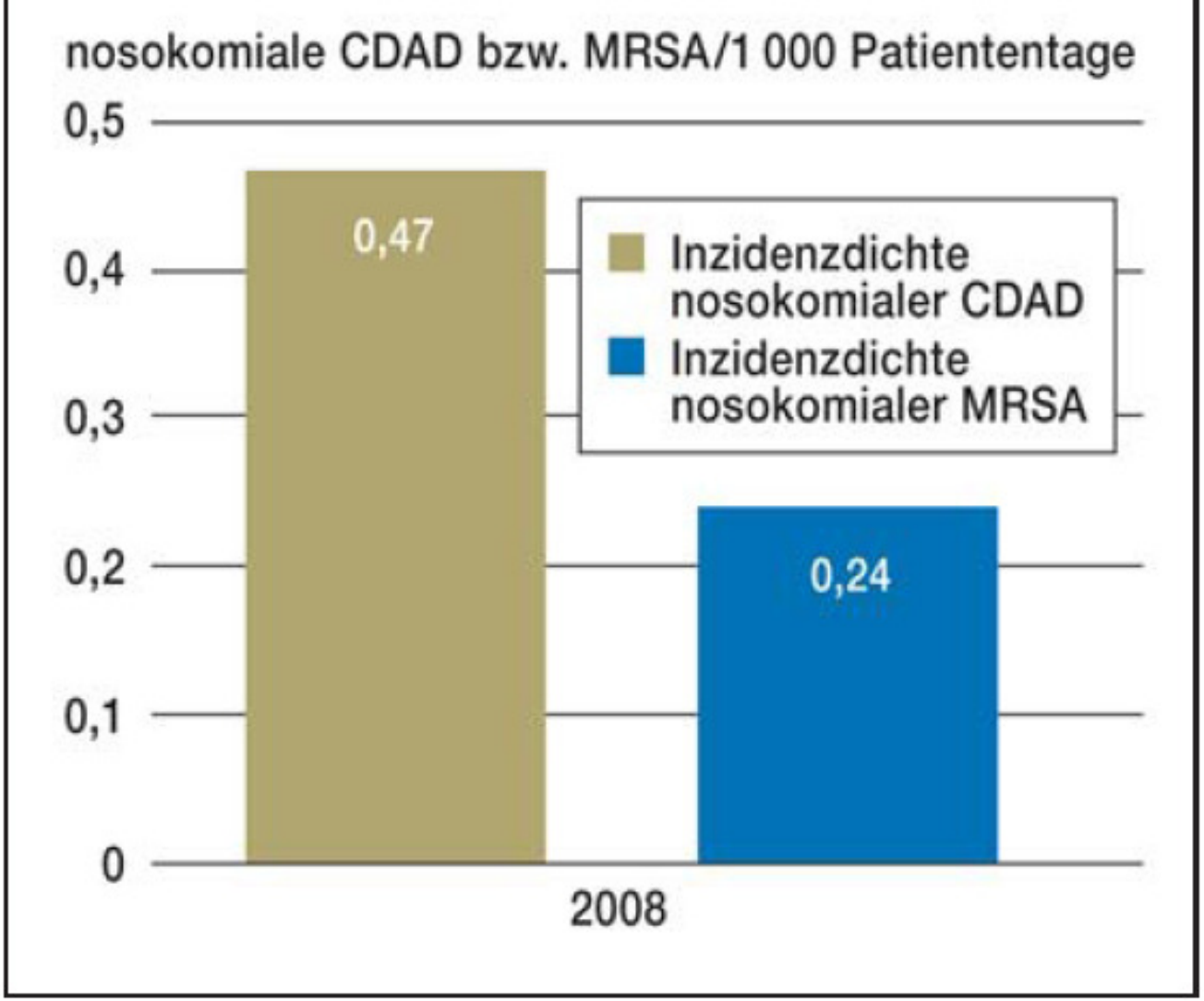
GRAFIK 4



MRE-Gesamt-Prävalenz (Patienten mit MRSA/ESBL/VRE pro 100 Patienten) während des ITS-Aufenthalts im zeitlichen Verlauf 2005 bis 2009

