

Online supplement for the article “Increase in surgical site infections caused by gram-negative bacteria in warmer temperatures: results from a retrospective observational study” by Aghdassi et al.

Table S1 Spearman's rank correlation coefficients for included meteorological factors

Parameter	Spearman's rank correlation									
	tmean	prec	rhum	vp	sunh	HD(>30°C)	ID(<0°C)	heavr	lon	lat
tmean	1.000	0.166	-0.647	0.960	0.814	0.673	-0.673	0.256	-0.044	-0.009
prec	0.166	1.000	0.153	0.267	-0.116	0.093	-0.072	0.585	-0.161	-0.089
rhum	-0.647	0.153	1.000	-0.435	-0.855	-0.494	0.442	-0.054	-0.062	0.137
vp	0.960	0.267	-0.435	1.000	0.672	0.619	-0.640	0.299	-0.075	0.041
sunh	0.814	-0.116	-0.855	0.672	1.000	0.578	-0.548	0.113	0.050	-0.032
HD(>30°C)	0.673	0.093	-0.494	0.619	0.578	1.000	-0.257	0.157	0.027	-0.077
ID(<0°C)	-0.673	-0.072	0.442	-0.640	-0.548	-0.257	1.000	-0.137	0.073	-0.005
heavr	0.256	0.585	-0.054	0.299	0.113	0.157	-0.137	1.000	-0.053	-0.126
lon	-0.044	-0.161	-0.062	-0.075	0.050	0.027	0.073	-0.053	1.000	0.180
lat	-0.009	-0.089	0.137	0.041	-0.032	-0.077	-0.005	-0.126	0.180	1.000

Abbreviations: HD(>30°C) – heat-days (maximum temperature>30°C); heavr – days with heavy rain (>30 mm/d); ID(<0°C) – ice-days (maximum temperature<0°C); lat – latitude; lon – longitude; prec – amount of precipitation; rhum – relative humidity; sunh – sun hours; tmean – mean temperature; vp – vapor pressure

Table S2 Superficial surgical site infections and superficial surgical site infection rates per 1,000 procedures stratified by temperature category and pathogen. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Parameter	Total	Mean monthly temperature (categorical)				
		<5°C	5°C - <10°C	10°C - <15°C	15°C - <20°C	≥20°C
Procedures (all)	2004793	557102	500914	385436	493205	68136
Superficial surgical site infections (SSIs-S)	13811	3614	3188	2650	3802	557
Number of SSIs-S, SSI-S-rate per 1000 procedures (95% confidence interval)						
SSIs-S	13811, 6.89 (6.77-7)	3614, 6.49 (6.28-6.7)	3188, 6.36 (6.15-6.59)	2650, 6.88 (6.62-7.14)	3802, 7.71 (7.47-7.96)	557, 8.17 (7.51-8.88)
SSIs-S without pathogen	5480, 2.73 (2.66-2.81)	1537, 2.76 (2.62-2.9)	1247, 2.49 (2.35-2.63)	1046, 2.71 (2.55-2.88)	1441, 2.92 (2.77-3.08)	209, 3.07 (2.67-3.51)
SSIs-S with pathogen(s)	8331, 4.16 (4.07-4.25)	2077, 3.73 (3.57-3.89)	1941, 3.87 (3.7-4.05)	1604, 4.16 (3.96-4.37)	2361, 4.79 (4.6-4.98)	348, 5.11 (4.59-5.67)
SSIs-S with gram-positive pathogen(s)	5377, 2.68 (2.61-2.75)	1331, 2.39 (2.26-2.52)	1224, 2.44 (2.31-2.58)	1074, 2.79 (2.62-2.96)	1521, 3.08 (2.93-3.24)	227, 3.33 (2.91-3.79)
SSIs-S with Staphylococcus aureus	2356, 1.18 (1.13-1.22)	558, 1 (0.92-1.09)	551, 1.1 (1.01-1.2)	459, 1.19 (1.08-1.3)	688, 1.39 (1.29-1.5)	100, 1.47 (1.19-1.78)
SSIs-S with Enterococcus spp.	1675, 0.84 (0.8-0.88)	432, 0.78 (0.7-0.85)	369, 0.74 (0.66-0.82)	339, 0.88 (0.79-0.98)	465, 0.94 (0.86-1.03)	70, 1.03 (0.8-1.3)
SSIs-S with coagulase-negative staphylococci	1387, 0.69 (0.66-0.73)	356, 0.64 (0.57-0.71)	315, 0.63 (0.56-0.7)	276, 0.72 (0.63-0.81)	379, 0.77 (0.69-0.85)	61, 0.9 (0.68-1.15)
SSIs-S with Streptococcus spp.	215, 0.11 (0.09-0.12)	56, 0.1 (0.08-0.13)	48, 0.1 (0.07-0.13)	60, 0.16 (0.12-0.2)	43, 0.09 (0.06-0.12)	8, 0.12 (0.05-0.23)
SSIs-S with Corynebacterium spp.	132, 0.07 (0.06-0.08)	34, 0.06 (0.04-0.09)	31, 0.06 (0.04-0.09)	25, 0.06 (0.04-0.1)	39, 0.08 (0.06-0.11)	3, 0.04 (0.01-0.13)
SSIs-S with gram-negative pathogen(s)	3391, 1.69 (1.64-1.75)	809, 1.45 (1.35-1.56)	804, 1.61 (1.5-1.72)	646, 1.68 (1.55-1.81)	978, 1.98 (1.86-2.11)	154, 2.26 (1.92-2.65)
SSIs-S with Escherichia coli	1649, 0.82 (0.78-0.86)	425, 0.76 (0.69-0.84)	400, 0.8 (0.72-0.88)	323, 0.84 (0.75-0.93)	439, 0.89 (0.81-0.98)	62, 0.91 (0.7-1.17)
SSIs-S with Pseudomonas aeruginosa	521, 0.26 (0.24-0.28)	112, 0.2 (0.17-0.24)	126, 0.25 (0.21-0.3)	93, 0.24 (0.19-0.3)	158, 0.32 (0.27-0.37)	32, 0.47 (0.32-0.66)
SSIs-S with Enterobacter spp.	408, 0.2 (0.18-0.22)	80, 0.14 (0.11-0.18)	97, 0.19 (0.16-0.24)	74, 0.19 (0.15-0.24)	131, 0.27 (0.22-0.32)	26, 0.38 (0.25-0.56)
SSIs-S with Klebsiella spp.	335, 0.17 (0.15-0.19)	82, 0.15 (0.12-0.18)	73, 0.15 (0.11-0.18)	63, 0.16 (0.13-0.21)	98, 0.2 (0.16-0.24)	19, 0.28 (0.17-0.44)
SSIs-S with Proteus spp.	428, 0.21 (0.19-0.23)	95, 0.17 (0.14-0.21)	90, 0.18 (0.14-0.22)	91, 0.24 (0.19-0.29)	134, 0.27 (0.23-0.32)	18, 0.26 (0.16-0.42)
SSIs-S with Bacteroides spp.	281, 0.14 (0.12-0.16)	72, 0.13 (0.1-0.16)	72, 0.14 (0.11-0.18)	50, 0.13 (0.1-0.17)	74, 0.15 (0.12-0.19)	13, 0.19 (0.1-0.33)
SSIs-S with Citrobacter spp.	131, 0.14 (0.12-0.16)	33, 0.13 (0.1-0.16)	29, 0.14 (0.11-0.18)	24, 0.13 (0.1-0.17)	39, 0.15 (0.12-0.19)	6, 0.19 (0.1-0.33)

	0.07 (0.05-0.08)	0.06 (0.04-0.08)	0.06 (0.04-0.08)	0.06 (0.04-0.09)	0.08 (0.06-0.11)	0.09 (0.03-0.19)
SSIs-S with other Enterobacteriaceae	127, 0.06 (0.05-0.08)	30, 0.05 (0.04-0.08)	35, 0.07 (0.05-0.1)	26, 0.07 (0.04-0.1)	32, 0.06 (0.04-0.09)	4, 0.06 (0.02-0.15)
SSIs-S with Serratia spp.	84, 0.04 (0.03-0.05)	14, 0.03 (0.01-0.04)	19, 0.04 (0.02-0.06)	18, 0.05 (0.03-0.07)	30, 0.06 (0.04-0.09)	3, 0.04 (0.01-0.13)
SSIs-S with Acinetobacter spp.	70, 0.03 (0.03-0.04)	3, 0.01 (0-0.02)	14, 0.03 (0.02-0.05)	12, 0.03 (0.02-0.05)	37, 0.08 (0.05-0.1)	4, 0.06 (0.02-0.15)
SSIs-S with Candida albicans	84, 0.04 (0.03-0.05)	20, 0.04 (0.02-0.06)	27, 0.05 (0.04-0.08)	12, 0.03 (0.02-0.05)	22, 0.04 (0.03-0.07)	3, 0.04 (0.01-0.13)

