Mongolian Emergency Service
Hospital Hygiene Project
MeshHp.mn

Hospital Infection

Mongolia, October 2011

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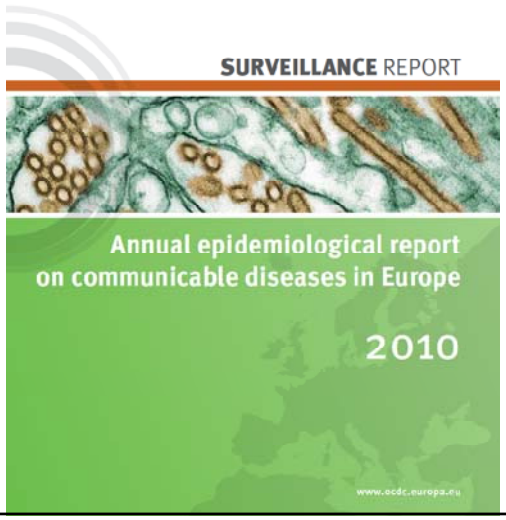
1



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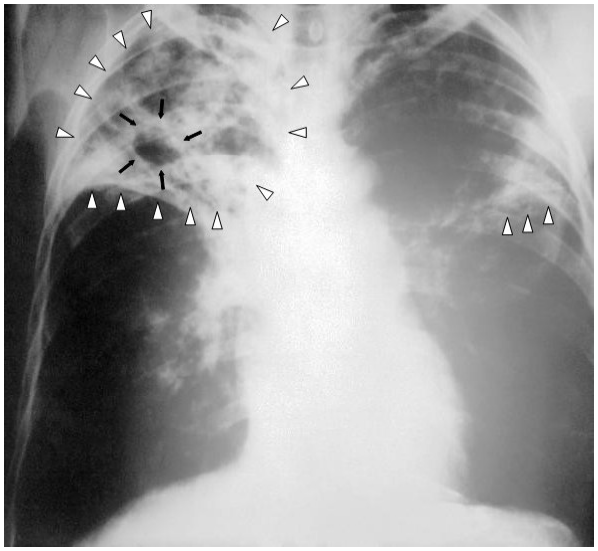

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Table 2.1.6. Number and notification rate of reported cases of tuberculosis in the EU and EEA/EFTA, 2006–08

Country	Report type*	All cases 2008		Confirmed cases[a] 2008		2007		2006	
		Total number and notification rate per 100 000 population		Total number and notification rate per 100 000 population		Notification rate per 100 000 population (all reported cases)		Notification rate per 100 000 population (all reported cases)	
		Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	C	–	–	–	–	874	10.5	906	11.0
Belgium	C	1 006	9.4	816	7.6	1 020	9.6	1 117	10.6
Bulgaria	C	3 151	41.2	1 361	17.8	3 038	39.7	3 232	42.0
Cyprus	C	50	6.3	36	4.6	42	5.4	37	4.8
Czech Republic	C	868	8.4	561	5.4	846	8.2	951	9.3
Denmark	C	367	6.7	283	5.2	391	7.2	387	7.1
Estonia	C	444	33.1	347	25.9	488	36.4	456	33.9
Finland	C	350	6.6	248	4.7	348	6.6	297	5.6
France	C	5 812	9.1	2 296	3.6	5 588	8.8	5 336	8.4
Germany	C	4 543	5.5	3 148	3.8	4 998	6.1	5 378	6.5
Greece	C	669	6.0	252	2.2	659	5.9	681	6.1
Hungary	C	1 606	16.0	766	7.6	1 682	16.7	1 855	18.4
Ireland	C	470	10.7	209	4.7	480	11.0	463	10.9
Italy	C	4 418	7.4	1 529	2.6	4 525	7.6	4 503	7.6
Latvia	C	1 070	47.1	838	36.9	1 255	55.1	1 328	58.0
Lithuania	C	2 250	66.8	1 616	48.0	2 408	71.3	2 559	75.4
Luxembourg	C	28	5.8	–	–	39	8.1	33	7.0
Malta	C	53	13.0	25	6.1	38	9.3	30	7.4
Netherlands	C	997	6.1	729	4.4	1 000	6.1	1 015	6.2
Poland	C	8 081	21.2	5 094	13.4	8 614	22.6	8 587	22.5
Portugal	C	2 995	28.7	2 007	18.9	3 139	29.8	3 425	32.4
Romania	C	24 786	115.1	14 762	68.6	24 844	115.3	26 935	124.8
Slovakia	C	633	11.7	383	7.1	682	12.6	730	13.5
Slovenia	C	213	10.6	201	9.9	218	10.8	215	10.7
Spain	C	8 214	18.1	4 493	9.9	7 768	17.3	8 039	18.2
Sweden	C	552	6.0	436	4.7	481	5.3	497	5.5
United Kingdom	C	8 655	14.1	4 872	8.0	8 314	13.6	8 298	13.7
EU total		**82 281**	**16.8**	**47 308**	**9.7**	**83 779**	**16.9**	**87 280**	**17.7**
Iceland	C	6	1.9	5	1.6	14	4.5	13	4.3
Liechtenstein	C	..	..	..	..	5	14.2	..	..
Norway	C	324	6.8	228	4.8	307	6.5	290	6.2
Total		**82 611**	**16.7**	**47 541**	**9.6**	**84 105**	**16.8**	**87 583**	**17.5**

Source: Country reports. *A: Aggregated data report; C: Case-based report; –: No report, U: Unspecified.
(a) Confirmed only on the laboratory criteria, i.e. culture positive or smear and nucleic acid tests positive.
Note: for several countries these data are to be considered as provisional.

Table 2.1.6. Number and notification rate of reported cases of tuberculosis in the EU and EEA/EFTA, 2006–08

Country	Report type*	All cases 2008		Confirmed cases[a] 2008		2007		2006	
		Total number and notification rate per 100 000 population		Total number and notification rate per 100 000 population		Notification rate per 100 000 population (all reported cases)		Notification rate per 100 000 population (all reported cases)	
		Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	C	–	–	–	–	874	10.5	906	11.0
Belgium	C	1 006	9.4	816	7.6	1 020	9.6	1 117	10.6
Bulgaria	C	3 151	41.2	1 361	17.8	3 038	39.7	3 232	42.0
Cyprus	C	50	6.3	36	4.6	42	5.4	37	4.8
Czech Republic	C	868	8.4	561	5.4	846	8.2	951	9.3
Denmark	C	367	6.7	283	5.2	391	7.2	387	7.1
Estonia	C	444	33.1	347	25.9	488	36.4	456	33.9
Finland	C	350	6.6	248	4.7	348	6.6	297	5.6
France	C	5 812	9.1	2 296	3.6	5 588	8.8	5 336	8.4
Germany	C	4 543	5.5	3 148	3.8	4 998	6.1	5 378	6.5
Greece	C	669	6.0	252	2.2	659	5.9	681	6.1
Hungary	C	1 606	16.0	766	7.6	1 682	16.7	1 855	18.4
Ireland	C	470	10.7	209	4.7	480	11.0	463	10.9
Italy	C	4 418	7.4	1 529	2.6	4 525	7.6	4 503	7.6
Latvia	C	1 070	47.1	830	36.9	1 255	55.1	1 328	58.0
Lithuania	C	2 250	66.8	1 616					
Luxembourg	C	28	5.8	–					
Malta	C	53	13.0	25					
Netherlands	C	997	6.1	729					
Poland	C	8 081	21.2	5 094					
Portugal	C	2 995	28.7	2 007					
Romania	C	24 786	115.1	14 762					
Slovakia	C	633	11.7	383					
Slovenia	C	213	10.6	201					
Spain	C	8 214	18.1	4 493					
Sweden	C	552	6.0	436					
United Kingdom	C	8 655	14.1	4 872					
EU total		**82 281**	**16.8**	**47 308**					
Iceland	C	6	1.9	5					
Liechtenstein	C	–	–	–					
Norway	C	324	6.8	228					
Total		**82 611**	**16.7**	**47 541**					

Source: Country reports. *A: Aggregated data report; C: Case-based report; –: No
(a) Confirmed only on the laboratory criteria, i.e. culture positive or smear and cul
Note: for several countries these data are to be considered as provisional.

Tuberculosis

Mongolia: 4,218 new cases in 2010.
156 per 100,000.

Transmission possible in hospital.
Isolation.
Staff protection: Mask, gloves, gowns, cap
Hand disinfection.
Vaccine not highly effective.

Table 2.1.8. Number of multidrug-resistant tuberculosis cases in EU and EEA/EFTA countries, 2008 (n = 1717)

Country	Cases with sensitivity test results (isoniazid & rifampicin)	Number of MDR TB cases (number of XDR TB cases)	MDR percentage from tested cases
Austria	–	–	–
Belgium	773	22 (2)	2.8
Bulgaria*	938	32 (0)	3.4
Cyprus	36	1 (0)	2.8
Czech Republic	520	11 (1)	2.1
Denmark	281	0 (0)	0.0
Estonia	347	74 (9)	21.3
Finland	247	1 (0)	0.4
France*	1 556	27 (–)	1.7
Germany	2 963	45 (–)	1.5
Greece	–	–	–
Hungary*	611	16 (–)	2.6
Ireland*	146	3 (–)	2.1
Italy*	1 932	71 (–)	3.7
Latvia	828	129 (19)	15.6
Lithuania*	1 616	276 (–)	17.1
Luxembourg	–	–	–
Malta*	25	0 (0)	0.0
Netherlands	728	13 (–)	1.8
Poland	–	–	–
Portugal	1 641	28 (–)	1.7
Romania*	5 547	816 (54)	14.7
Slovakia	383	4 (0)	1.0
Slovenia	195	2 (–)	1.0
Spain*	1 628	76 (3)	4.7
Sweden	423	12 (1)	2.8
United Kingdom	4 808	53 (1)	1.1
EU total	**28 172**	**1 712 (90)**	**6.1**
Iceland	5	1 (0)	20.0
Liechtenstein	–	–	–
Norway	227	4 (0)	1.8
Total	**28 404**	**1 717 (90)**	**6.0**

–: No data.
* Data considered to be incomplete.

