

Abstract

BACKGROUND:

SSI is one of the most frequent healthcare-associated infections. Since 1999, French authorities have set up a coordination of the regional surveillance networks to gather national SSI incidence data. In parallel, a national campaign was implemented to promote benchmarking through the network and guidelines on SSI preventive measures. The aim of the current study was to describe the largest database ever collected in France on SSI and to analyze temporal trends.

METHODS:

Surgery patients were enrolled by voluntary participating surgical wards in a yearly 3-month incidence survey. In each ward, 100 consecutive surgery procedures should be included and patients followed up to 30 days after surgery. SSI was defined based on standard international criteria. For each patient, risk factors were collected on the day of surgery including age, ASA score, Altemeier wound class, type and duration of procedure, emergency/elective, and when videoscoping surgery was performed. Regional and national reports were edited yearly feeding back the overall results of the network to all participants including the rank of surgery units. Temporal variation of incidence risk was tested using chi-square for linear trends and multivariate logistic regression model.

RESULTS:

Since 1999, 1,179,418 operations (35,626,300 operated patients-days follow-up; median post-operative follow-up: 29 days). The overall crude SSI incidence rate was 1.47%. Organ space and deep incisional SSI accounted for 42.7% although their proportion varied according to the type of surgery. SSI incidence rate increased from 0.84% for NNIS-0 patients to 5.94% for NNIS-2, 3 patients. The SSI incidence varied from 0.49% for knee prosthesis to 9.24% for colon surgery. From 1999 to 2007, NNIS-0 SSI incidence decreased from 1.10 to 0.80 for 100 operated patients. Over the last 4 years 2004-2007, 65% of surgery wards had SSI incidence rate lower than the median reference value in 2004. The decrease was the most significant for hernia repair (-68%) and cholecystectomy (-62%) NNIS-0 incidence rates. Multivariate analysis showed a -29.5% relative decrease of SSI risk over the study period.

CONCLUSION:

These encouraging results demonstrate the potential impact of the national policy on SSI reduction in France, although efforts have to be maintained for some specific surgery.

Background

- SSI surveillance in France:
 - among the top 5 priorities in NI surveillance in France;
 - surveillance in regional networks is coordinated at the national level since 1999.
- A national campaign was implemented to promote benchmarking and guidelines on SSI preventive measures.
- This study describes the largest SSI database ever collected in France.

Materials & Methods

- Participation on a voluntary basis.
- Surveillance at least 3 months each year.
- All surgical procedures included.
- At least 100 procedures/ward.
- A standardized file for each procedure:
 - Type of surgery;
 - NHSN criteria: ASA score, Altemeier wound class, duration;
 - Elective vs emergency;
 - Videoscoping vs open surgery.
- At least 30 postoperative days follow-up.
- SSI incidence expressed p 100 procedures.