Table S3 Deep incisional and deep organ/space surgical site infections and deep incisional and deep organ/space surgical site infection rates per 1,000 procedures stratified by temperature category and pathogen. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Parameter	Total	Mean monthly temperature (categorical)				
		<5°C	5°C - <10°C	10°C - <15°C	15°C - <20°C	≥20°C
Procedures (all)	2004793	557102	500914	385436	493205	68136
Deep incisional and deep organ/space surgical site infections (SSIs-D/SSIs-O)	18307	4783	4479	3527	4820	698
Number of SSIs-D/SSIs-O, SSI-D/SSI-O-rate per 1000 procedures (95% confidence interval)						
SSIs-D/SSIs-O	18307, 9.13 (9-9.26)	4783, 8.59 (8.34-8.83)	4479, 8.94 (8.68-9.21)	3527, 9.15 (8.85-9.46)	4820, 9.77 (9.5-10.05)	698, 10.24 (9.5-11.03)
SSIs-D/SSIs-O without pathogen	3321, 1.66 (1.6-1.71)	872, 1.57 (1.46-1.67)	799, 1.6 (1.49-1.71)	632, 1.64 (1.51-1.77)	890, 1.8 (1.69-1.93)	128, 1.88 (1.57-2.23)
SSIs-D/SSIs-O with pathogen(s)	14986, 7.48 (7.36-7.6)	3911, 7.02 (6.8-7.24)	3680, 7.35 (7.11-7.59)	2895, 7.51 (7.24-7.79)	3930, 7.97 (7.72-8.22)	570, 8.37 (7.7-9.08)
SSIs-D/SSIs-O with gram-positive pathogen(s)	10490, 5.23 (5.13-5.33)	2794, 5.02 (4.83-5.2)	2579, 5.15 (4.95-5.35)	2041, 5.3 (5.07-5.53)	2681, 5.44 (5.23-5.65)	395, 5.8 (5.24-6.4)
SSIs-D/SSIs-O with Staphylococcus aureus	4722, 2.36 (2.29-2.42)	1245, 2.23 (2.11-2.36)	1154, 2.3 (2.17-2.44)	923, 2.39 (2.24-2.55)	1213, 2.46 (2.32-2.6)	187, 2.74 (2.37-3.17)
SSIs-D/SSIs-O with Enterococcus spp.	3309, 1.65 (1.59-1.71)	920, 1.65 (1.55-1.76)	810, 1.62 (1.51-1.73)	651, 1.69 (1.56-1.82)	803, 1.63 (1.52-1.74)	125, 1.83 (1.53-2.19)
SSIs-D/SSIs-O with coagulase-negative staphylococci	2841, 1.42 (1.37-1.47)	715, 1.28 (1.19-1.38)	725, 1.45 (1.34-1.56)	539, 1.4 (1.28-1.52)	763, 1.55 (1.44-1.66)	99, 1.45 (1.18-1.77)
SSIs-D/SSIs-O with Streptococcus spp.	330, 0.16 (0.15-0.18)	93, 0.17 (0.13-0.2)	70, 0.14 (0.11-0.18)	74, 0.19 (0.15-0.24)	89, 0.18 (0.14-0.22)	4, 0.06 (0.02-0.15)
SSIs-D/SSIs-O with Corynebacterium spp.	183, 0.09 (0.08-0.11)	42, 0.08 (0.05-0.1)	44, 0.09 (0.06-0.12)	38, 0.1 (0.07-0.14)	49, 0.1 (0.07-0.13)	10, 0.15 (0.07-0.27)
SSIs-D/SSIs-O with gram-negative pathogen(s)	5556, 2.77 (2.7-2.85)	1412, 2.53 (2.4-2.67)	1283, 2.56 (2.42-2.71)	1084, 2.81 (2.65-2.98)	1569, 3.18 (3.03-3.34)	208, 3.05 (2.65-3.5)
SSIs-D/SSIs-O with Escherichia coli	2869, 1.43 (1.38-1.48)	763, 1.37 (1.27-1.47)	674, 1.35 (1.25-1.45)	542, 1.41 (1.29-1.53)	786, 1.59 (1.48-1.71)	104, 1.53 (1.25-1.85)
SSIs-D/SSIs-O with Pseudomonas aeruginosa	761, 0.38 (0.35-0.41)	192, 0.34 (0.3-0.4)	174, 0.35 (0.3-0.4)	154, 0.4 (0.34-0.47)	211, 0.43 (0.37-0.49)	30, 0.44 (0.3-0.63)
SSIs-D/SSIs-O with Enterobacter spp.	808, 0.4 (0.38-0.43)	161, 0.29 (0.25-0.34)	176, 0.35 (0.3-0.41)	163, 0.42 (0.36-0.49)	270, 0.55 (0.48-0.62)	38, 0.56 (0.39-0.77)
SSIs-D/SSIs-O with Klebsiella spp.	720, 0.36 (0.33-0.39)	191, 0.34 (0.3-0.4)	160, 0.32 (0.27-0.37)	148, 0.38 (0.32-0.45)	194, 0.39 (0.34-0.45)	27, 0.4 (0.26-0.58)
SSIs-D/SSIs-O with Proteus spp.	623, 0.31 (0.29-0.34)	128, 0.23 (0.19-0.27)	159, 0.32 (0.27-0.37)	137, 0.36 (0.3-0.42)	171, 0.35 (0.3-0.4)	28, 0.41 (0.27-0.59)
SSIs-D/SSIs-O with Bacteroides spp.	496, 0.25 (0.23-0.27)	150, 0.27 (0.23-0.32)	104, 0.21 (0.17-0.25)	89, 0.23 (0.19-0.28)	131, 0.27 (0.22-0.32)	22, 0.32 (0.2-0.49)

SSIs-D/SSIs-O with <i>Citrobacter</i> spp.	255, 0.13 (0.11-0.14)	62, 0.11 (0.09-0.14)	52, 0.1 (0.08-0.14)	57, 0.15 (0.11-0.19)	77, 0.16 (0.12-0.2)	7, 0.1 (0.04-0.21)
SSIs-D/SSIs-O with other Enterobacteriaceae	244, 0.12 (0.11-0.14)	62, 0.11 (0.09-0.14)	61, 0.12 (0.09-0.16)	52, 0.13 (0.1-0.18)	64, 0.13 (0.1-0.17)	5, 0.07 (0.02-0.17)
SSIs-D/SSIs-O with <i>Serratia</i> spp.	170, 0.08 (0.07-0.1)	39, 0.07 (0.05-0.1)	38, 0.08 (0.05-0.1)	38, 0.1 (0.07-0.14)	50, 0.1 (0.08-0.13)	5, 0.07 (0.02-0.17)
SSIs-D/SSIs-O with <i>Acinetobacter</i> spp.	131, 0.07 (0.05-0.08)	33, 0.06 (0.04-0.08)	25, 0.05 (0.03-0.07)	23, 0.06 (0.04-0.09)	42, 0.09 (0.06-0.12)	8, 0.12 (0.05-0.23)
SSIs-D/SSIs-O with <i>Candida albicans</i>	271, 0.14 (0.12-0.15)	81, 0.15 (0.12-0.18)	66, 0.13 (0.1-0.17)	47, 0.12 (0.09-0.16)	72, 0.15 (0.11-0.18)	5, 0.07 (0.02-0.17)

Table S4 Descriptive analysis of 2,004,793 procedures resulting in 32,118 SSI (all depths) conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Parameter	Characteristic	Number of procedures	Number of SSIs	SSI-rate per 1000 procedures (CI95)	Incidence rate ratio* (CI95)	p-value*
Total		2004793	32118	16.02 (15.84-16.2)		
Sex	female	1215779	16686	13.72 (13.52-13.94)	1=reference	
	male	789014	15432	19.56 (19.26-19.86)	1.43 (1.39-1.46)	<0.001
Age in years	<30	153043	1308	8.55 (8.08-9.02)	1=reference	
	30-39	183503	1454	7.92 (7.52-8.34)	0.93 (0.86-1)	0.047
	40-49	175056	1928	11.01 (10.52-11.52)	1.29 (1.2-1.38)	<0.001
	50-59	286723	4177	14.57 (14.12-15.02)	1.71 (1.6-1.81)	<0.001
	60-69	438264	7483	17.07 (16.68-17.46)	2 (1.88-2.12)	<0.001
	70-79	522091	10114	19.37 (19-19.76)	2.27 (2.14-2.4)	<0.001
	≥80	246113	5654	22.97 (22.38-23.58)	2.69 (2.53-2.86)	<0.001
NNIS risk index (points)	0	932758	7019	7.52 (7.34-7.7)	1=reference	
	1	834106	15747	18.88 (18.58-19.18)	2.51 (2.47-2.54)	<0.001
	2	224382	8281	36.91 (36.12-37.7)	4.9 (4.83-4.98)	<0.001
	3	13547	1071	79.06 (74.4-83.94)	10.51 (10.17-10.85)	<0.001
Surgical approach	laparoscopic	296348	3123	10.54 (10.18-10.92)	1=reference	
	open	1708445	28995	16.97 (16.78-17.16)	1.61 (1.55-1.67)	<0.001
Hospital type	Other than tertiary and maximum care	1215055	15916	13.1 (12.9-13.3)	1=reference	
	Tertiary and maximum care	753594	15777	20.94 (20.62-21.26)	1.6 (1.56-1.63)	<0.001
	Not specified	36144	425	11.76 (10.66-12.94)	0.9 (0.82-0.99)	0.028
Type of procedure (separated into 7 groups)	Traumatology/ Orthopedics	883099	8741	9.9 (9.7-10.1)	1=reference	
	General and other surgery (a)	153427	1104	7.2 (6.78-7.64)	0.73 (0.68-0.77)	<0.001
	Abdominal surgery	330305	10839	32.82 (32.2-33.44)	3.32 (3.22-3.41)	<0.001
	Urology	36016	840	23.32 (21.78-24.96)	2.36 (2.2-2.53)	<0.001
	Gynecology	358923	3032	8.45 (8.14-8.76)	0.85 (0.82-0.89)	<0.001
	Heart surgery	145789	5538	37.99 (37-39)	3.84 (3.71-3.97)	<0.001
	Vascular surgery	97204	2024	20.82 (19.92-21.74)	2.10 (2.00-2.21)	<0.001
	Not specified	30	0	0	not defined	