Zitierweise
Geffers C, Gastmeier P: Nosocomial infections and multidrug-resistant organisms in Germany—epidemiological data from KISS (The Hospital Infection Surveillance System). Dtsch Arztebl Int 2011; 108(6): 87–93.
DOI: 10.3238/arztebl.2011.0087

GRAFIK 5



Inzidenzdichte nosokomialer CDAD und MRSA pro 1 000 Patiententage in Krankenhäusern im Jahr 2008

EHEC

Mai bis Juli 2011

- 855 HUS-Fälle
- 2.987 Fälle von akuter Gastroenteritis

Klinik: Händedesinfektion, Isolierung, eigene Toilette, Schutzkittel, tägliche Flächendesinfektion

Nach Entlassung: Hände mit Wasser und Seife reinigen – vor allem in Küche -, (mit Erbrochenem und Stuhl) kontaminierte Gegenstände reinigen, dabei Schutzhandschuhe tragen, Wäche über 60°C waschen, frühzeitige räumliche Trennung der erkrankten Person von Haushaltskontakten

Prospektive Studie (Stand 30.8.11):

- keine Haushaltsübertragungen,
- längste dokumentierte Ausscheidungsdauer 13 Wochen

Ähnlich:

- VRE
- Toxin-bildende Clostridium difficile

Folgerungen zu MRSA

Krankenhaus:

- Desinfektion läuft.
- Keine residente Flora auf Oberflächen.
- Keimträger im Personal?
- Immer mehr Fälle werden mitgebracht.
- Die Sanierung ist verbesserungsfähig.

Außerhalb:

- Keine adäquate Versorgung in den anderen Sektoren.
- Insbesondere problematisch in Alten- und Pflegeheimen und bei Niedergelassenen Ärzten.
- Ausbreitung in Familien und sozialen Gruppen?

Andere MRE

ESBL, VRE:

- Lange Trägerschaft anzunehmen.
- Übertragung in Familien und sozialen Gruppen anzunehmen.
- Keine Erkenntnisse.

Gesamtfolgerung

Die Hauptdefizite liegen außerhalb des Krankenhauses.
Die Erkenntnislage ist desolat.

Fragen:

Taxi-Unternehmer und –Fahrer: MRSA-positiv.
Was tun?

50-jährige Patientin mit Psoriasis,
seit 4 Jahren c-MRSA-Trägerin,
häufige Abszesse.
Tochter schwanger.
Wie Umgang mit Enkel?

Enkelin spielt in Kindergruppe.
Ein Kind einer Tierärztin (Mastitis) ist zufällig positiv auf MRSA getestet.
Was tun?

Table 3: Persistence of clinically relevant viruses on dry inanimate surfaces.

Type of virus	Duration of persistence (range)	Source
Adenovirus	7 days – 3 months	[32, 34, 38–41, 111]
Astrovirus	7 – 90 days	[38]
Coronavirus	3 hours	[112, 113]
SARS associated virus	72 – 96 hours	[114]
Coxsackie virus	> 2 weeks	[34, 111]
Cytomegalovirus	8 hours	[115]
Echovirus	7 days	[39]
HAV	2 hours – 60 days	[35, 38, 41]
HBV	> 1 week	[116]
HIV	> 7 days	[117–119]
Herpes simplex virus, type 1 and 2	4.5 hours – 8 weeks	[34, 111, 118, 120]
Influenza virus	1 – 2 days	[39, 43, 121, 122]
Norovirus and feline calici virus (FCV)	8 hours – 7 days	[42, 45]
Papillomavirus 16	> 7 days	[123]
Papovavirus	8 days	[118]
Parvovirus	> 1 year	[118]
Poliovirus type 1	4 hours – < 8 days	[35, 118]
Poliovirus type 2	1 day – 8 weeks	[34, 38, 111]
Pseudorabies virus	≥ 7 days	[124]
Respiratory syncytial virus	up to 6 hours	[44]
Rhinovirus	2 hours – 7 days	[33, 125]
Rotavirus	6 – 60 days	[36 – 38, 41]
Vacciniavirus	3 weeks – > 20 weeks	[34, 126]