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]

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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

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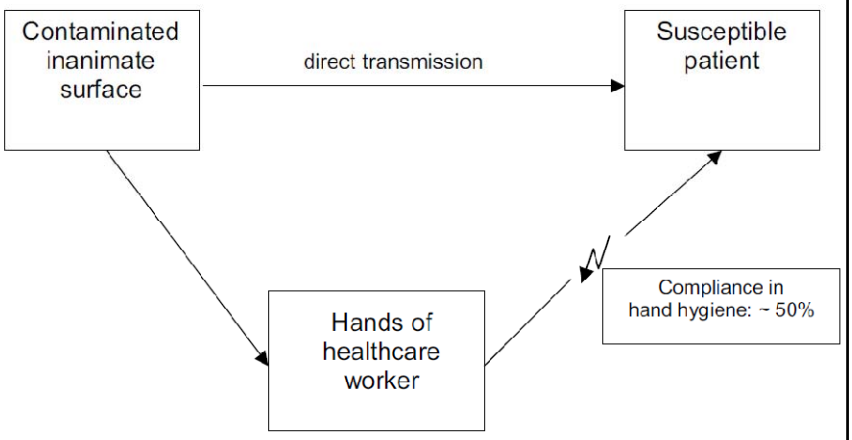

Figure 1
Common modes of transmission from inanimate surfaces to susceptible patients.

Research article

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

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Table 2.2.3. Number and notification rate of hepatitis B cases in the EU and EEA/EFTA, 2006–08

Country	Report type*	2008			2007		2006	
		Total cases	Confirmed cases	Notification rate per 100 000 population	Confirmed cases and notification rate		Confirmed cases and notification rate	
					Cases	Rate	Cases	Rate
Austria	C	43	3	0.04	19	0.23	0	0.00
Belgium	A	122	122	1.1	138	1.3	401	3.8
Bulgaria	A	624	624	8.2	751	9.8	773	10
Cyprus	C	7	7	0.89	13	1.7	7	0.91
Czech Republic	C	–	–	–	–	–	306	3.0
Denmark	C	180	180	3.3	278	5.1	20	0.37
Estonia	C	53	53	4.0	44	3.3	45	3.4
Finland	C	49	49	0.92	24	0.45	0	0.00
France	C	145	145	0.23	156	0.25	182	0.29
Germany	C	822	822	1.0	1 008	1.2	1 179	1.4
Greece	C	80	77	0.69	77	0.69	67	0.60
Hungary	C	88	88	0.88	81	0.80	83	0.82
Ireland	C	82	82	1.9	52	1.2	94	2.2
Italy	C	855	855	1.4	1 097	1.9	1 068	1.8
Latvia	A	140	140	6.2	165	7.2	167	7.3
Lithuania	A	90	90	2.7	84	2.5	0	0.00
Luxembourg	C	21	21	4.3	14	2.9	9	1.9
Malta	C	4	4	0.97	2	0.49	2	0.49
Netherlands	C	225	225	1.4	224	1.4	263	1.6
Poland	A	262	165	0.43	269	0.71	362	0.95
Portugal	C	53	52	0.49	64	0.60	40	0.38
Romania	C	718	718	3.3	927	4.3	1 279	5.9
Slovakia	C	112	111	2.1	103	1.9	123	2.3
Slovenia	C	17	17	0.85	16	0.80	26	1.3
Spain	C	758	758	1.7	645	1.5	496	1.1
Sweden	C	177	177	1.9	201	2.2	162	1.8
United Kingdom	C	620	620	1.0	–	–	–	–
EU total	–	**6 347**	**6 205**	**1.27**	**6 452**	**1.52**	**7 154**	**1.65**
Iceland	C	61	61	19	47	15	11	3.7
Liechtenstein	–	–	–	–	–	–	–	–
Norway	C	103	103	2.17	120	2.6	149	3.2
Total	–	**6 511**	**6 369**	**1.29**	**6 619**	**1.54**	**7 314**	**1.67**

Source: Country reports. *A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.

Table 2.2.3. Number and notification rate of hepatitis B cases in the EU and EEA/EFTA, 2006–08

Country	Report type*	2008			2007		2006	
		Total cases	Confirmed cases	Notification rate per 100 000 population	Confirmed cases and notification rate		Confirmed cases and notification rate	
					Cases	Rate	Cases	Rate
Austria	C	43	3	0.04	19	0.23	0	0.00
Belgium	A	122	122	1.1	138	1.3	401	3.8
Bulgaria	A	624	624	8.2	751	9.8	773	10
Cyprus	C	7	7	0.89	13	1.7	7	0.91
Czech Republic	C	—	—	—	—	—	306	3.0
Denmark	C	180	180	3.3	278	5.1	20	0.37
Estonia	C	53	53	4.0	44	3.3	45	3.4
Finland	C	49	49	0.92	24	0.45	0	0.00
France	C	145	145	0.23	156	0.25	182	0.29
Germany	C	822	822	1.0	1 008	1.2	1 179	1.4
Greece	C	80	77	0.69	77	0.69	67	0.60
Hungary	C	88	88	0.88	81	0.80	83	0.82
Ireland	C	82	82	1.9	52	1.2	94	2.2
Italy	C	855	855	1.4	1 097	1.9	1 068	1.8
Latvia	A	140	140	6.2	165	7.2	167	7.3
Lithuania	A	90	90	2.	86	2.6	0	0.00
Luxembourg	C	21	21	4				
Malta	C	4	4	0.				
Netherlands	C	225	225	1				
Poland	A	262	165	0.				
Portugal	C	53	52	0.				
Romania	C	718	718	3				
Slovakia	C	112	111	2				
Slovenia	C	17	17	0.				
Spain	C	758	758	1				
Sweden	C	177	177	1				
United Kingdom	C	620	620	1				
EU total	—	**6 347**	**6 205**	1.				
Iceland	C	61	61	1				
Liechtenstein	—	—	—	—	—	—	—	—
Norway	C	103	103	2.17	120	2.6	149	3.2
Total	—	**6 511**	**6 369**	**1.39**	**6 619**	**1.54**	**7 314**	**1.67**

Source: Country reports. *A: Aggregated data report; C: Case-based report; —: No report; U: Unspecified.

Hepatitis B

Parenteral transmission.
Vaccine available!
High risk in medical staff: injuries.

Mongolia: Around 20 % carrier of virus!
750 new cases in 2010.
27 per 100,000.

Table 2.3.2. Number and notification rate of human brucellosis cases in the EU and EEA/EFTA, 2006–08

Country	Report type*	2008			2007		2006	
		Total cases	Confirmed cases	Notification rate per 100000 population	Confirmed cases and notification rate		Confirmed cases and notification rate	
					Cases	Rate	Cases	Rate
Austria	C	5	5	< 0.1	0	0.00	1	< 0.1
Belgium	A	1	1	< 0.1	3	< 0.1	2	< 0.1
Bulgaria	A	19	8	0.10	9	0.12	3	< 0.1
Cyprus	C	0	0	0.00	0	0.00	0	0.00
Czech Republic	C	1	1	< 0.1	0	0.00	0	0.00
Denmark	—	—	—	—	—	—	—	—
Estonia	C	0	0	0.00	0	0.00	0	0.00
Finland	C	0	0	0.00	2	< 0.1	0	0.00
France	C	21	21	< 0.1	14	< 0.1	24	< 0.1
Germany	C	24	24	< 0.1	21	< 0.1	37	< 0.1
Greece	C	344	304	2.7	101	0.90	121	1.1
Hungary	C	0	0	0.00	1	< 0.1	—	—
Ireland	C	3	2	< 0.1	7	0.16	4	0.10
Italy	C	163	163	0.27	179	0.30	456	0.78
Latvia	C	0	0	0.00	0	0.00	0	0.00
Lithuania	A	0	0	0.00	0	0.00	0	0.00
Luxembourg	C	0	0	0.00	0	0.00	0	0.00
Malta	C	0	0	0.00	0	0.00	0	0.00
Netherlands	C	8	3	< 0.1	2	< 0.1	6	< 0.1
Poland	C	4	1	0.00	1	0.00	0	0.00
Portugal	C	56	56	0.53	74	0.70	76	0.72
Romania	C	2	2	< 0.1	2	< 0.1	1	< 0.1
Slovakia	C	1	1	< 0.1	0	0.00	0	0.00
Slovenia	C	2	2	0.10	1	< 0.1	0	0.00
Spain	C	144	130	0.26	201	0.45	196	0.45
Sweden	C	8	8	< 0.1	8	< 0.1	4	< 0.1
United Kingdom	C	13	13	< 0.1	13	< 0.1	20	< 0.1
EU total		**843**	**735**	**0.15**	**639**	**0.13**	**952**	**0.20**
Iceland	C	0	0	0.00	0	0.00	0	0.00
Liechtenstein	C	0	0	0.00	0	0.00	—	—
Norway	C	0	0	0.00	0	0.00	3	< 0.1
Total		**843**	**735**	**0.15**	**639**	**0.13**	**954**	**0.20**

Source: Country reports. *A: Aggregated data report; C: Case-based report; —: No report; U: Unspecified.