				(0-95.4)		
Year of surgery	2000	41618	834	20.04 (18.7-21.44)	1.42 (1.32-1.54)	<0.001
	2001	55143	1089	19.75 (18.6-20.96)	1.40 (1.31-1.50)	<0.001
	2002	63722	1363	21.39 (20.26-22.56)	1.52 (1.43-1.62)	<0.001
	2003	70155	1407	20.06 (19.02-21.14)	1.42 (1.34-1.52)	<0.001
	2004	72503	1353	18.66 (17.68-19.68)	1.33 (1.24-1.41)	<0.001
	2005	86487	1396	16.14 (15.3-17.02)	1.15 (1.08-1.22)	<0.001
	2006	90042	1503	16.69 (15.86-17.56)	1.19 (1.12-1.26)	<0.001
	2007	97814	1600	16.36 (15.56-17.18)	1.16 (1.09-1.23)	<0.001
	2008	105472	1747	16.56 (15.8-17.36)	1.18 (1.11-1.25)	<0.001
	2009	112540	1793	15.93 (15.2-16.68)	1.13 (1.07-1.2)	<0.001
	2010	123980	1892	15.26 (14.58-15.96)	1.08 (1.02-1.15)	0.005
	2011	133202	2052	15.41 (14.74-16.08)	1.09 (1.04-1.16)	0.001
	2012	141370	2050	14.5 (13.88-15.14)	1.03 (0.98-1.09)	0.297
	2013	160381	2358	14.7 (14.12-15.3)	1.04 (0.99-1.1)	0.110
	2014	192768	2842	14.74 (14.2-15.3)	1.05 (1-1.1)	0.073
	2015	221987	3521	15.86 (15.34-16.4)	1.13 (1.07-1.18)	<0.001
2016	235609	3318	14.08 (13.6-14.58)	1=reference		
Season as intervals of months	December-February	487200	7345	15.08 (14.74-15.42)	1=reference	
	March-May	512666	8272	16.14 (15.78-16.48)	1.07 (1.04-1.1)	<0.001
	June-August	475122	8425	17.73 (17.36-18.12)	1.18 (1.14-1.21)	<0.001
	September-November	529805	8076	15.24 (14.92-15.58)	1.01 (0.98-1.04)	0.493

*calculated by Poisson regression; Abbreviations: (a) – incl. hernia surgery, thyroid struma surgery, lobectomy, parotidectomy, craniotomy, neck dissection; CI95 – 95% confidence interval; NNIS – National Nosocomial Infections Surveillance System, NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥ 3 , ASA-score ≥ 3 , and duration of surgery >75% percentile increase the index by 1 point; SSI surgical site infection

Table S5 Univariable analysis (logistic regression) for the outcome surgical site infection (all depths). Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Parameter	Characteristic	Odds ratio (CI95)	p-value
Mean temperature	per 1°C	1.010 (1.008-1.011)	<0.001
Amount of precipitation	per 1mm increase	1.000 (1.000-1.000)	0.647
Relative humidity	per 1% increase	0.992 (0.991-0.994)	<0.001
Vapor pressure	per 1 hectopascal increase	1.017 (1.014-1.020)	<0.001
Sunshine duration	per 1 hour	1.001 (1.001-1.001)	<0.001
Heat days (Tmax >30°C)	per 1 heat day	1.021 (1.016-1.026)	<0.001
Ice days (Tmax <0°C)	per 1 ice day	0.993 (0.990-0.997)	<0.001
Days with heavy rain (>30mm/day)	per 1 day with heavy rain	1.026 (1.019-1.042)	0.001
Longitude	per 1 degree increase	1.034 (1.029-1.039)	<0.001
Latitude	per 1 degree increase	0.973 (0.967-0.979)	<0.001
Age in years	<30	reference	<0.001
	30-39	0.927 (0.860-0.999)	0.005
	40-49	1.292 (1.204-1.386)	<0.001
	50-59	1.715 (1.611-1.825)	<0.001
	60-69	2.015 (1.899-2.137)	<0.001
	70-79	2.291 (2.162-2.428)	<0.001
	≥80	2.727 (2.567-2.897)	<0.001
Sex (male vs. female)	male	1.434 (1.402-1.466)	<0.001
Temperature in 5°C-intervals (5 groups)	<5°C	reference	<0.001
	5 - <10°C	1.016 (0.985-1.048)	0.327
	10 - <15°C	1.064 (1.030-1.100)	<0.001
	15 - <20°C	1.163 (1.128-1.198)	<0.001
	≥20°C	1.226 (1.155-1.302)	<0.001
Season	December-February	reference	<0.001
	March-May	1.071 (1.038-1.106)	<0.001
	June-August	1.179 (1.143-1.217)	<0.001
	September-November	1.011 (0.980-1.044)	0.490
Type of procedure (segregated into 7 groups)	General and other surgery (a)	reference	<0.001
	Abdominal surgery	4.681 (4.399-4.982)	<0.001
	Traumatology/Orthopedics	1.379 (1.295-1.469)	<0.001
	Urology	3.295 (3.010-3.607)	<0.001
	Gynecology	1.175 (1.097-1.260)	<0.001
	Heart surgery	5.448 (5.105-5.814)	<0.001
	Vascular surgery	2.934 (2.725-3.159)	<0.001
Surgical approach (laparoscopic vs. open)	laparoscopic	0.617 (0.594-0.640)	<0.001
NNIS risk index (points)	0	reference	<0.001
	1	2.538 (2.467-2.611)	<0.001
	2	5.054 (4.894-5.219)	<0.001
	3	11.323 (10.592-12.103)	<0.001
Year of surgery	2016	reference	<0.001
	2000	1.432 (1.326-1.546)	<0.001
	2001	1.410 (1.316-1.511)	<0.001
	2002	1.530 (1.436-1.631)	<0.001
	2003	1.433 (1.345-1.526)	<0.001
	2004	1.331 (1.249-1.419)	<0.001
	2005	1.149 (1.078-1.223)	<0.001
	2006	1.189 (1.118-1.264)	<0.001
	2007	1.164 (1.096-1.236)	<0.001
	2008	1.179 (1.112-1.250)	<0.001
	2009	1.133 (1.070-1.201)	<0.001
	2010	1.085 (1.025-1.148)	0.005
	2011	1.095 (1.036-1.158)	0.001
	2012	1.030 (0.975-1.089)	0.294

	2013	1.045 (0.991-1.102)	0.107
	2014	1.048 (0.996-1.102)	0.071
	2015	1.128 (1.076-1.184)	<0.001
Hospital type (tertiary/maximum care vs. non-tertiary/maximum care)	no	reference	<0.001
	yes	1.611 (1.576-1.647)	0.027
	unknown	0.896 (0.814-0.988)	<0.001

Abbreviations: (a) – incl. hernia surgery, thyroid struma surgery, lobectomy, parotidectomy, craniotomy, neck dissection; CI95 – 95% confidence interval; NNIS – National Nosocomial Infections Surveillance System, NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥ 3 , ASA-score ≥ 3 , and duration of surgery >75% percentile increase the index by 1 point; Tmax – maximum temperature