Results

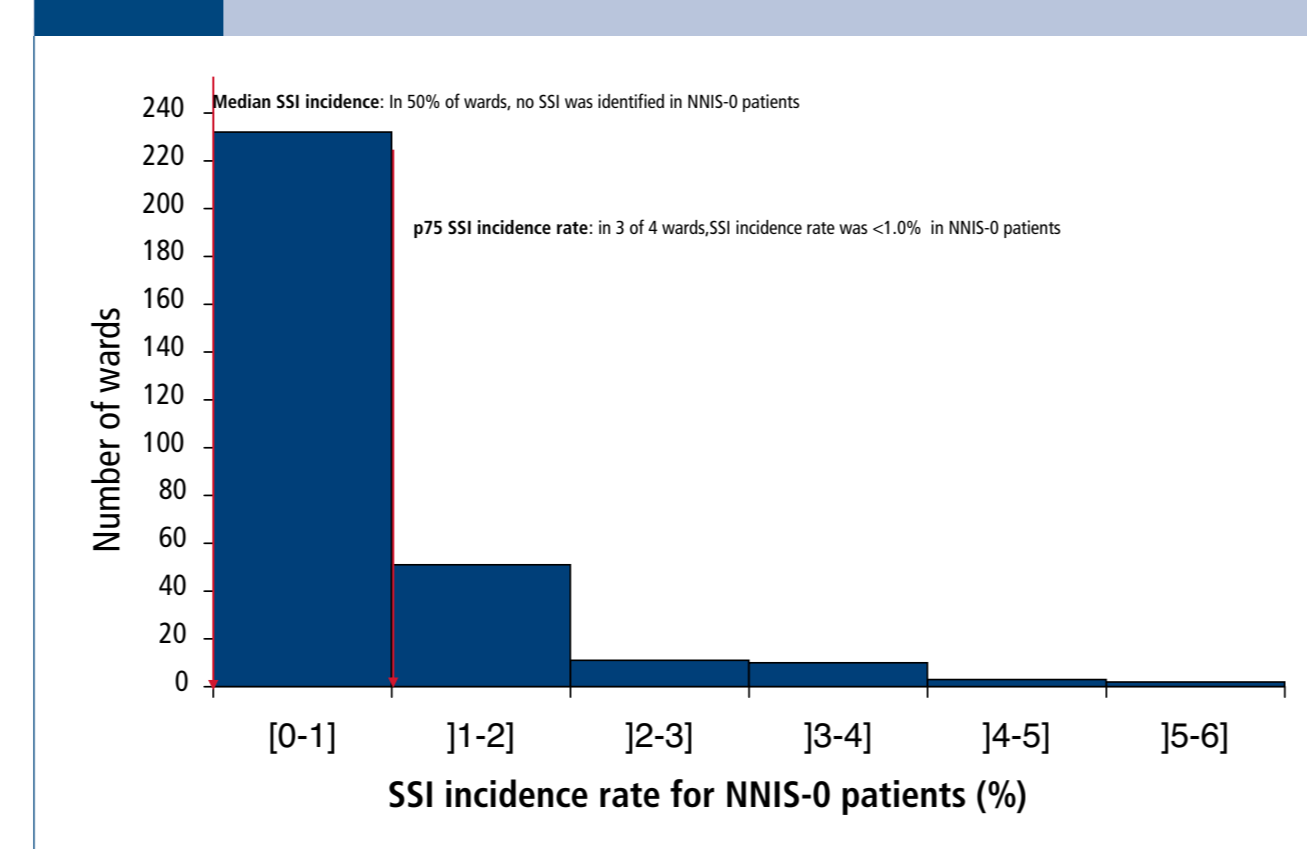
- From 1999 to 2007 1,179,418 procedures included (median postoperative follow-up: 29 days).
- 73.1% in 4 surgery categories:
 - Orthopedic 31.7%;
 - Digestive 21.4%;
 - Gyneco-obstetrical 12.9%;
 - Cardio-vascular 7.1%.
- Overall crude SSI incidence: 1.47%
 - 42.7% of which deep incisional or organ/space;
 - 0.84% in NNIS-0 to 12.94% in NNIS-3 patients.