Table 2.3.2. Number and notification rate of human brucellosis cases in the EU and EEA/EFTA, 2006–08

Country	Report type*	2008			2007		2006	
		Total cases	Confirmed cases	Notification rate per 100000 population	Confirmed cases and notification rate		Confirmed cases and notification rate	
					Cases	Rate	Cases	Rate
Austria	C	5	5	< 0.1	0	0.00	1	< 0.1
Belgium	A	1	1	< 0.1	3	< 0.1	2	< 0.1
Bulgaria	A	19	8	0.10	9	0.12	3	< 0.1
Cyprus	C	0	0	0.00	0	0.00	0	0.00
Czech Republic	C	1	1	< 0.1	0	0.00	0	0.00
Denmark	—	—	—	—	—	—	—	—
Estonia	C	0	0	0.00	0	0.00	0	0.00
Finland	C	0	0	0.00	2	< 0.1	0	0.00
France	C	21	21	< 0.1	14	< 0.1	24	< 0.1
Germany	C	24	24	< 0.1	21	< 0.1	37	< 0.1
Greece	C	344	304	2.7	101	0.90	121	1.1
Hungary	C	0	0	0.00	1	< 0.1	—	—
Ireland	C	3	2	< 0.1	7	0.16	4	0.10
Italy	C	163	163	0.27	179	0.30	456	0.78
Latvia	C	0	0	0.00	0	0.00	0	0.00
Lithuania	A	0	0	0.00	0	0.00	0	0.00
Luxembourg	C	0	0	0.0				
Malta	C	0	0	0.0				
Netherlands	C	8	3	< 0.				
Poland	C	4	1	0.0				
Portugal	C	56	56	0.5				
Romania	C	2	2	< 0.				
Slovakia	C	1	1	< 0.				
Slovenia	C	2	2	0.1				
Spain	C	166	120	0.26	201	0.45	196	0.45
Sweden	C	8	8	< 0.1	8	< 0.1	4	< 0.1
United Kingdom	C	13	13	< 0.1	13	< 0.1	20	< 0.1
EU total		**843**	**735**	**0.15**	**639**	**0.13**	**952**	**0.20**
Iceland	C	0	0	0.00	0	0.00	0	0.00
Liechtenstein	C	0	0	0.00	0	0.00	—	—
Norway	C	0	0	0.00	0	0.00	3	< 0.1
Total		**843**	**735**	**0.15**	**639**	**0.13**	**954**	**0.20**

Source: Country reports. *A: Aggregated data report; C: Case-based report; : No report; U: Unspecified.

Brucellosis

High risk in Mongolia: lifestock.
Avoidable by pasteurisation.
Hospital infection possible by food.

Table 2.3.12. Number and notification rate of salmonellosis cases in the EU and EEA/EFTA, 2006–08

Country	Report type*	2008			2007		2006	
		Total cases	Confirmed cases	Notification rate per 100000 population	Confirmed cases and notification rate		Confirmed cases and notification rate	
					Cases	Rate	Cases	Rate
Austria	C	2 312	2 312	28	3 386	41	4 787	58
Belgium	C	3 831	3 831	36	3 915	37	3 630	35
Bulgaria	A	1 622	1 516	20	1 136	15	1 056	14
Cyprus	C	169	169	21	158	20	99	13
Czech Republic	C	10 872	10 707	103	17 655	172	24 186	236
Denmark	C	3 669	3 669	67	1 648	30	1 662	31
Estonia	C	647	647	48	428	32	453	34
Finland	C	3 126	3 126	59	2 738	52	0	0.00
France	C	7 186	7 186	11	5 313	8.4	6 008	9.5
Germany	C	42 909	42 909	52	55 399	67	52 575	64
Greece	C	817	795	7.1	706	6.3	890	8.0
Hungary	C	7 166	6 657	66	6 578	65	9 389	93
Ireland	C	447	447	10	440	10	420	10
Italy	C	6 662	6 662	11	6 731	11	6 272	11
Latvia	C	1 229	1 229	54	619	27	781	34
Lithuania	C	3 308	3 308	98	2 270	67	3 557	105
Luxembourg	C	153	153	32	163	34	308	66
Malta	C	161	161	39	85	21	63	16
Netherlands[a]	C	1 627	1 627	—	1 224	—	1 644	—
Poland	A	9 609	9 148	24	11 155	29	12 502	33
Portugal	C	348	332	3.1	438	4.1	387	3.7
Romania	A	624	624	2.9	620	2.9	645	3.0
Slovakia	C	7 336	6 849	127	8 367	155	8 191	152
Slovenia	C	1 033	1 033	51	1 336	67	1 519	76
Spain[b]	C	3 833	3 833	—	3 842	—	5 117	—
Sweden	C	4 185	4 185	46	3 930	43	4 056	45
United Kingdom	C	11 511	11 511	19	13 557	22	14 124	23
EU total		**136 392**	**134 606**	**29.62[c]**	**153 013**	**34.1[c]**	**164 321**	**36.38[c]**
Iceland	C	134	134	43	93	30	114	38
Liechtenstein	C	2	2	5.7	1	2.8	—	—
Norway	C	1 941	1 941	41	1 649	35	1 813	39
Total		**138 469**	**136 681**	**29.75[c]**	**154 756**	**34.1[c]**	**166 248**	**36.41[c]**

Source: Country reports. *A: Aggregated data report; C: Case-based report; —: No report; U: Unspecified.
(a) Coverage by the Dutch sentinel system is about 64 %.
(b) Surveillance system currently estimated to cover 25 % of the total population.
(c) Rates calculated excluding the Dutch and Spanish data.

Table 2.3.12. Number and notification rate of salmonellosis cases in the EU and EEA/EFTA, 2006–08

Country	Report type*	2008			2007		2006	
		Total cases	Confirmed cases	Notification rate per 100 000 population	Confirmed cases and notification rate		Confirmed cases and notification rate	
					Cases	Rate	Cases	Rate
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Cyprus	C	169	169	21	158	20	99	13
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Denmark	C	3 669	3 669	67	1 648	30	1 662	31
Estonia	C	647	647	48	428	32	453	34
Finland	C	3 126	3 126	59	2 738	52	0	0.00
France	C	7 186	7 186	11	5 313	8.4	6 008	9.5
Germany	C	42 909	42 909	52	55 399	67	52 575	64
Greece	C	817	795	7.1	706	6.3	890	8.0
Hungary	C	7 166	6 657	66	6 578	65	9 389	93
Ireland	C	447	447	10	440	10	420	10
Italy	C	6 662	6 662	11	6 731	11	6 272	11
Latvia	C	1 229	1 229	54	619	27	781	34
Lithuania	C	3 308	3 308	98	2 270	67	3 557	105
Luxembourg	C	153	153					
Malta	C	161	161					
Netherlands[a]	C	1 627	1 627					
Poland	A	9 609	9 148					
Portugal	C	348	337					
Romania	A	624	624					
Slovakia	C	7 336	6 849					
Slovenia	C	1 033	1 033					
Spain[b]	C	3 833	3 833					
Sweden	C	4 185	4 185					
United Kingdom	C	11 511	11 511	19	13 557	22	14 124	23
EU total		**136 392**	**134 606**	**29.62[c]**	**153 013**	**34.1[c]**	**164 321**	**36.38[c]**
Iceland	C	134	134	43	93	30	114	38
Liechtenstein	C	2	2	5.7	1	2.8	–	–
Norway	C	1 941	1 941	41	1 649	35	1 813	39
Total		**138 469**	**136 681**	**29.75[c]**	**154 756**	**34.1[c]**	**166 248**	**36.41[c]**

Source: Country reports. *A: Aggregated data report; C: Case-based report; –: No report; U: Unspecified.
(a) Coverage by the Dutch sentinel system is about 64 %.
(b) Surveillance system currently estimated to cover 25 % of the total population.
(c) Rates calculated excluding the Dutch and Spanish data.

Salmonellosis

Risk in Mongolia?
High risk by eggs, chicken, some meat.
Cook and heat them!
Hospital infection possible by food.

2.6 Antimicrobial resistance and healthcare-associated infections

Antimicrobial resistance and healthcare-associated infections.

Based on data reported to EARSS in 2009, the main conclusions were:

- Antimicrobial resistance represents an increasingly important public health hazard in Europe.
- The proportions of antibiotic resistance among indicator bacteria isolated from blood and cerebrospinal fluid samples showed wide variations across European countries.
- *Escherichia coli*, the most frequent Gram-negative bacteria responsible for bloodstream infection and urinary tract infection, showed a Europe-wide increase of resistance to all antibiotic classes under surveillance.
- Multidrug resistance (resistance to multiple antibiotics), which is often observed in some Gram-negative bacteria such as *E. coli*, *K. pneumoniae* and *P. aeruginosa*, further increases the threat posed by antibiotic resistance since it limits the number of options for treating infections.
- A decrease of the proportion of MRSA was reported by some countries, although proportions of MRSA remained above 25 % in one third of the countries.
- International cooperation and concerted, multi-disciplinary efforts are needed to contain and prevent the spread of antibiotic resistance.