Table S6 Multivariable analysis (logistic regression) for the outcome surgical site infection (all depths) in reference to the mean temperature (continuous) in the month of surgery (model type I). Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Parameter	Characteristic	Odds ratio (CI95)	p-value
Temperature continuous (model type I)	per 1°C	1.007 (1.005-1.009)	<0.001
Sex	male vs. female	1.014 (0.989-1.040)	0.268
Age in years	30-39 vs. <30	1.088 (1.008-1.174)	0.030
	40-49 vs. <30	1.359 (1.265-1.459)	<0.001
	50-59 vs. <30	1.608 (1.508-1.716)	<0.001
	60-69 vs. <30	1.708 (1.605-1.817)	<0.001
	70-79 vs. <30	1.845 (1.735-1.963)	<0.001
	≥80 vs. <30	2.059 (1.930-2.196)	<0.001
NNIS risk index (points)	1 vs. 0	1.794 (1.741-1.849)	<0.001
	2 vs. 0	2.706 (2.613-2.803)	<0.001
	3 vs. 0	3.781 (3.521-4.060)	<0.001
Type of procedure (vs. reference: General and other surgery (a))	Abdominal surgery	5.858 (5.494-6.245)	<0.001
	Traumatology/Orthopedics	1.005 (0.943-1.072)	0.870
	Urology	2.917 (2.663-3.195)	<0.001
	Gynecology	1.289 (1.198-1.387)	<0.001
	Heart surgery	2.963 (2.773-3.166)	<0.001
	Vascular surgery	1.873 (1.739-2.018)	<0.001
Surgical approach	laparoscopic vs. open	0.244 (0.234-0.254)	<0.001
Year of surgery	2000 vs. 2016	1.372 (1.269-1.483)	<0.001
	2001 vs. 2016	1.267 (1.181-1.359)	<0.001
	2002 vs. 2016	1.326 (1.243-1.415)	<0.001
	2003 vs. 2016	1.263 (1.185-1.346)	<0.001
	2004 vs. 2016	1.151 (1.079-1.228)	<0.001
	2005 vs. 2016	1.035 (0.971-1.103)	0.291
	2006 vs. 2016	1.056 (0.993-1.124)	0.084
	2007 vs. 2016	1.044 (0.982-1.109)	0.167
	2008 vs. 2016	1.054 (0.994-1.118)	0.080
	2009 vs. 2016	1.039 (0.980-1.102)	0.201
	2010 vs. 2016	1.004 (0.948-1.063)	0.900
	2011 vs. 2016	1.014 (0.959-1.073)	0.625
	2012 vs. 2016	0.956 (0.904-1.011)	0.116
	2013 vs. 2016	0.995 (0.943-1.050)	0.860
2014 vs. 2016	1.026 (0.975-1.080)	0.324	
2015 vs. 2016	1.115 (1.062-1.170)	<0.001	

Abbreviations: (a) – incl. hernia surgery, thyroid struma surgery, lobectomy, parotidectomy, craniotomy, neck dissection; CI95 – 95% confidence interval; NNIS – National Nosocomial Infections Surveillance System, NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥3, ASA-score ≥3, and duration of surgery >75% percentile increase the index by 1 point

Table S7 Multivariable analysis (logistic regression) for the outcome surgical site infection (all depths) in reference to the mean temperature (categorical) in the month of surgery (model type II). Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Parameter	Characteristic	Odds ratio (CI95)	p-value
Temperature categorical (model type II)	5°C - <10°C vs. <5°C	1.012 (0.98-1.044)	0.483
	10°C - <15°C vs. <5°C	1.048 (1.014-1.085)	0.006
	15°C - <20°C vs. <5°C	1.118 (1.084-1.153)	<0.001
	≥20°C vs. <5°C	1.132 (1.064-1.204)	<0.001
Sex	male vs. female	1.014 (0.989-1.04)	0.268
Age in years	30-39 vs. <30	1.088 (1.008-1.173)	0.030
	40-49 vs. <30	1.359 (1.265-1.459)	<0.001
	50-59 vs. <30	1.608 (1.507-1.716)	<0.001
	60-69 vs. <30	1.707 (1.604-1.817)	<0.001
	70-79 vs. <30	1.845 (1.735-1.962)	<0.001
	≥80 vs. <30	2.058 (1.929-2.195)	<0.001
	NNIS risk index (points)	1 vs. 0	1.794 (1.741-1.849)
2 vs. 0		2.706 (2.613-2.803)	<0.001
3 vs. 0		3.78 (3.52-4.059)	<0.001
Type of procedure (vs. reference: General and other surgery (a))	Abdominal surgery	5.856 (5.493-6.243)	<0.001
	Traumatology/Orthopedics	1.006 (0.943-1.072)	0.870
	Urology	2.917 (2.663-3.195)	<0.001
	Gynecology	1.288 (1.197-1.387)	<0.001
	Heart surgery	2.962 (2.772-3.166)	<0.001
	Vascular surgery	1.874 (1.74-2.019)	<0.001
Surgical approach	laparoscopic vs. open	0.244 (0.234-0.254)	<0.001
Year of surgery	2000 vs. 2016	1.368 (1.265-1.479)	<0.001
	2001 vs. 2016	1.268 (1.182-1.36)	<0.001
	2002 vs. 2016	1.33 (1.247-1.42)	<0.001
	2003 vs. 2016	1.261 (1.182-1.345)	<0.001
	2004 vs. 2016	1.149 (1.077-1.226)	<0.001
	2005 vs. 2016	1.03 (0.966-1.098)	0.291
	2006 vs. 2016	1.054 (0.99-1.122)	0.084
	2007 vs. 2016	1.046 (0.984-1.112)	0.167
	2008 vs. 2016	1.056 (0.995-1.12)	0.080
	2009 vs. 2016	1.037 (0.978-1.099)	0.201
	2010 vs. 2016	0.998 (0.942-1.058)	0.900
	2011 vs. 2016	1.01 (0.955-1.068)	0.625
	2012 vs. 2016	0.957 (0.904-1.012)	0.116
	2013 vs. 2016	0.993 (0.941-1.048)	0.860
2014 vs. 2016	1.027 (0.976-1.082)	0.324	
2015 vs. 2016	1.122 (1.068-1.178)	<0.001	

Abbreviations: (a) – incl. hernia surgery, thyroid struma surgery, lobectomy, parotidectomy, craniotomy, neck dissection; CI95 – 95% confidence interval; NNIS – National Nosocomial Infections Surveillance System, NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥3, ASA-score ≥3, and duration of surgery >75% percentile increase the index by 1 point

Table S8 Results of the multivariable logistic regression analysis: adjusted odds ratios with 95% confidence intervals in reference to the mean monthly temperature as a continuous parameter (model type I) and as a categorical parameter (model type II) for the outcome occurrence of superficial surgical site infection. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Outcome	Temperature	Temperature interval			
	(continuous)	(categorical) vs. <5°C			
	(model type I)	(model type II)			
	per 1°C	5°C - <10°C	10°C - <15°C	15°C - <20°C	≥20°C
AOR (CI95)	AOR (CI95)	AOR (CI95)	AOR (CI95)	AOR (CI95)	
SSIs-S	1.008 (1.006-1.011)	0.987 (0.94-1.036)	1.047 (0.994-1.101)	1.139 (1.087-1.193)	1.146 (1.045-1.256)
SSIs-S without pathogen	1.001 (0.997-1.005)	0.926 (0.858-0.999)	0.964 (0.89-1.044)	1.002 (0.932-1.077)	1.05 (0.906-1.218)
SSIs-S with pathogen(s)	1.013 (1.01-1.017)	1.032 (0.969-1.1)	1.107 (1.037-1.183)	1.239 (1.167-1.315)	1.213 (1.08-1.363)
SSIs-S with gram-positive pathogen(s)	1.015 (1.01-1.019)	1.014 (0.937-1.097)	1.158 (1.068-1.256)	1.247 (1.158-1.343)	1.236 (1.071-1.428)
SSIs-S with Staphylococcus aureus	1.018 (1.011-1.024)	1.081 (0.959-1.218)	1.154 (1.018-1.307)	1.353 (1.209-1.514)	1.293 (1.04-1.607)
SSIs-S with Enterococcus spp.	1.011 (1.004-1.019)	0.937 (0.814-1.079)	1.129 (0.977-1.304)	1.143 (1.002-1.305)	1.158 (0.894-1.498)
SSIs-S with coagulase-negative staphylococci	1.011 (1.003-1.019)	0.981 (0.841-1.145)	1.131 (0.964-1.326)	1.179 (1.019-1.364)	1.279 (0.969-1.687)
SSIs-S with Streptococcus spp.	1 (0.98-1.021)	0.924 (0.624-1.367)	1.526 (1.056-2.205)	0.826 (0.554-1.232)	0.892 (0.419-1.897)
SSIs-S with Corynebacterium spp.	1.013 (0.986-1.04)	0.953 (0.581-1.563)	1.037 (0.615-1.749)	1.268 (0.798-2.013)	0.562 (0.171-1.851)
SSIs-S with gram-negative pathogen(s)	1.017 (1.012-1.023)	1.101 (0.997-1.216)	1.146 (1.032-1.273)	1.294 (1.178-1.421)	1.378 (1.155-1.644)
SSIs-S with Escherichia coli	1.007 (1-1.015)	1.055 (0.918-1.212)	1.101 (0.951-1.275)	1.118 (0.977-1.279)	1.022 (0.779-1.342)
SSIs-S with Pseudomonas aeruginosa	1.025 (1.011-1.039)	1.24 (0.958-1.605)	1.178 (0.892-1.556)	1.465 (1.148-1.869)	2.14 (1.429-3.203)
SSIs-S with Enterobacter spp.	1.041 (1.025-1.058)	1.323 (0.98-1.786)	1.311 (0.952-1.803)	1.772 (1.34-2.343)	2.366 (1.504-3.724)
SSIs-S with Klebsiella spp.	1.017 (1-1.035)	0.938 (0.681-1.292)	1.094 (0.784-1.525)	1.257 (0.936-1.688)	1.51 (0.905-2.518)
SSIs-S with Proteus spp.	1.027 (1.012-1.042)	1.094 (0.817-1.465)	1.389 (1.038-1.858)	1.487 (1.141-1.937)	1.459 (0.872-2.44)
SSIs-S with Bacteroides spp.	1.005 (0.987-1.023)	1.128 (0.81-1.571)	1.001 (0.695-1.44)	1.104 (0.797-1.53)	1.204 (0.659-2.199)
SSIs-S with Citrobacter spp.	1.021 (0.994-1.049)	0.953 (0.575-1.581)	1.025 (0.602-1.747)	1.26 (0.791-2.008)	1.299 (0.536-3.149)
SSIs-S with other Enterobacteriaceae	1.004 (0.976-1.032)	1.203 (0.733-1.975)	1.18 (0.693-2.01)	1.123 (0.681-1.851)	0.89 (0.309-2.56)
SSIs-S with Serratia spp.	1.051 (1.016-1.088)	1.53 (0.76-3.078)	2.011 (0.991-4.081)	2.283 (1.208-4.316)	1.782 (0.5-6.356)
SSIs-S with Acinetobacter spp.	1.135 (1.086-1.187)	4.593 (1.313-16.074)	5.429 (1.526-19.313)	12.478 (3.841-40.542)	10.466 (2.281-48.014)
SSIs-S with Candida albicans	0.998 (0.965-1.032)	1.577 (0.877-2.835)	0.876 (0.425-1.808)	1.124 (0.612-2.065)	1.222 (0.355-4.203)