SPECIFIC SSI RATES PROCEDURE

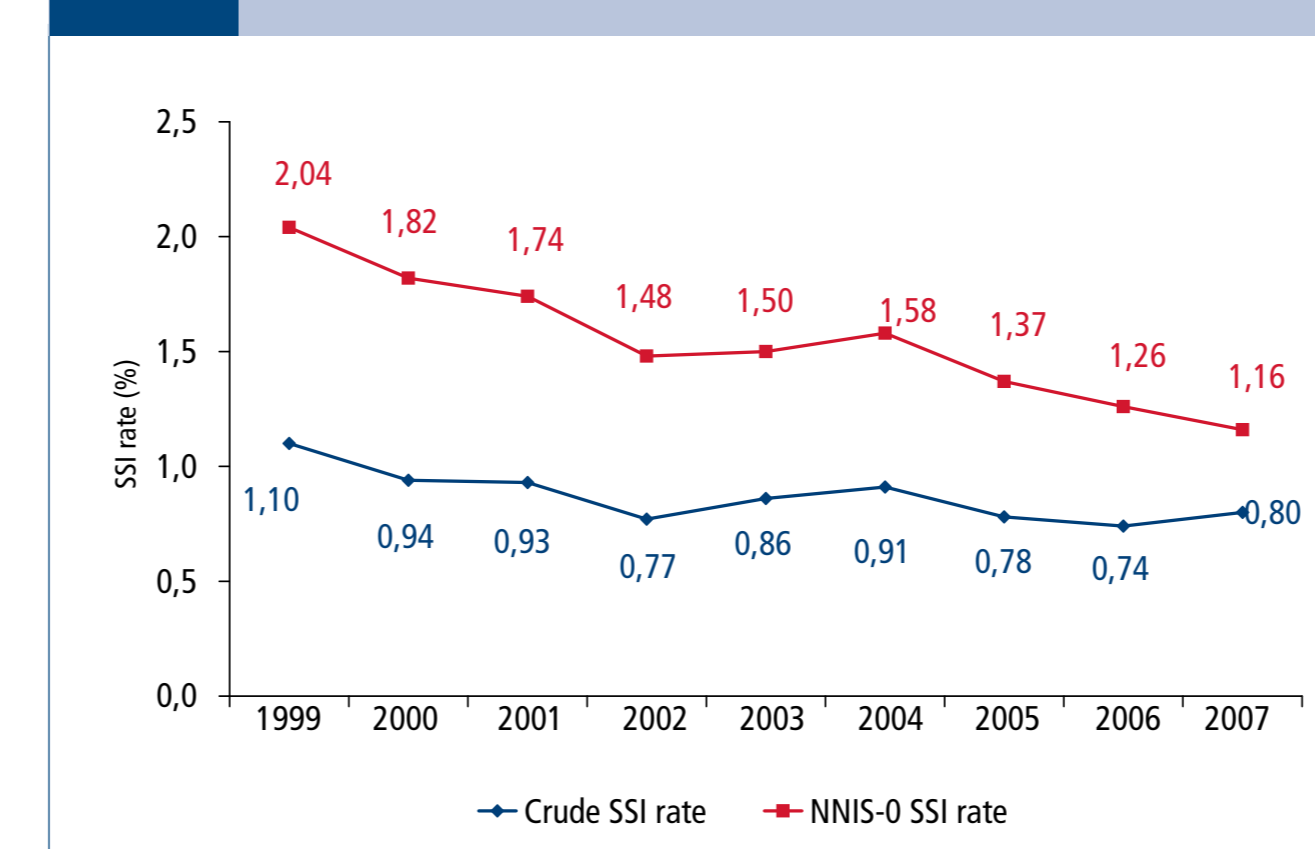
Procedures	Crude			NNIS-0		
	n	SSI rate (%)	[CI95%]	n	SSI rate (%)	[CI95%]
Cholecystectomy	46,032	1.02%	[0.93 - 1.12]	31,908	0.45%	[0.38 - 0.53]
Hernia repair	97,862	0.81%	[0.75 - 0.86]	62,536	0.48%	[0.42 - 0.53]
Colorectal surgery	30,051	9.24%	[8.92 - 9.57]	10,003	6.99%	[6.49 - 7.5]
Laminectomy	4,579	1.22%	[0.93 - 1.59]	2,227	0.90%	[0.56 - 1.4]
C section	51,363	2.14%	[2.02 - 2.27]	43,962	2.04%	[1.91 - 2.18]
Breast surgery	41,387	1.79%	[1.66 - 1.91]	30,322	1.42%	[1.29 - 1.56]
Adbominal hysterectomy	8,826	2.70%	[2.37 - 3.06]	5,500	2.16%	[1.8 - 2.59]
Knee prosthesis	28,201	0.49%	[0.41 - 0.58]	17,347	0.37%	[0.29 - 0.47]
Hip hemiarthroplasty	50,440	1.26%	[1.16 - 1.36]	30,593	0.90%	[0.79 - 1.01]
Total hip prosthesis	26,888	0.73%	[0.63 - 0.84]	17,143	0.52%	[0.42 - 0.64]

- Results were annually fed back to participants as they could compare their own results with others (see example).
- Ranking was performed according to speciality