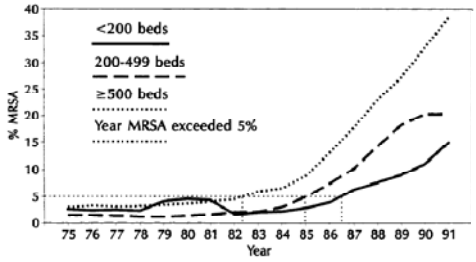
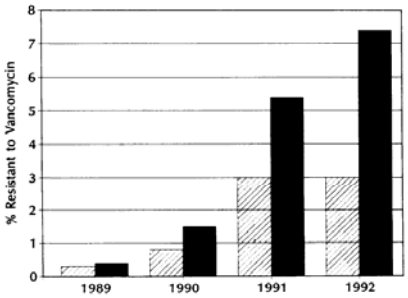


FIG. 2. Temporal trends in percentage of MRSA isolates b hospital size, NNIS system (from reference 112).



N>1 each cat

FIG. 3. Percentage of nosocomial enterococci resistant to vancomycin in non-ICU (hatched bars) and ICU (solid bars) patients, by year, NNIS system (n > 800 in each category).

CLINICAL MICROBIOLOGY REVIEWS, Oct. 1993, p. 428–442
0893-8512/93/040428-15$02.00/0

Vol. 6, No. 4

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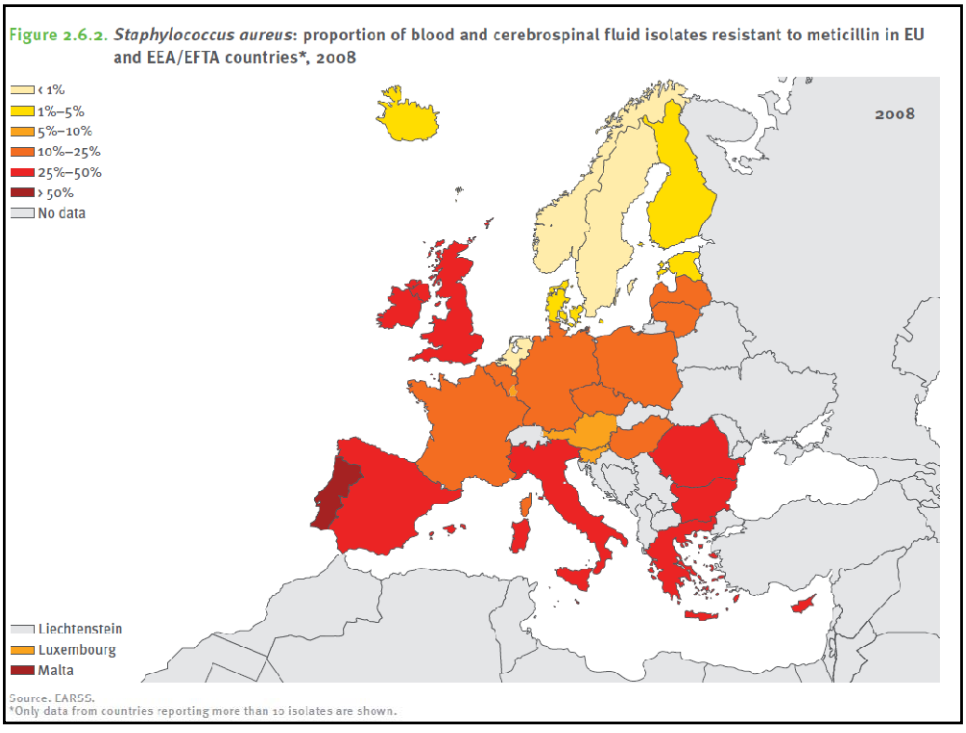
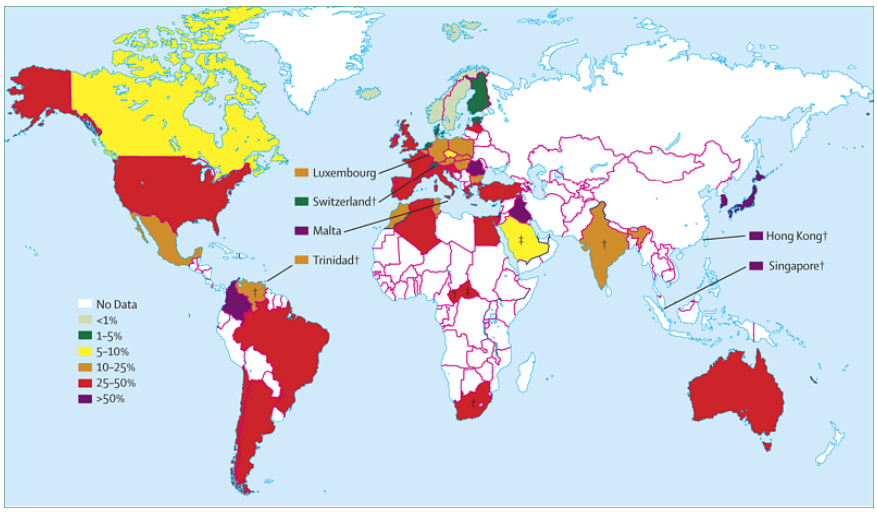




Weltweite Prдvalenz von MRSA
(Grundmann et al., Lancet 368, 2006, 874-885)

19

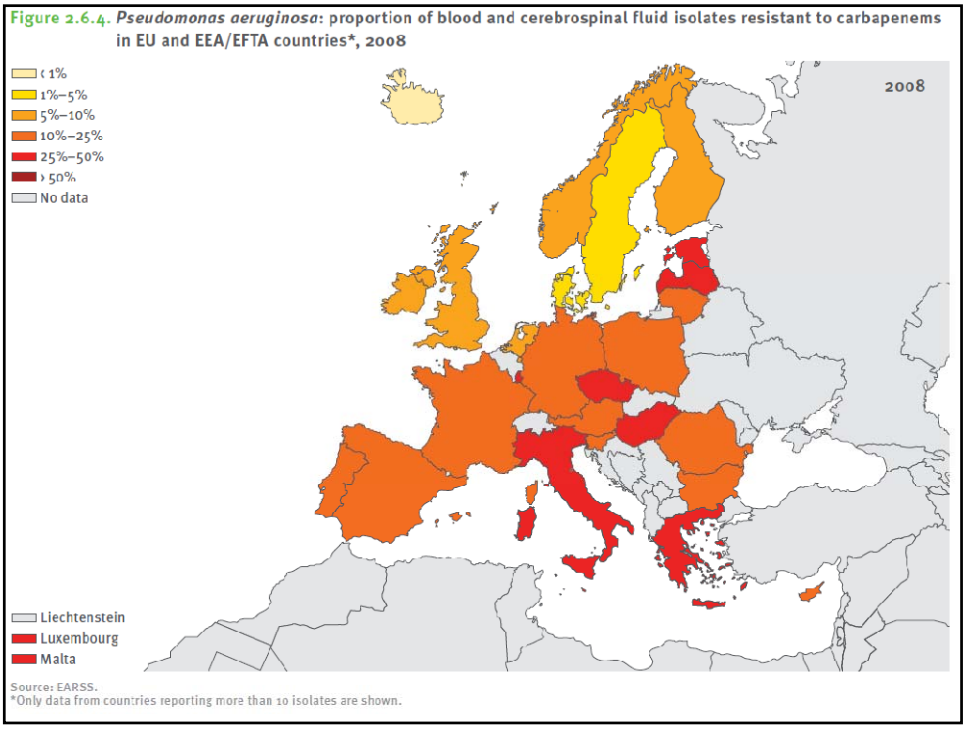
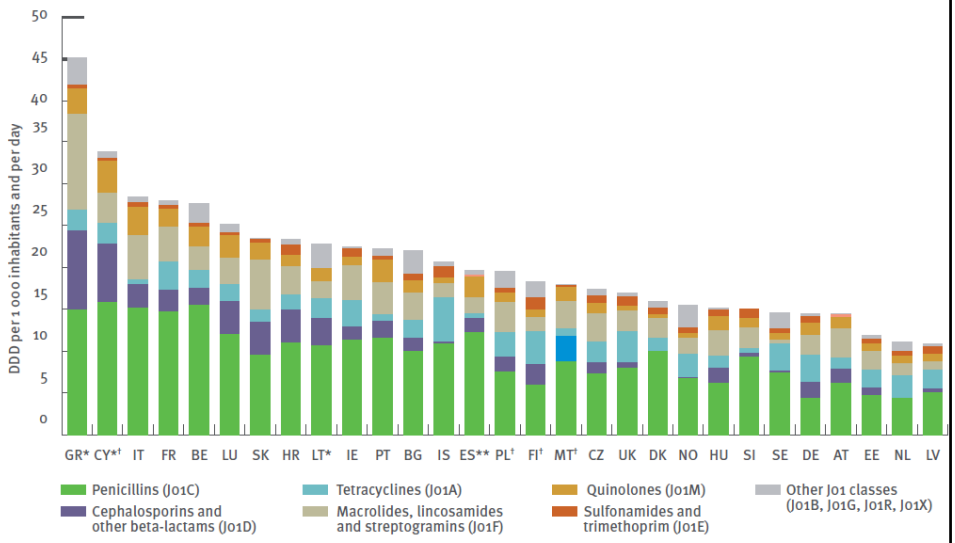


Table 3.6.1. Proportion of resistant isolates (median and range) in indicator micro-organisms isolated from blood and spinal fluid