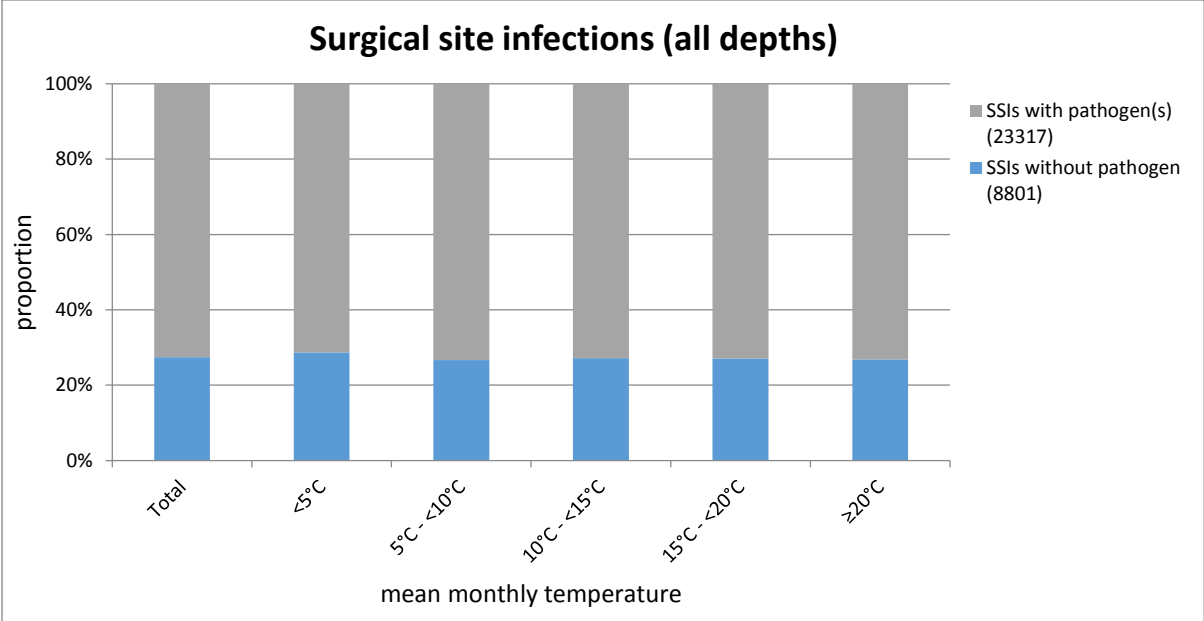
All adjusted odds ratios are adjusted by age, sex, National Nosocomial Infections Surveillance System (NNIS) risk index, type of procedure, surgical approach and year. NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥3, ASA-score ≥3, and duration of surgery >75% percentile increase the index by 1 point. Model type I analyzes temperature as a continuous variable. Model type II analyzes temperature as a categorical variable for defined temperature intervals. Abbreviations: AOR – adjusted odds ratio; CI95 – 95% confidence interval; SSIs-S – superficial surgical site infections

Table S9 Results of the multivariable logistic regression analysis: adjusted odds ratios with 95% confidence intervals in reference to the mean monthly temperature as a continuous parameter (model type I) and as a categorical parameter (model type II) for the outcome occurrence of deep incisional and deep organ/space surgical site infection. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network

Outcome	Temperature	Temperature interval			
	(continuous)	(categorical) vs. <5°C			
	(model type I)	(model type II)			
	per 1°C	5°C - <10°C	10°C - <15°C	15°C - <20°C	≥20°C
AOR (CI95)	AOR (CI95)	AOR (CI95)	AOR (CI95)	AOR (CI95)	
SSIs-D/SSIs-O	1.006 (1.004-1.008)	1.033 (0.99-1.077)	1.051 (1.006-1.099)	1.105 (1.061-1.151)	1.123 (1.035-1.218)
SSIs-D/SSIs-O without pathogen	1.007 (1.002-1.012)	1.049 (0.951-1.156)	1.043 (0.941-1.157)	1.114 (1.014-1.224)	1.199 (0.992-1.449)
SSIs-D/SSIs-O with pathogen(s)	1.006 (1.003-1.008)	1.029 (0.983-1.077)	1.053 (1.002-1.106)	1.102 (1.053-1.152)	1.106 (1.01-1.21)
SSIs-D/SSIs-O with gram-positive pathogen(s)	1.003 (1-1.006)	1.015 (0.961-1.072)	1.039 (0.981-1.101)	1.06 (1.004-1.118)	1.068 (0.959-1.19)
SSIs-D/SSIs-O with Staphylococcus aureus	1.006 (1.001-1.01)	1.014 (0.935-1.101)	1.049 (0.963-1.144)	1.082 (0.999-1.172)	1.138 (0.972-1.331)
SSIs-D/SSIs-O with Enterococcus spp.	0.997 (0.991-1.002)	0.983 (0.893-1.082)	1.007 (0.91-1.116)	0.936 (0.851-1.029)	1.037 (0.857-1.256)
SSIs-D/SSIs-O with coagulase-negative staphylococci	1.007 (1.001-1.013)	1.097 (0.988-1.219)	1.075 (0.96-1.204)	1.193 (1.077-1.323)	1.042 (0.841-1.29)
SSIs-D/SSIs-O with Streptococcus spp.	0.998 (0.982-1.015)	0.895 (0.653-1.226)	1.122 (0.825-1.527)	1.096 (0.818-1.469)	0.314 (0.114-0.859)
SSIs-D/SSIs-O with Corynebacterium spp.	1.019 (0.996-1.043)	1.151 (0.748-1.77)	1.278 (0.819-1.994)	1.28 (0.846-1.937)	1.706 (0.842-3.456)
SSIs-D/SSIs-O with gram-negative pathogen(s)	1.01 (1.006-1.014)	1.004 (0.929-1.084)	1.092 (1.007-1.183)	1.191 (1.108-1.281)	1.093 (0.941-1.268)
SSIs-D/SSIs-O with Escherichia coli	1.003 (0.998-1.009)	0.979 (0.881-1.088)	1.004 (0.898-1.123)	1.096 (0.991-1.212)	1.003 (0.814-1.236)
SSIs-D/SSIs-O with Pseudomonas aeruginosa	1.012 (1.001-1.024)	0.996 (0.809-1.228)	1.129 (0.911-1.4)	1.188 (0.976-1.446)	1.079 (0.729-1.597)
SSIs-D/SSIs-O with Enterobacter spp.	1.037 (1.026-1.049)	1.214 (0.978-1.508)	1.423 (1.142-1.773)	1.788 (1.469-2.175)	1.862 (1.297-2.673)
SSIs-D/SSIs-O with Klebsiella spp.	1.008 (0.997-1.02)	0.965 (0.779-1.194)	1.153 (0.927-1.434)	1.083 (0.886-1.324)	1.107 (0.734-1.669)
SSIs-D/SSIs-O with Proteus spp.	1.02 (1.008-1.033)	1.362 (1.076-1.725)	1.51 (1.183-1.927)	1.432 (1.138-1.803)	1.573 (1.036-2.386)
SSIs-D/SSIs-O with Bacteroides spp.	0.999 (0.985-1.012)	0.774 (0.6-0.998)	0.859 (0.659-1.12)	0.937 (0.74-1.186)	1.015 (0.643-1.602)
SSIs-D/SSIs-O with Citrobacter spp.	1.018 (0.999-1.038)	0.908 (0.625-1.319)	1.314 (0.913-1.892)	1.337 (0.955-1.871)	0.784 (0.356-1.729)
SSIs-D/SSIs-O with other Enterobacteriaceae	0.999 (0.979-1.019)	1.022 (0.713-1.463)	1.128 (0.775-1.641)	1.073 (0.755-1.524)	0.558 (0.223-1.399)
SSIs-D/SSIs-O with Serratia spp.	1.018 (0.994-1.042)	1.009 (0.641-1.589)	1.374 (0.873-2.161)	1.367 (0.897-2.081)	0.917 (0.357-2.361)
SSIs-D/SSIs-O with Acinetobacter spp.	1.032 (1.005-1.06)	0.818 (0.484-1.384)	0.991 (0.578-1.698)	1.372 (0.867-2.171)	1.621 (0.735-3.575)
SSIs-D/SSIs-O with Candida albicans	0.987 (0.969-1.006)	0.87 (0.625-1.211)	0.81 (0.563-1.165)	0.925 (0.672-1.272)	0.418 (0.168-1.04)