Research article Open Access

How long do nosocomial pathogens persist on inanimate surfaces? A systematic review

Axel Kramer*[1], Ingeborg Schwebke[2] and Günter Kampf[1,3]

Address: [1]Institut für Hygiene und Umweltmedizin, Ernst-Moritz-Arndt Universität, Greifswald, Germany, [2]Robert-Koch Institut, Berlin, Germany and [3]Bode Chemie GmbH & Co. KG, Scientific Affairs, Hamburg, Germany

Email: Axel Kramer* - kramer@uni-greifswald.de; Ingeborg Schwebke - schwebkei@rki.de; Günter Kampf - guenter.kampf@bode-chemie.de

* Corresponding author

Published: 16 August 2006

BMC Infectious Diseases 2006, 6:130 doi:10.1186/1471-2334-6-130

Received: 26 April 2006

Accepted: 16 August 2006

Epidemiologisches Bulletin

18. April 2011 / Nr. 15 AKTUELLE DATEN UND INFORMATIONEN ZU INFEKTIONSKRANKHEITEN UND PUBLIC HEALTH

Zum Umgang mit MRSA-Patienten in deutschen Krankenhäusern

Ergebnisse einer Umfrage der DGKH und des BVÖGD im Herbst 2010

		immer		meistens		selten bis nie		keine Angabe	
Gesamt		755	84,5 %	69	7,7 %	19	2,1 %	50	5,6 %
Hausgröße	< 100	75	79,8 %	6	6,4 %	6	6,4 %	7	7,4 %
	100 – 200	202	87,1 %	13	5,6 %	4	1,7 %	13	5,6 %
	200 – 400	249	84,1 %	26	8,8 %	3	1,0 %	18	6,1 %
	400 – 600	114	88,4 %	11	8,5 %	2	1,6 %	2	1,6 %
	k. A.	25	78,1 %	1	3,1 %	3	9,4 %	3	9,4 %
Träger	öffentlich	267	84,5 %	29	9,2 %	3	0,9 %	17	5,4 %
	kirchlich	252	84,8 %	20	6,7 %	8	2,7 %	17	5,7 %
	privat	172	82,3 %	17	8,1 %	7	3,3 %	13	6,2 %
	sonstige	64	90,1 %	3	4,2 %	1	1,4 %	3	4,2 %

Tab. 1: Isolierung von MRSA-positiven Patienten in deutschen Krankenhäusern nach Größe und Trägerschaft (Umfrage DGKH und BVÖGD Oktober 2010)

Epidemiologisches Bulletin

18. April 2011 / Nr. 15 AKTUELLE DATEN UND INFORMATIONEN ZU INFEKTIONSKRANKHEITEN UND PUBLIC HEALTH

Zum Umgang mit MRSA-Patienten in deutschen Krankenhäusern

Ergebnisse einer Umfrage der DGKH und des BVÖGD im Herbst 2010

	Arzt		Pfleger		Hilfskräfte		Sonstige		Besucher		keine Antwort	
Schutzkittel	850	95,2%	866	97,0%	831	93,1%	833	93,3%	760	85,1%	11	1,2%
Handschuhe	821	91,9%	863	96,6%	815	91,3%	814	91,2%	592	66,3%	20	2,2%
Mund-Nasen-Schutz	761	85,2%	836	93,6%	764	85,6%	771	86,3%	651	72,9%	49	5,5%
Kopfhaube	369	41,3%	449	50,3%	385	43,1%	377	42,2%	308	34,5%	432	48,4%
Schürze	281	31,5%	577	64,6%	328	36,7%	236	26,4%	104	11,6%	299	33,5%

Tab. 2: Tragen von Schutzkleidung nach Berufsgruppe bzw. Besucher im Krankenhaus, (Umfrage DGKH und BVÖGD Oktober 2010)