Species, antimicrobial resistance	% R[a], 2007 median [Range]		No. countries[b]	No. Countries with: Upward trend[c]	Downward trend[c]
Streptococcus pneumoniae, Penicillin-R or I[a] (PNSP)	7	[0–34]	27	1	3
S. pneumoniae, Erythromycin-R	15	[0–36]	26	4	2
Escherichia coli, Aminopenicillin-R	54	[33–77]	28	19	0
E. coli, Third-generation cephalosporin-R	6	[1–28]	28	19	1
E. coli, Aminoglycoside-R	7	[2–38]	28	16	0
E. coli, Fluoroquinolone-R	19	[7–40]	28	24	0
Staphylococcus aureus, Methicillin-R (MRSA)	16	[0–52]	28	7	4
S. aureus, Vancomycin-R	0	[0–0]	27	—[d]	—
Enterococcus faecium, Aminoglycoside-R (high level)	49	[14–90]	23	—	—
E. faecium, Vancomycin-R	<1	[0–37]	26	4	2
Enterococcus faecalis, Aminoglycoside-R (high level)	38	[13–67]	23	5	1
E. faecalis, Vancomycin-R	0	[0–7]	27	—	—
Klebsiella pneumoniae, Third-generation cephalosporin-R	10	[0–80]	27	—	—
K. pneumoniae, Carbapenem-R	0	[0–42]	27	—	—
K. pneumoniae, Aminoglycoside-R	10	[0–80]	27	—	—
K. pneumoniae, Fluoroquinolone-R	13	[0–55]	27	—	—
Pseudomonas aeruginosa, Piperacillin- or Pip.-Tazobactam-R	11	[0–38]	26	—	—
P. aeruginosa, Ceftazidime-R	7	[0–40]	26	—	—
P. aeruginosa, Carbapenem-R	14	[0–47]	25	—	—
P. aeruginosa, Aminoglycoside-R	13	[0–49]	26	—	—
P. aeruginosa, Fluoroquinolone-R	17	[0–50]	26	—	—

Source: EARSS Interactive Database and EARSS Annual Report 2007.
[a] R: resistant; I: intermediate.
[b] Only data from countries that reported more than 10 isolates are included.
[c] Only countries with significant trends are reported. Surveillance period: *Streptococcus pneumoniae* and *Staphylococcus aureus*, 1999–2007; E. enterococci, 2001–2007.
[d] Not available.

Figure 2.6.5. Outpatient antibiotic (ATC group J01) use subdivided into major antibiotic classes according to ATC classification, 2008



22

Microbiology laboratory

Diagnosis of bacteria (and viruses and mould)
Methods standardised
Quality control (external and internal)
Resistance to antibiotics
statistics

23

TABLE 1. Estimated extra days, extra charges, and deaths attributable to nosocomial infections annually in U.S. hospitals[a]

Infection type	Avg extra days in hospital per infection	Avg extra charges per infection (1992 dollars)	Deaths directly caused by infections		Deaths to which infections contributed	
			%	Estimated U.S. total	%	Estimated U.S. total
SSI	7.3	$3,152	0.6	3,251	1.9	9,726
Pneumonia	5.9	$5,683	3.1	7,087	10.1	22,983
BSI	7.4	$3,517	4.4	4,496	8.6	8,844
UTI	1.0	$ 680	0.1	947	0.7	6,503
Other	4.8	$1,617	0.8	3,246	2.5	10,036
All	4.0	$2,100	0.9	19,027	2.7	58,092

[a] Adapted from reference 97.

CLINICAL MICROBIOLOGY REVIEWS, Oct. 1993, p. 428–442
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TABLE 3. Distribution of major infection sites for all patients and by major services, 1990 through 1992, hospital-wide component, NNIS system

Infection type	% of cases						
	All patients (n = 62,205)	General surgery (n = 26,408)	Medical (n = 26,178)	Newborn (n = 3,220)	Obstetric (n = 2,931)	Gynecology (n = 1,882)	Pediatric (n = 1,586)
UTI	33.1	30.2	42.1	4.2	16.5	39.7	12.7
Pneumonia	15.5	16.4	17.0	14.9	2.3	6.5	12.7
SSI	14.9	24.5	2.3	1.8	45.0	37.2	6.1
Primary BSI	13.1	9.5	14.8	36.1	2.2	3.9	29.7
Other	23.4	19.4	23.8	43.1	34.0	12.7	38.8

CLINICAL MICROBIOLOGY REVIEWS, Oct. 1993, p. 428–442
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TABLE 5. Distribution of nosocomial pathogens isolated from major infection sites, 1990 through 1992, hospital-wide component, NNIS system[a]

Pathogen	% of isolates					
	All sites (70,411 isolates)	UTI (25,371 isolates)	SSI (11,724 isolates)	BSI (9,444 isolates)	Pneumonia (8,891 isolates)	Other (14,981 isolates)
Escherichia coli	12	25	8	5	4	4
Staphylococcus aureus	12	2	19	16	20	17
CoNS	11	4	14	31	2	14
Enterococcus spp.	10	16	12	9	2	5
Pseudomonas aeruginosa	9	11	8	3	16	6
Enterobacter spp.	6	5	7	4	11	4
Candida albicans	5	8	3	5	5	5
Klebsiella pneumoniae	5	7	3	4	7	3
Gram-positive anaerobes	4	0	1	1	0	19
Proteus mirabilis	3	5	3	1	2	2
Other *Streptococcus* spp.	2	1	3	4	1	2
Other *Candida* spp.	2	2	1	3	1	1
Other fungi	2	3	0	1	1	1
Acinetobacter spp.	1	1	1	2	4	1
Serratia marcescens	1	1	1	1	3	1
Citrobacter spp.	1	2	1	1	1	1
Other non-*Enterobacteriaceae*—aerobes	1	0	1	1	4	2
Group D streptococci	1	2	2	1	0	1
Group B streptococci	1	1	1	2	1	1
Haemophilus influenzae	1	.	0	0	5	2
Other *Klebsiella* spp.	1	1	1	1	2	1
Other *Enterobacteriaceae*—aerobes	1	1	1	0	1	1
Other gram-positive aerobes	1	0	2	1	0	1
Viruses	1	0	0	0	1	2
Bacillus fragilis	1	0	2	1	0	0

[a] Pathogens that constituted less than 1% of isolates from all sites are not included.

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Factors that predispose to nosocomial infection

Related to underlying health status
Advanced age
Malnutrition
Alcoholism
Heavy smoking
Chronic lung disease
Diabetes
Related to acute disease process
Surgery
Trauma
Burns
Related to invasive procedures
Endotracheal or nasal intubation
Central venous catheterisation
Extracorporeal renal support
Surgical drains
Nasogastric tube
Tracheostomy
Urinary catheter
Related to treatment
Blood transfusions
Recent antimicrobial therapy
Immunosuppressive treatments—eg, corticosteroids
Stress-ulcer prophylaxis
Recumbent position
Parenteral nutrition

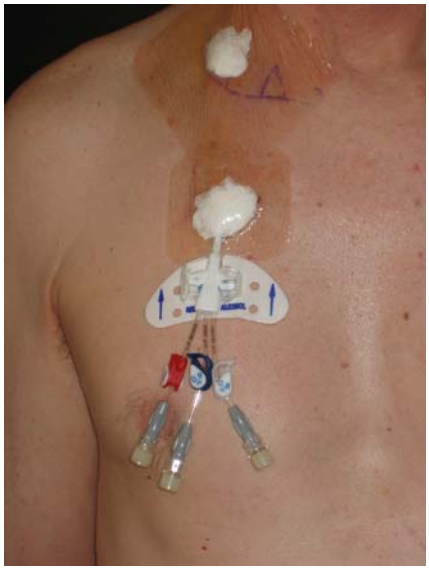
Review

Nosocomial infections in adult intensive-care units

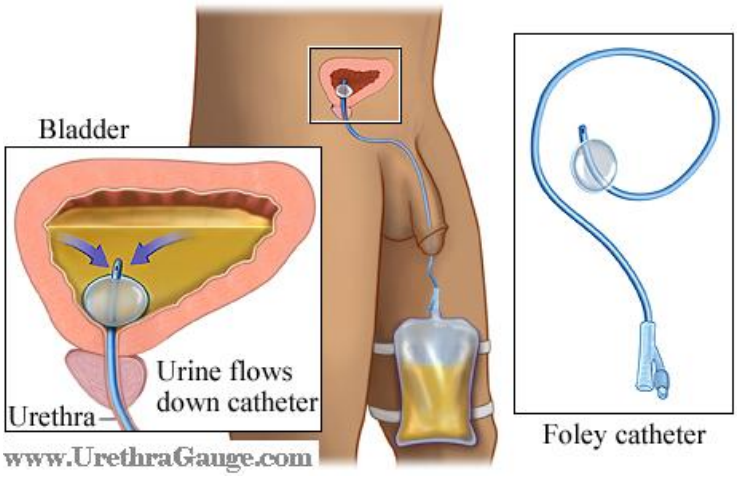
Jean-Louis Vincent

Lancet 2003; **361:** 2068–77

28



29


Bladder
Urine flows
down catheter
Urethra
www.UrethraGauge.com
Foley catheter

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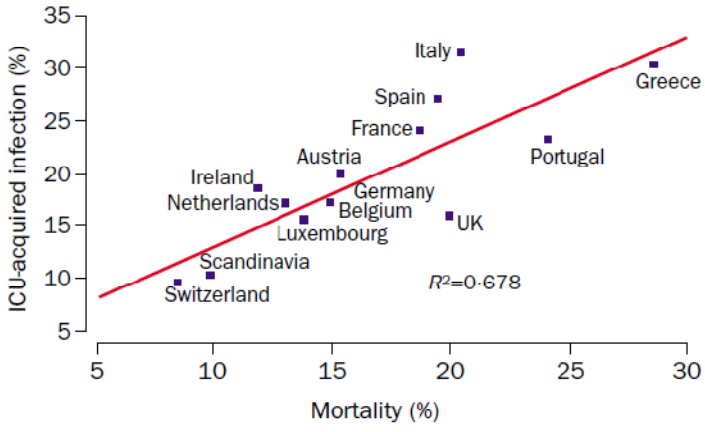