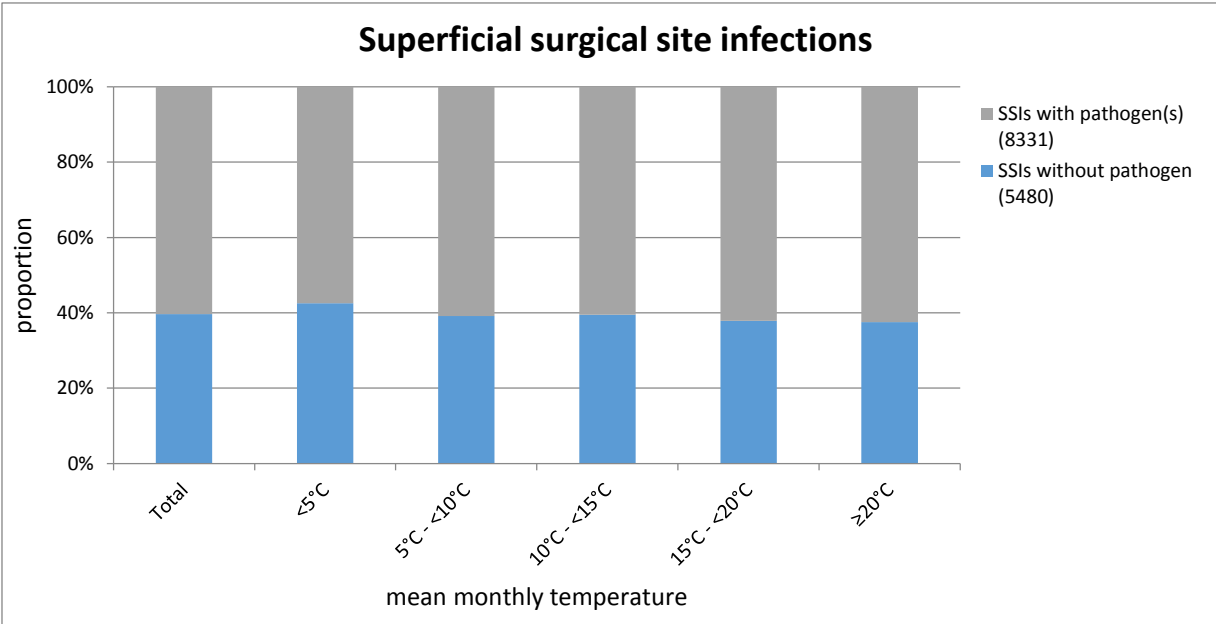
All adjusted odds ratios are adjusted by age, sex, National Nosocomial Infections Surveillance System (NNIS) risk index, type of procedure, surgical approach and year. NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥3, ASA-score ≥3, and duration of surgery >75% percentile increase the index by 1 point. Model type I analyzes temperature as a continuous variable. Model type II analyzes temperature as a categorical variable for defined temperature intervals. Abbreviations: AOR – adjusted odds ratio; CI95 – 95% confidence interval; SSIs-D – deep incisional surgical site infections; SSIs-O – deep organ/space surgical site infections

Figure S1 Distribution of surgical site infections (all depths) with and without documented pathogen(s) stratified by different intervals of the mean monthly temperature. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



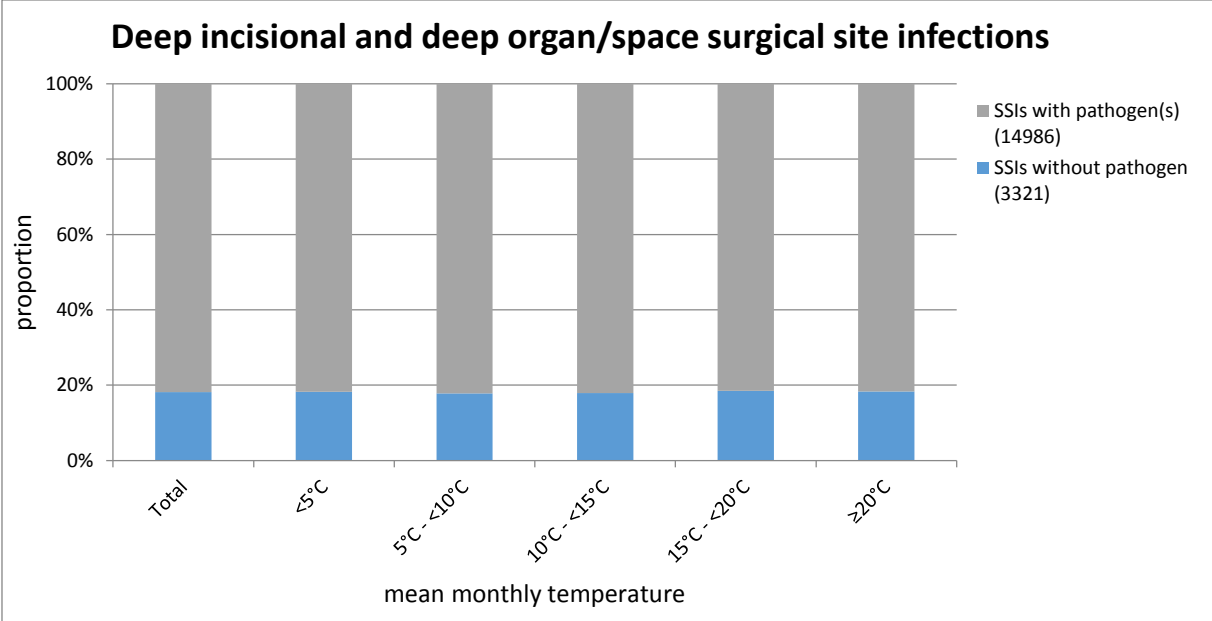
Abbreviations: SSI – surgical site infection

Figure S2 Distribution of superficial surgical site infections with and without documented pathogen(s) stratified by different intervals of the mean monthly temperature. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