SSI RATES PER WARD

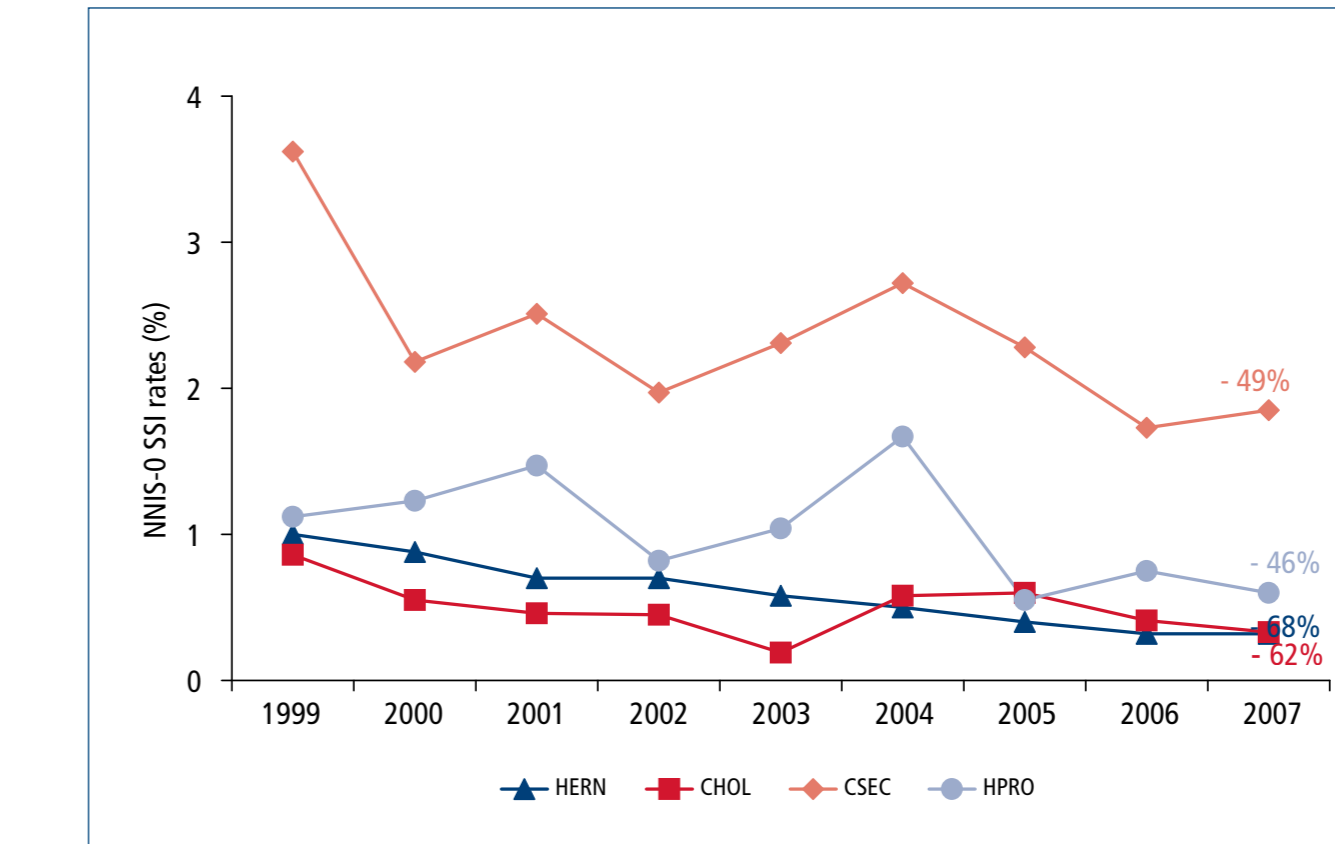


SSI TEMPORAL TRENDS 1999-2007



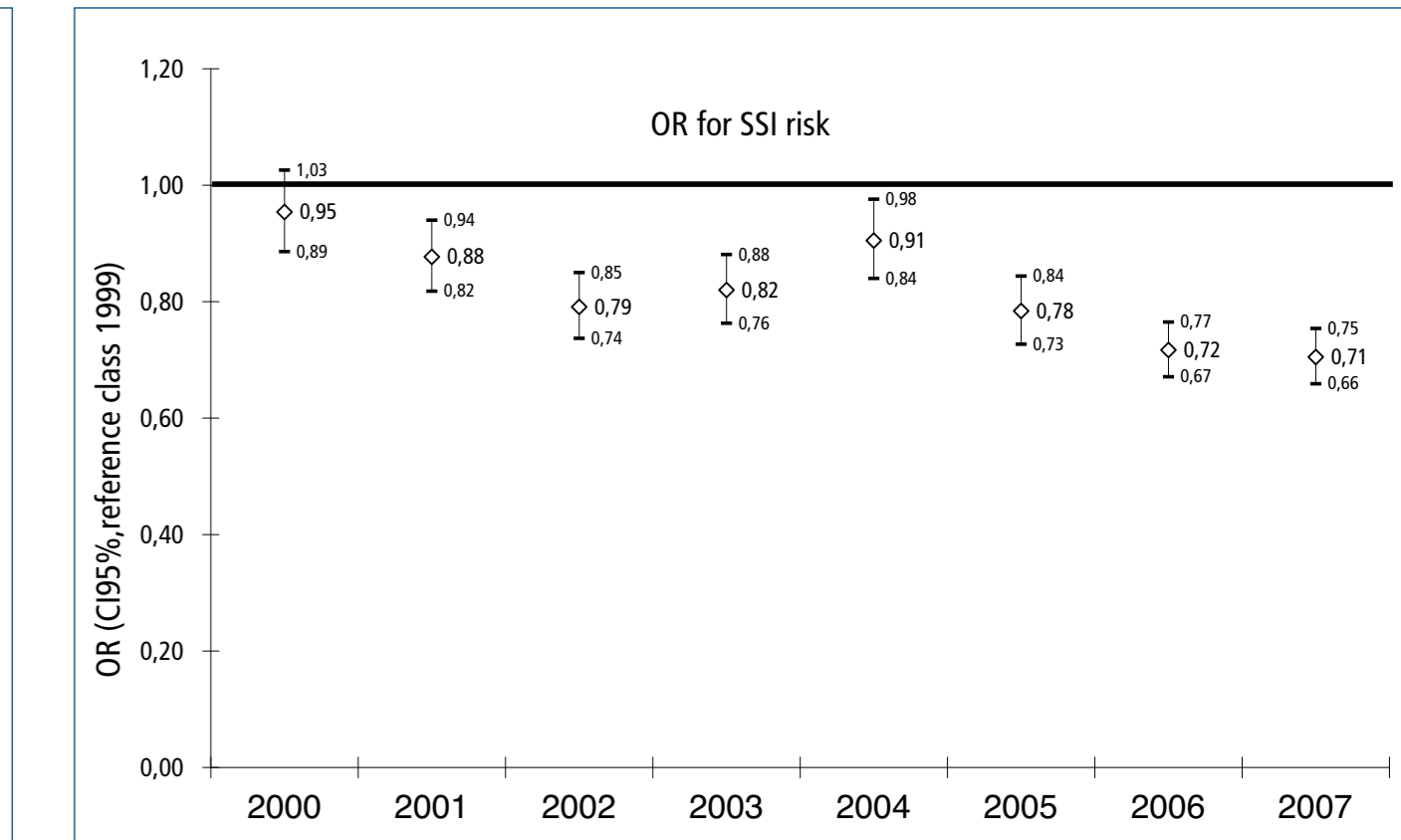
SPECIFIC PROCEDURES SSI RATES EVOLUTION

NNIS-0 SSI incidence rate decrease significant for hernia repair, cholecystectomy, hip prosthesis, C-section, and colorectal surgery (-35%, not shown).



MULTIVARIATE ANALYSIS

SSI incidence rate decrease by 29.5%, independently of other associated SSI risk factors.



THE LAST 4 YEARS (2004-2007)

Year	DISTRIBUTION OF SSI RATES (%) AMONG PARTICIPATING WARDS					
	n	mean	SD	p25	med.	p75
2004	118	1.63	0.16	0.52	1.16	2.24
2005	176	1.37	0.13	0.00	0.96	1.91
2006	357	1.31	0.10	0.00	0.78	1.80
2007	393	1.25	0.09	0.00	0.76	1.65

- In 2007, 65% of surgery wards had SSI incidence rate lower than the median value in 2004.

Conclusion

- SSI risk decreased in France during the last decade.
- This results emphasize the impact of a national policy of SSI surveillance and on SSSI risk reduction.
- Efforts to be maintained in some procedures.