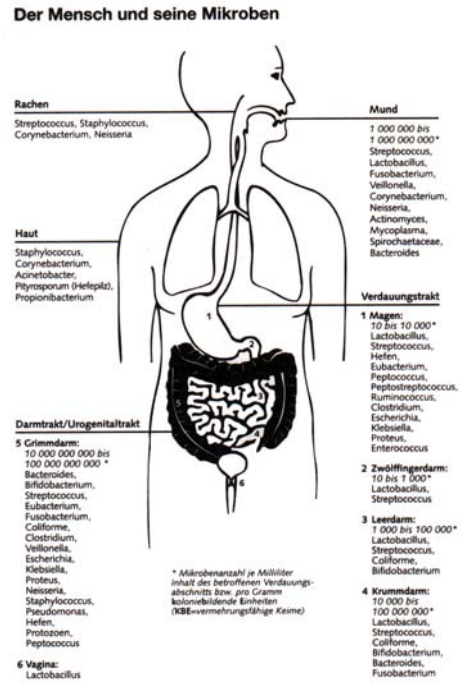
Figure 1: **Correlation between prevalence rate of intensive-care-unit-acquired infection and mortality rate by country**
ICU=intensive-care unit.

Review

Nosocomial infections in adult intensive-care units

Jean-Louis Vincent

Lancet 2003; **361:** 2068–77



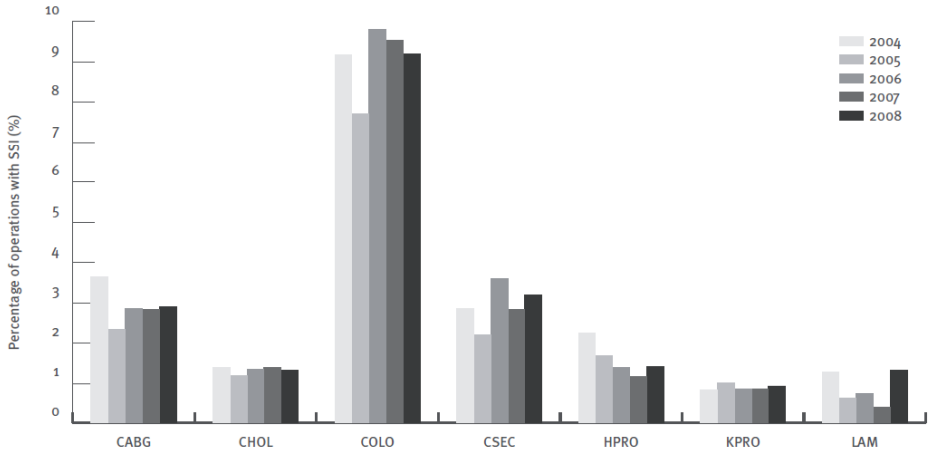
33

Healthcare-associated infections

- Surveillance of healthcare-associated infections in Europe is slowly extending with, in 2008, 17 countries having implemented surveillance of surgical site infections and/or surveillance of infections acquired in intensive care units following European standardised protocols.
- Decreasing trends previously observed for surgical site infections following hip prosthesis were confirmed in 2008.
- The distribution of micro-organisms associated with infections acquired in intensive care units showed a high proportion of third-generation cephalosporin-resistant Enterobacteriaceae, and in particular among *Klebsiella* spp. and *Enterobacter* spp.

34

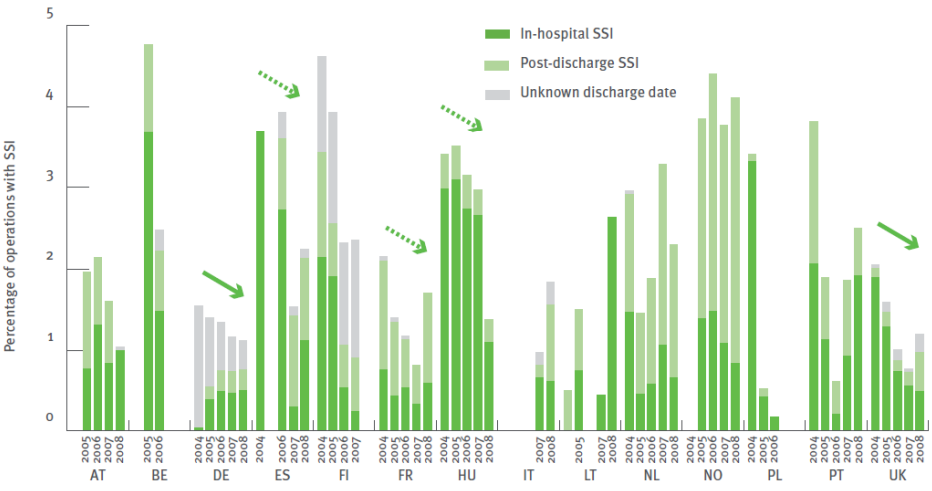
Figure 2.6.6. Trends in cumulative incidence of surgical site infections in Europe by intervention category, HELICS-SSI, 2004–08



Source: ECDC, HELICS-SSI database.
CABG: Coronary artery bypass graft; CHOL: Cholecystectomy; COLO: Colon surgery; CSEC: Caesarean section; HPRO: Hip prosthesis; KPRO: Knee prosthesis; LAM: Laminectomy.

35

Figure 2.6.7. Trends in cumulative incidence of surgical site infections in hip prosthesis (HPRO) by country, HELICS-SSI, 2004–08



Source: ECDC, HELICS-SSI database.
Notes: Belgium, Finland and Poland did not submit data for 2008 and trends for these countries were not analysed. New surveillance network in Spain since 2006. Data from France only include partial hip prosthesis from 2004 until 2008. Arrows indicate statistically significant trends from 2004 to 2008, full line $p < 0.001$, dotted line $p < 0.05$.

36

Table 2.6.1. Number of interventions included in surveillance of surgical site infections according to HELICS-SSI by category and country, 2008

	Number of hospitals	CABG	CHOL	COLO	CSEC	HPRO	KPRO	LAM	Total
Austria	31	209	259	398	3 248	3 694	220	—	8 028
France	605	1178	11 193	6 274	16 729	19 074	9 291	1 182	64 921
Germany	220	9 505	8 515	6 105	11 319	23 350	12 709	2 239	73 742
Hungary	25	228	1 599	211	3 210	731	219	88	6 286
Italy	138	758	4 358	2 205	8 160	1 804	1 079	706	19 070
Lithuania	5	483	656	219	241	38	23	0	1 660
Malta	1	73	0	0	0	0	0	0	73
Netherlands	33	0	1 117	1 183	1 434	6 443	4 110	120	14 407
Norway	54	718	346	0	1 970	1 893	0	0	4 927
Portugal	15	13	1 745	695	1 079	523	0	146	4 201
Spain	33	551	1 623	1 236	1 403	1784	1 095	263	7 955
United Kingdom*	262	4 224	—	2 236	15 580	38 195	41 116	0	101 351
Total	**1 422**	**17 940**	**31 411**	**20 762**	**64 373**	**97 529**	**69 862**	**4 744**	**306 621**

Source: ECDC, HELICS-SSI database.
* Comprises orthopaedic surgery data from England, Northern Ireland, Scotland and Wales, CABG and COLO data from England and CSEC data from Scotland and Wales.
CABG: Coronary artery bypass graft; CHOL: Cholecystectomy; COLO: Colon surgery; CSEC: Caesarean section; HPRO: Hip prosthesis; KPRO: Knee prosthesis; LAM: Laminectomy; —: no data.

37

Table 2.6.2. Fifteen most frequently isolated micro-organisms in ICU-acquired pneumonia by country, surveillance of ICU-acquired infections, 2008