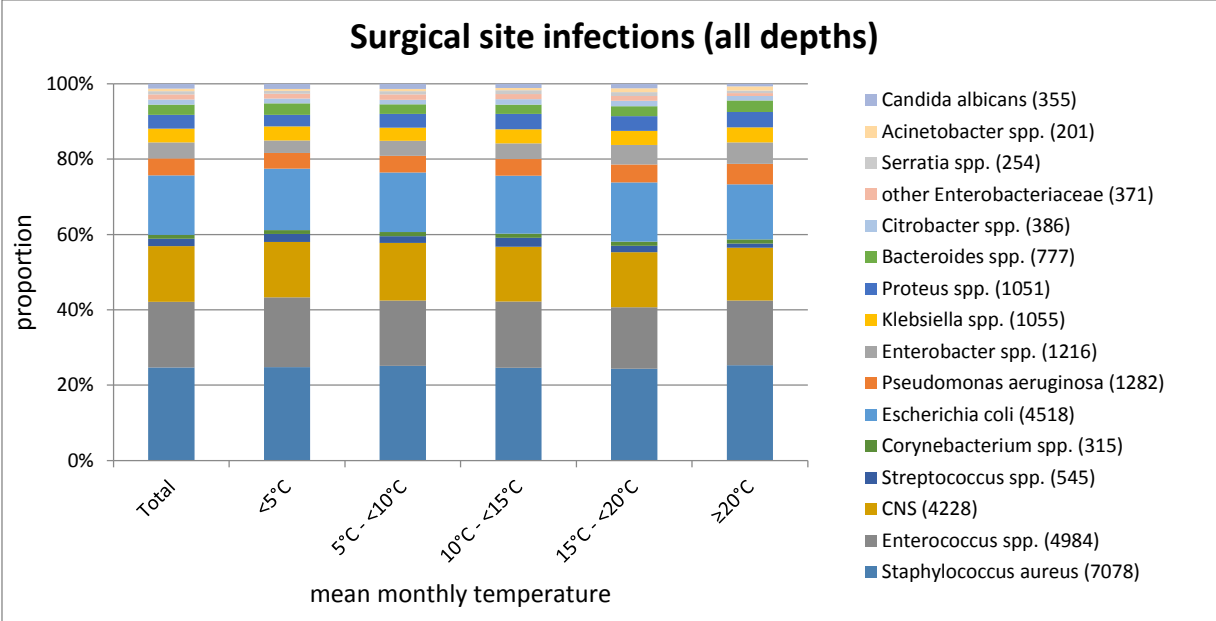
Abbreviations: SSI – surgical site infection

Figure S3 Distribution of deep incisional and deep organ/space surgical site infections with and without documented pathogen(s) stratified by different intervals of the mean monthly temperature. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



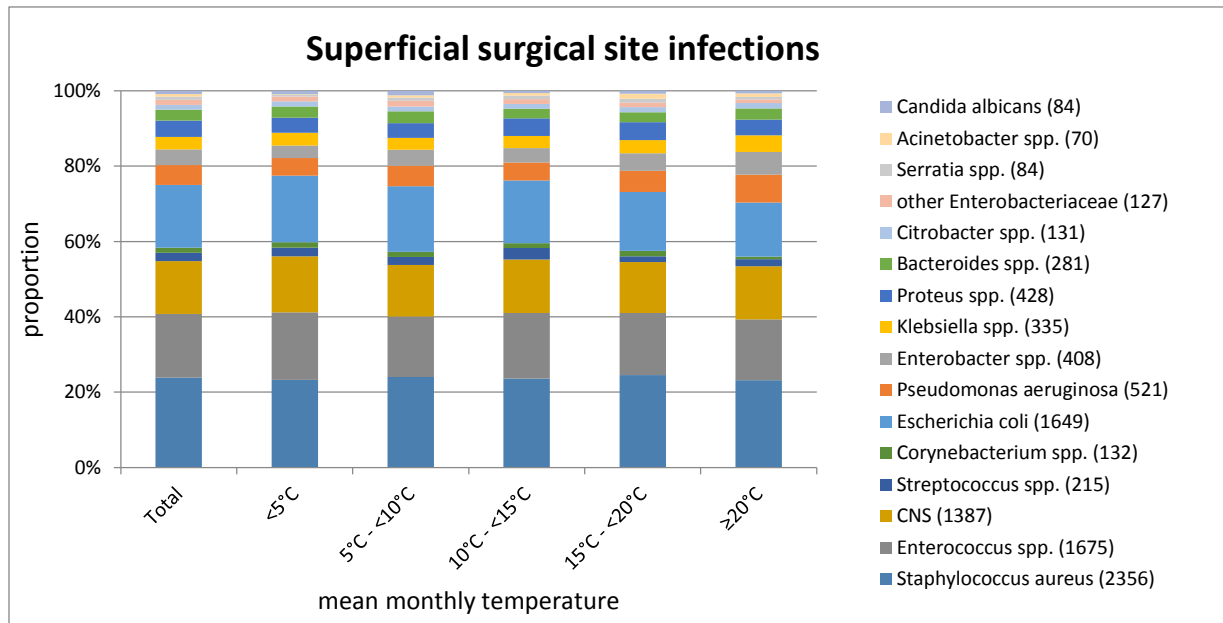
Abbreviations: SSI – surgical site infection

Figure S4 Distribution of surgical site infections (all depth) with documented pathogen(s) by type of pathogen(-group) stratified by different intervals of the mean monthly temperature. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



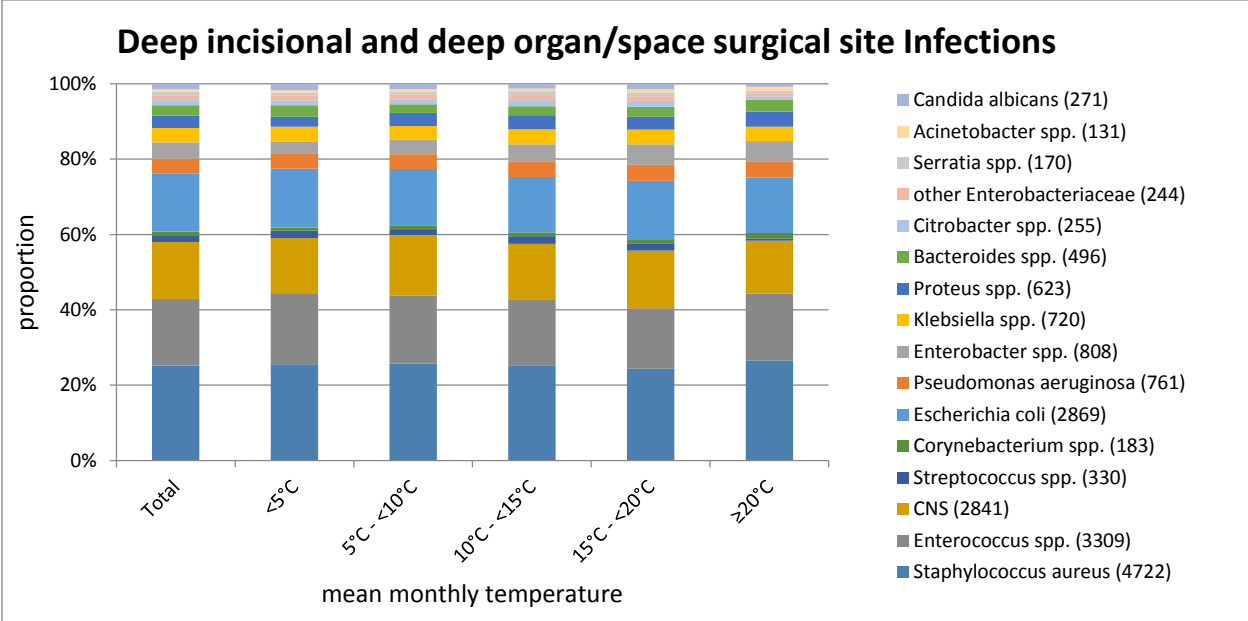
Abbreviations: CNS – coagulase-negative staphylococci

Figure S5 Distribution of superficial surgical site infections with documented pathogen(s) by type of pathogen(-group) stratified by different intervals of the mean monthly temperature. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