Epidemiologisches Bulletin

18. April 2011 / Nr. 15 AKTUELLE DATEN UND INFORMATIONEN ZU INFEKTIONSKRANKHEITEN UND PUBLIC HEALTH

Zum Umgang mit MRSA-Patienten in deutschen Krankenhäusern

Ergebnisse einer Umfrage der DGKH und des BVÖGD im Herbst 2010

	immer		teilweise		praktisch nie		keine Angabe	
Mupirocin-Nasensalbe	462	51,7%	392	43,9%	11	1,2%	28	3,1%
Antiseptische Rachenspülung	385	43,1%	425	47,6%	40	4,5%	43	4,8%
Antiseptisches Waschen/Duschen	540	60,5%	305	34,2%	20	2,2%	28	3,1%

Tab. 4: Häufigkeit von Maßnahmen zur Sanierung bei MRSA-positiven Patienten (Umfrage DGKH und BVÖGD Oktober 2010)

Health Care–Associated Invasive MRSA Infections, 2005-2008

Alexander J. Kallen, MD, MPH
Yi Mu, PhD
Sandra Bulens, MPH
Arthur Reingold, MD
Susan Petit, MPH
Ken Gershman, MD, MPH
Susan M. Ray, MD
Lee H. Harrison, MD
Ruth Lynfield, MD
Ghinwa Dumyati, MD
John M. Townes, MD
William Schaffner, MD
Priti R. Patel, MD, MPH
Scott K. Fridkin, MD
for the Active Bacterial Core surveillance (ABCs) MRSA Investigators of the Emerging Infections Program

Context Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogen of public health importance; MRSA prevention programs that may affect MRSA transmission and infection are increasingly common in health care settings. Whether there have been changes in MRSA infection incidence as these programs become established is unknown; however, recent data have shown that rates of MRSA bloodstream infections (BSIs) in intensive care units are decreasing.

Objective To describe changes in rates of invasive health care–associated MRSA infections from 2005 through 2008 among residents of 9 US metropolitan areas.

Design, Setting, and Participants Active, population-based surveillance for invasive MRSA in 9 metropolitan areas covering a population of approximately 15 million persons. All reports of laboratory-identified episodes of invasive (from a normally sterile body site) MRSA infections from 2005 through 2008 were evaluated and classified based on the setting of the positive culture and the presence or absence of health care exposures. Health care–associated infections (ie, hospital-onset and health care–associated community-onset), which made up 82% of the total infections, were included in this analysis.

Main Outcome Measures Change in incidence of invasive health care–associated MRSA infections and health care–associated MRSA BSIs using population of the catchment area as the denominator.

Results From 2005 through 2008, there were 21 503 episodes of invasive MRSA infection; 17 508 were health care associated. Of these, 15 458 were MRSA BSIs. The incidence rate of hospital-onset invasive MRSA infections was 1.02 per 10 000 population in 2005 and decreased 9.4% per year (95% confidence interval [CI], 14.7% to 3.8%; $P=.005$), and the incidence of health care–associated community-onset infections was 2.20 per 10 000 population in 2005 and decreased 5.7% per year (95% CI, 9.7% to 1.6%; $P=.01$). The decrease was most prominent for the subset of infections with BSIs (hospital-onset: –11.2%; 95% CI –15.9% to –6.3%; health care–associated community-onset: –6.6%; 95% CI –9.5% to –3.7%).

Conclusion Over the 4-year period from 2005 through 2008 in 9 diverse metropolitan areas, rates of invasive health care–associated MRSA infections decreased among patients with health care–associated infections that began in the community and also decreased among those with hospital-onset invasive disease.

JAMA. 2010;304(6):641-648 www.jama.com

An estimated 1.7 million health care–associated infections are associated annually with 99 000 deaths in US hospitals.[1] Although many pathogens can cause health care–associated infections, about 16% of those recently reported to the Centers for Disease Control and Prevention's (CDC's) National

Health Care–Associated Invasive MRSA Infections, 2005-2008

Alexander J. Kallen, MD, MPH
Yi Mu, PhD
Sandra Bulens, MPH
Arthur Reingold, MD
Susan Petit, MPH

Context Methicillin-resistant *Staphylococcus aureus* (MRSA) is a pathogen of public health importance; MRSA prevention programs that may affect MRSA transmission and infection are increasingly common in health care settings. Whether there have been changes in MRSA infection incidence as these programs become established is unknown; however, recent data have shown that rates of MRSA bloodstream infections (BSIs) in intensive care units are decreasing.