	Austria	Belgium	Estonia	France	Germany	Italy	Lithuania	Luxembourg	Portugal	Slovakia	Spain	UK	Total
Number of isolates	167	775	5	3 038	4 143	131	19	64	391	57	1701	47	10 538
Pseudomonas aeruginosa	13.8%	18.6%	60.0%	21.2%	15.5%	26.0%	5.3%	18.8%	23.5%	22.8%	18.2%	2.1%	18.2%
Staphylococcus aureus	6.6%	7.1%	0.0%	19.3%	18.1%	9.9%	21.1%	10.9%	17.6%	7.0%	12.4%	14.9%	16.3%
Escherichia coli	4.8%	9.3%	20.0%	10.3%	10.2%	8.4%	5.3%	12.5%	4.3%	12.3%	7.1%	4.3%	9.3%
Klebsiella spp.	10.8%	11.1%	0.0%	6.3%	9.3%	8.4%	21.1%	9.4%	7.9%	36.8%	5.5%	6.4%	8.1%
Candida spp.	26.3%	2.5%	20.0%	3.9%	11.9%	6.1%	5.3%	6.3%	10.0%	10.5%	5.2%	4.3%	7.9%
Enterobacter spp.	6.6%	11.5%	0.0%	7.2%	7.4%	4.6%	5.3%	10.9%	4.1%	1.8%	5.2%	6.4%	7.1%
Acinetobacter spp.	3.0%	0.9%	0.0%	2.0%	2.4%	16.0%	15.8%	0.0%	14.1%	5.3%	8.2%	0.0%	3.7%
Haemophilus spp.	3.0%	3.2%	0.0%	5.1%	2.6%	0.0%	5.3%	6.3%	2.6%	0.0%	4.9%	4.3%	3.7%
Stenotrophomonas spp.	3.0%	5.8%	0.0%	3.1%	3.3%	6.9%	0.0%	4.7%	3.8%	0.0%	3.8%	0.0%	3.5%
Enterococcus spp.	7.2%	3.9%	0.0%	1.1%	5.6%	0.8%	0.0%	1.6%	0.3%	0.0%	1.6%	0.0%	3.2%
Serratia spp.	0.0%	3.6%	0.0%	2.4%	3.3%	2.3%	0.0%	4.7%	1.5%	0.0%	2.7%	4.3%	2.8%
Proteus spp.	1.2%	3.0%	0.0%	2.9%	3.0%	0.0%	0.0%	1.6%	1.5%	0.0%	2.4%	4.3%	2.7%
Coagulase-negative staphylococci	3.6%	5.9%	0.0%	2.7%	2.0%	3.8%	0.0%	0.0%	0.5%	1.8%	1.6%	0.0%	2.4%
Streptococcus spp.	4.2%	3.4%	0.0%	4.9%	0.0%	2.3%	10.5%	3.1%	1.5%	0.0%	3.1%	4.3%	2.4%
Citrobacter spp.	2.4%	1.5%	0.0%	2.0%	2.3%	0.0%	0.0%	0.0%	0.8%	0.0%	1.0%	0.0%	1.8%

Source: ECDC, HELICS-ICU database.

38

Table 2.6.3. Fifteen most frequently isolated micro-organisms in ICU-acquired bloodstream infections by country, surveillance of ICU-acquired infections, 2008

	Austria	Belgium	France	Germany	Italy	Lithuania	Luxembourg	Portugal	Slovakia	Spain	UK	Total
Number of isolates	27	218	1167	1436	64	23	50	209	23	1058	40	4 315
Coagulase-negative staphylococci	40.7%	19.3%	22.4%	31.4%	28.1%	30.4%	12.0%	23.9%	13.0%	33.3%	20.0%	28.0%
Enterococcus spp.	18.5%	12.4%	8.0%	17.8%	9.4%	4.3%	24.0%	11.5%	8.7%	10.4%	12.5%	12.5%
Staphylococcus aureus	3.7%	7.3%	15.2%	14.3%	4.7%	13.0%	4.0%	11.5%	0.0%	4.5%	27.5%	11.4%
Pseudomonas aeruginosa	11.1%	6.4%	9.9%	5.6%	14.1%	4.3%	8.0%	8.1%	34.8%	8.5%	2.5%	7.9%
Escherichia coli	0.0%	11.0%	9.8%	6.8%	1.6%	0.0%	14.0%	5.3%	8.7%	6.1%	2.5%	7.5%
Klebsiella spp.	3.7%	11.9%	5.2%	5.8%	14.1%	13.0%	14.0%	7.2%	34.8%	6.0%	5.0%	6.5%
Candida spp.	14.8%	8.3%	7.3%	6.5%	7.8%	0.0%	4.0%	9.1%	0.0%	4.3%	7.5%	6.3%
Enterobacter spp.	3.7%	7.8%	6.5%	4.5%	3.1%	0.0%	8.0%	5.3%	0.0%	5.6%	7.5%	5.5%
Acinetobacter spp.	0.0%	1.4%	1.5%	1.0%	12.5%	8.7%	0.0%	5.7%	0.0%	4.2%	0.0%	2.3%
Serratia spp.	0.0%	4.1%	1.2%	1.9%	1.6%	0.0%	4.0%	3.8%	0.0%	1.9%	7.5%	2.0%
Streptococcus spp.	0.0%	2.8%	2.7%	0.0%	1.6%	8.7%	0.0%	1.9%	0.0%	2.0%	2.5%	1.5%
Proteus spp.	0.0%	0.0%	1.5%	1.3%	0.0%	4.3%	2.0%	1.4%	0.0%	0.9%	0.0%	1.2%
Stenotrophomonas spp.	0.0%	0.9%	0.9%	0.8%	0.0%	4.3%	2.0%	1.9%	0.0%	0.8%	0.0%	0.9%
Bacteroides spp.	0.0%	2.3%	1.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.7%
Citrobacter spp.	0.0%	0.5%	1.5%	0.2%	0.0%	0.0%	0.0%	0.5%	0.0%	0.7%	0.0%	0.7%

Source: ECDC, HELICS-ICU database.

39

40

Case definitions of Healthcare-Associated Infections: definitions
SSI – Surgical site infection

Superficial incisional
Organ/Space

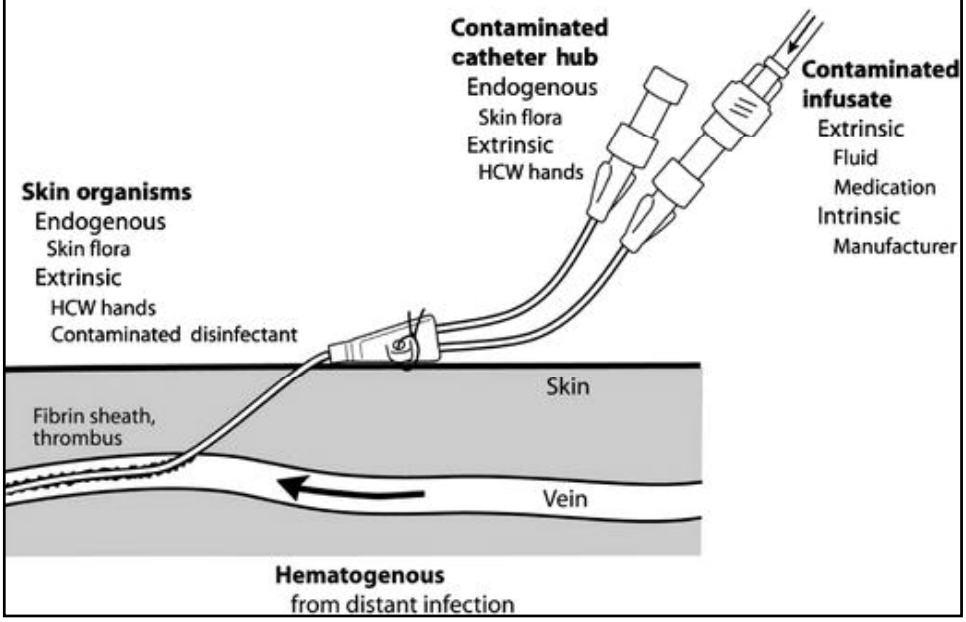
Deep incisional (SSI-D)

Infection occurs within 30 days after the operation if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operation and infection involves deep soft tissue (e.g. fascia, muscle) of the incision and at least one of the following:

1. Purulent drainage from the deep incision but not from the organ/space component of the surgical site.
2. A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (>38e C), localized pain or tenderness, unless incision is culture-negative.
3. An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
4. Diagnosis of deep incisional SSI made by a surgeon or attending physician.

41

BSI - BLOODSTREAM INFECTION



BSI - BLOODSTREAM INFECTION

1 positive blood culture for a recognised pathogen
or
Patient has at least one of the following signs or symptoms: fever (>38°C.), chills, or hypotension
and
2 (two) positive blood cultures for a common skin contaminant (from 2 separate blood samples, usually within 48 hours)..

43

Hospital hygiene
(Infection control, Infection prevention)

Main elements:
Organisational structure (staff, responsibility, office, hardware, internet access)
Hygiene plan (written procedures)
Prevention of main hospital infections
Surveillance
Outbreak management
Audits
Microbiology laboratory
Antibiotics policy
Hand hygiene
Isolation precautions
Cleaning, disinfection, sterilisation
Reprocessing of medical devices
Occupational health issues
Housekeeping and laundry
Waste management
Food hygiene
Water hygiene
…

44

MRSA in Germany

2-3 % of patients in hospital
2-5 % in nursing homes
    Some up to 25 %
0.4 1 % patients with practitioners?
1 % ambulant care

Hospital acquired MRSA
Community acquired MRSA
Livestock acquired MRSA

45

MRSA in Germany

Hospital:
    Isolation
    Gowns, gloves, mask

Nursing home:
    Isolation of ill patients with catheters…
    No isolation of mobile patients

Ambulant care:
    No regulation

Private home:
    No regulation

Table 1. Characteristics of 103 Participating ICUs, According to the Period of Implementation of the Intervention to Reduce the Rate of Catheter-Related Bloodstream Infections.

Period	No. of ICUs	No. of Catheter-Days per Month	Teaching Hospital	No. of Beds
		median (interquartile range)	%	*median (interquartile range)*
March to May 2004*	40	154 (94–258)	83	404 (268–609)
June to August 2004	35	146 (72–228)	57	336 (218–610)
September to November 2004	17	181 (80–275)	59	299 (190–393)
After November 2004	11	172 (48–279)	73	288 (181–917)

* Baseline data were not collected by ICUs implementing the study intervention during the baseline (preimplementation) period.