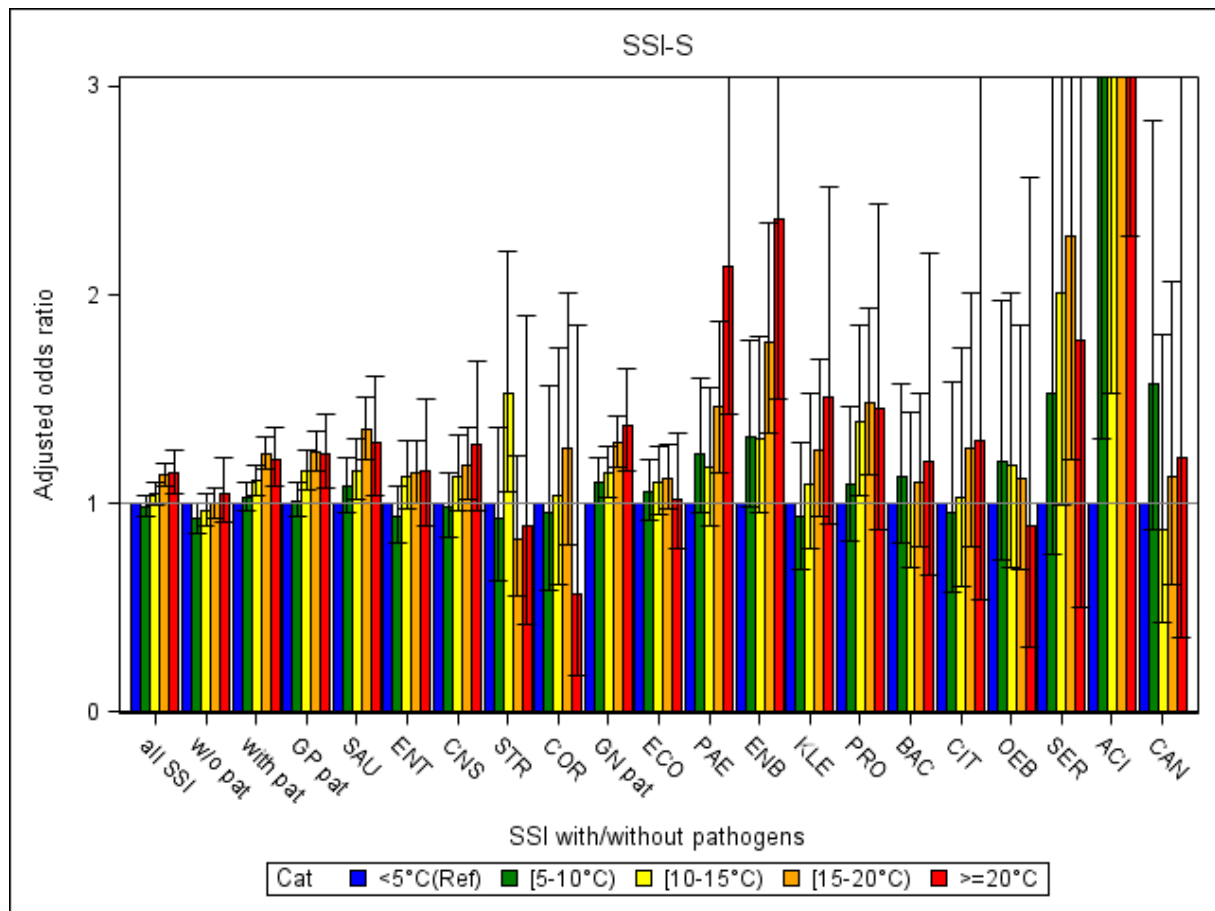
Abbreviations: CNS – coagulase-negative staphylococci

Figure S6 Distribution of deep incisional and deep organ/space surgical site infections with documented pathogen(s) by type of pathogen(-group) stratified by different intervals of the mean monthly temperature. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



Abbreviations: CNS – coagulase-negative staphylococci

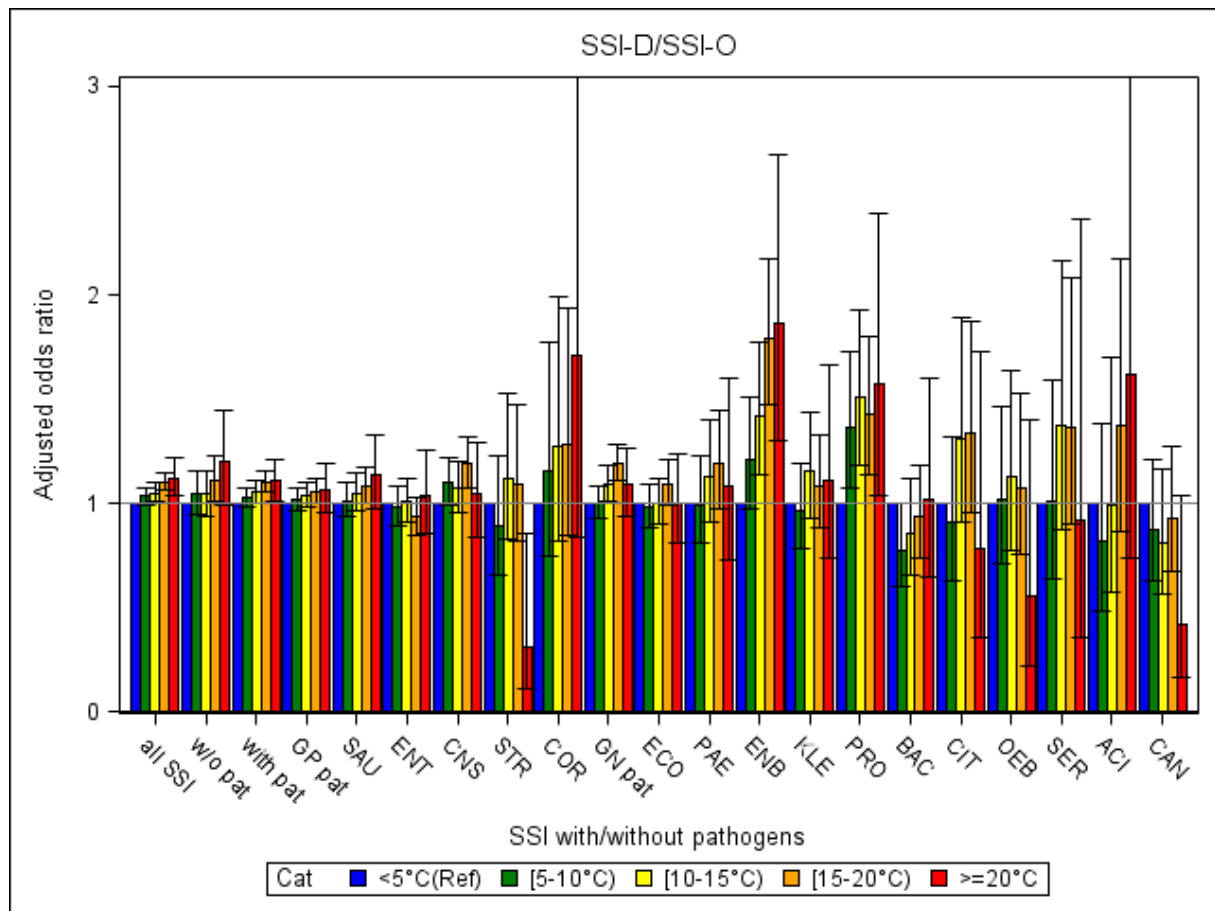
Figure S7 Adjusted odds ratios with 95% confidence intervals for the occurrence of superficial surgical site infections for different temperature intervals in reference to <5°C (model type II), stratified by pathogen. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



Legend Figure S1 All models are adjusted for the factors: age, sex, type of procedure, surgical approach (laparoscopic vs. open), year of surgery, and National Nosocomial Infections Surveillance System (NNIS) risk index. NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥ 3 , ASA-score ≥ 3 , and duration of surgery >75% percentile increase the index by 1 point. Model type II analyzes temperature as a categorical variable for defined temperature intervals. The error bar represents the 95% confidence interval.

Abbreviations: ACI – Acinetobacter spp.; BAC – Bacteroides spp.; CAN – Candida albicans; Cat – Category; CIT – Citrobacter spp.; CNS – coagulase-negative staphylococci; COR – Corynebacterium spp.; ECO – Escherichia coli; ENB – Enterobacter spp.; ENT – Enterobacter spp.; GN pat – gram-negative pathogen(s); GP pat – gram-positive pathogen(s); KLE – Klebsiella spp.; OEB – other Enterobacteriaceae; PAE – Pseudomonas aeruginosa; pat – pathogen; PRO – Proteus spp.; SAU – Staphylococcus aureus; SER – Serratia spp.; SSI-S – superficial surgical site infection; STR – Streptococcus spp.; temp – temperature; w/o pat – without pathogen

Figure S8 Adjusted odds ratios with 95% confidence intervals for the occurrence of deep incisional and deep organ/space surgical site infections for different temperature intervals in reference to <5°C (model type II), stratified by pathogen. Data from 2,004,793 procedures conducted between 2000 and 2016 in 1,455 surgical departments participating in the German surgical site infection surveillance network



Legend Figure S2 All models are adjusted for the factors: age, sex, type of procedure, surgical approach (laparoscopic vs. open), year of surgery, and National Nosocomial Infections Surveillance System (NNIS) risk index. NNIS risk index includes the following parameters: wound contamination class, ASA-score, duration of surgery. A wound contamination class ≥ 3 , ASA-score ≥ 3 , and duration of surgery >75% percentile increase the index by 1 point. Model type II analyzes temperature as a categorical variable for defined temperature intervals. The error bar represents the 95% confidence interval.

Abbreviations: ACI – Acinetobacter spp.; BAC – Bacteroides spp.; CAN – Candida albicans; Cat – Category; CIT – Citrobacter spp.; CNS – coagulase-negative staphylococci; COR – Corynebacterium spp.; ECO – Escherichia coli; ENB – Enterobacter spp.; ENT – Enterobacter spp.; GN pat – gram-negative pathogen(s); GP pat – gram-positive pathogen(s); KLE – Klebsiella spp.; OEB – other Enterobacteriaceae; PAE – Pseudomonas aeruginosa; pat – pathogen; PRO – Proteus spp.; SAU – Staphylococcus aureus; SER – Serratia spp.; SSI-D – deep incisional surgical site infection; ; SSI-O – deep organ/space surgical site infection; STR – Streptococcus spp.; temp – temperature; w/o pat – without pathogen