Objective To describe changes in rates of invasive health care–associated MRSA in-

Table 1. Invasive Methicillin-Resistant *Staphylococcus aureus* Infections Representing Specific Syndromes, January 2005-December 2008

Syndrome	No. (%) of Patients With Hospital-Onset Invasive Infections: Year 2005	2006	2007	2008	Total	*P* Value[a]
Bloodstream infection	1305 (87)	1161 (86)	1081 (84)	949 (84)	**4496 (85)**	.06
Bloodstream infection only	790 (61)	750 (65)	620 (57)	518 (55)	**2678 (60)**	<.01
Pneumonia or empyema	258 (17)	210 (16)	242 (19)	229 (20)	**939 (18)**	.01
Skin or soft tissue infection	105 (7)	88 (7)	95 (7)	91 (8)	**379 (7)**	.50
Bone or joint infection	104 (7)	94 (7)	111 (9)	104 (9)	**413 (8)**	.07
Urinary tract infection	81 (5)	62 (5)	73 (6)	54 (5)	**270 (5)**	.55
Endocarditis	36 (2)	35 (3)	38 (3)	42 (4)	**151 (3)**	.21
Health Care–Associated Community-Onset Invasive Infections						
Bloodstream infection	2912 (91)	2823 (90)	2742 (89)	2485 (88)	**10 962 (90)**	.01
Bloodstream infection only	1337 (46)	1405 (50)	1197 (44)	986 (40)	**4925 (45)**	<.01
Pneumonia or empyema	384 (12)	293 (9)	383 (12)	428 (15)	**1488 (12)**	<.01
Skin or soft tissue infection	385 (12)	364 (12)	362 (12)	371 (13)	**1482 (12)**	.27
Bone or joint infection	384 (12)	366 (12)	416 (14)	426 (15)	**1592 (13)**	<.01
Urinary tract infection	219 (7)	215 (7)	182 (6)	221 (8)	**837 (7)**	.04
Endocarditis	205 (6)	155 (5)	193 (6)	175 (6)	**728 (6)**	.06

[a] *P* values were derived by Fisher exact test.

MacKenzie, F.M., J. Bruce, M. J. Struelens, H. Goossens, J. Mollison, I. M. Gould, on behalf of the ARPAC Steering Group

Antimicrobial drug use and infection control practices associated with the prevalence of methicillin-resistant *Staphylococcus aureus* in European hospitals

Clin Microbiol Infect 2007, 13, 269

Major regional variations in the prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) are observed across Europe. This study investigated hospital MRSA prevalence in relation to patterns of antimicrobial use and infection control policies in an observational, cross-sectional study that used retrospective data from 2001 and linear regression to model relationships. MRSA prevalence (median 20.8%, n = 173 hospitals) and antimicrobial consumption (median 55.2 defined daily doses/100 bed-days, n = 140 hospitals) both varied significantly according to geographical region ($p < 0.001$). MRSA prevalence and antimicrobial consumption data were provided by 128 hospitals, and showed a strong statistical relationship between macrolide use and MRSA prevalence. Use of (i) third-generation cephalosporins, (ii) all antimicrobial agents, and (iii) all antimicrobial agents except glycopeptides was also associated with MRSA prevalence. Up to 146 hospitals provided data on MRSA prevalence and key infection control parameters. Adjusted linear regression modelling provided strong evidence that infection control policy recommendations associated with lower MRSA prevalence rates were (i) use of alcohol-based solutions for hand hygiene (mean difference 10.3%, 99% CI 1.2–10.3), and (ii) placement of MRSA patients in single rooms (mean difference 11.2%, 99% CI 1.4–20.9). Hospitals with problems in implementing isolation policies had higher resistance levels (mean difference 12%, 99% CI 3.8–20.1). Additional recommendations showed less evidence of association with a low MRSA prevalence. Overall, this study highlighted significant associations between MRSA prevalence, antimicrobial use and various key infection control parameters, all of which showed significant individual variations according to geographical region.