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Table 3. Rates of Catheter-Related Bloodstream Infection from Baseline (before Implementation of the Study Intervention) to 18 Months of Follow-up.*

Study Period	No. of ICUs	No. of Bloodstream Infections per 1000 Catheter-Days				
		Overall	Teaching Hospital	Nonteaching Hospital	<200 Beds	≥200 Beds
		median (interquartile range)				
Baseline	55	2.7 (0.6–4.8)	2.7 (1.3–4.7)	2.6 (0–4.9)	2.1 (0–3.0)	2.7 (1.3–4.8)
During implementation	96	1.6 (0–4.4)†	1.7 (0–4.5)	0 (0–3.5)	0 (0–5.8)	1.7 (0–4.3)†
After implementation						
0–3 mo	96	0 (0–3.0)‡	1.3 (0–3.1)†	0 (0–1.6)†	0 (0–2.7)	1.1 (0–3.1)‡
4–6 mo	96	0 (0–2.7)‡	1.1 (0–3.6)†	0 (0–0)‡	0 (0–0)†	0 (0–3.2)‡
7–9 mo	95	0 (0–2.1)‡	0.8 (0–2.4)‡	0 (0–0)‡	0 (0–0)†	0 (0–2.2)‡
10–12 mo	90	0 (0–1.9)‡	0 (0–2.3)‡	0 (0–1.5)‡	0 (0–0)†	0.2 (0–2.3)‡
13–15 mo	85	0 (0–1.6)‡	0 (0–2.2)‡	0 (0–0)‡	0 (0–0)†	0 (0–2.0)‡
16–18 mo	70	0 (0–2.4)‡	0 (0–2.7)‡	0 (0–1.2)†	0 (0–0)†	0 (0–2.6)‡

* Because the ICUs implemented the study intervention at different times, the total number of ICUs contributing data for each period varies. Of the 103 participating ICUs, 48 did not contribute baseline data. P values were calculated by the two-sample Wilcoxon rank-sum test.
† P≤0.05 for the comparison with the baseline (preimplementation) period.
‡ P≤0.002 for the comparison with the baseline (preimplementation) period.

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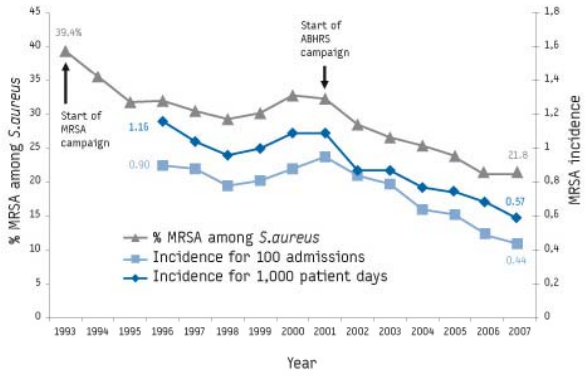
FIGURE 3

MRSA proportion among *S. aureus*, and MRSA incidence, 39 teaching hospitals of the Paris area, 1993 to 2007



Source: Assistance publique - Hôpitaux de Paris
MRSA: methicillin-resistant S. aureus. ABHRS: alcohol-based hand rub solutions

Eurosurveillance, Volume 13, Issue 46, 13 November 2008

49

National Trends in the Incidence of Surgical Site Infection

TABLE 3. Annual Overall and Risk-Adjusted Incidence Rate for Surgical Site Infection for Major Surgical Procedures in France, 1999–2005

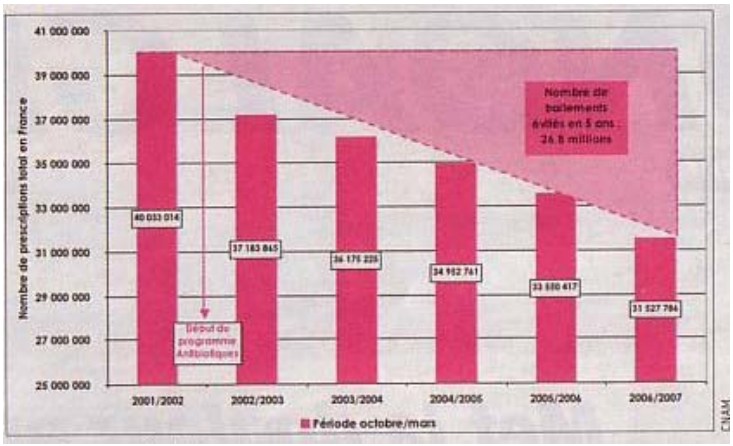
Variable	Year							Relative % difference in incidence, 1999–2005	*P*[a]
	1999	2000	2001	2002	2003	2004	2005		
No. of procedures surveyed	79,803	82,348	109,149	114,579	107,576	126,451	150,006	...	...
Overall incidence	2.0	1.8	1.7	1.5	1.5	1.6	1.4	31	<.001
Incidence for NNIS risk class 0	1.1	0.9	0.9	0.8	0.9	0.9	0.8	29	<.001

NOTE. Incidence data for each year are the no. of infections per 100 patients who underwent surgery, adapted from the Réseau d'alerte, d'investigation et de surveillance des infections nosocomiales (RAISIN) results.[15] RAISIN combines data from the 5 interregional surveillance networks, which use common definitions and surveillance methods, into a single national database. NNIS, National Nosocomial Infections Surveillance System.

[a] By χ^2 test for linear trend.

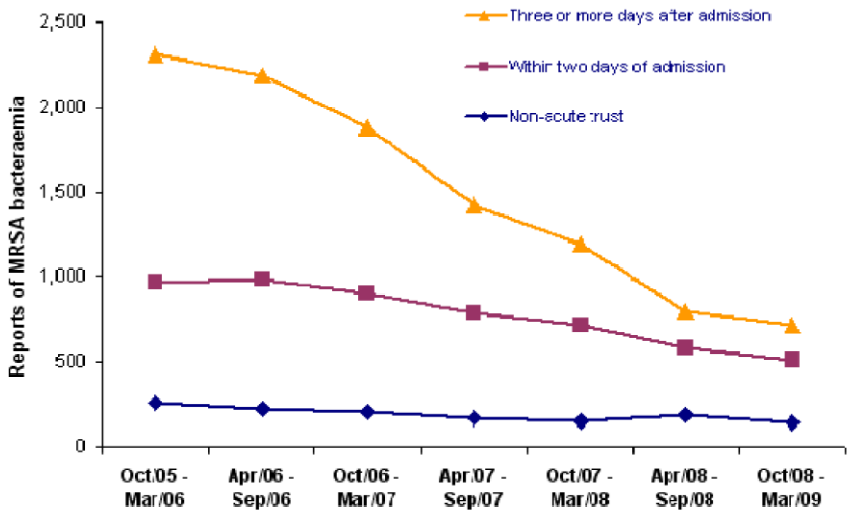
50

TOTAL ANTIBIOTIC COMSUMPTION in FRANCE



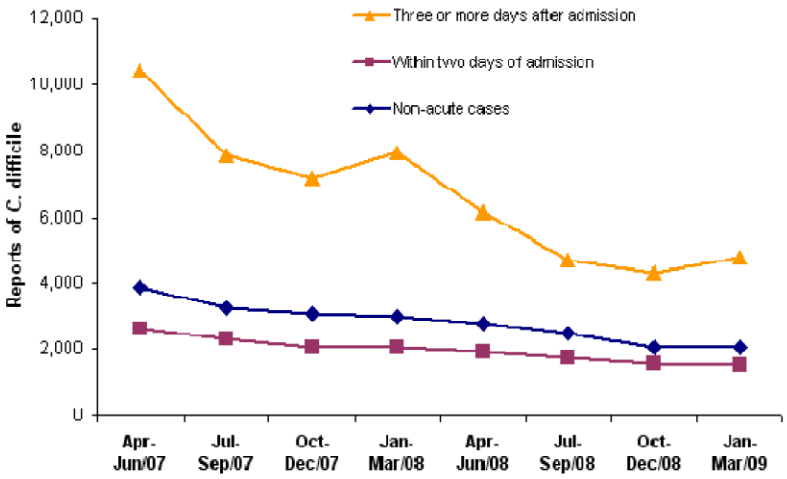
51

Figure 1. MRSA bacteraemia, by patient presentation, since October 2005



52

Figure 2. *Clostridium difficile*, by patient presentation (all patients aged 2 years and over), since October 2005



53

MRSA in European countries:
„… indicates a 13 % relative decrease during the past 5 years."

„In England, a study of National Health Service hospitals found that lower incidence rates of MRSA bacteremia were associated with strategic interventions, hand hygiene promotion, and contact isolation policy. Likewise, a pan-European study showed increased prevalence of MRSA infection in acute care institutions lacking single-bed rooms for patient isolation and lower rates associated with the use of alcohol-based products for hand hygiene…"

Struelens and Monnet, Infect Control Hosp Epidemiol 2010, 31, suppl 1, S42

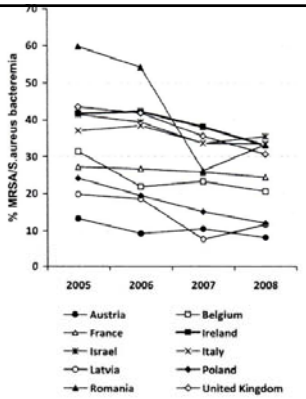


FIGURE 1. Trends of decreases in the percentage of *S. aureus* bacteremia cases caused by methicillin-resistant *S. aureus* (MRSA) in 10 countries reporting to the European Antibiotic Resistance Surveillance System, 2005–2008. Adapted with permission from the European Antimicrobial Resistance Surveillance System 2008 annual report.[1]

54

Mongolian Emergency Service
Hospital Hygiene Project
MeshHp.mn

Thanks

55