

# Best of SF2H 2016 : Infection du site opératoire

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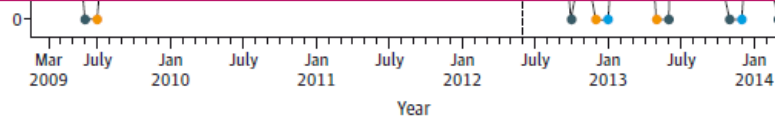
*UHLIN*

*Hôpital Bichat – Cl Bernard, Paris*

# Pré-opératoire : bundle *S. aureus*

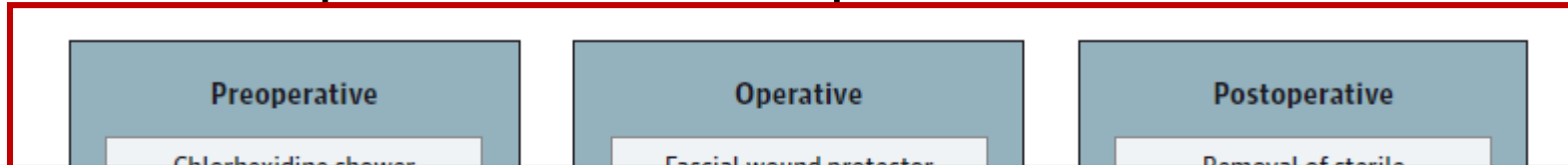
- 20 hôpitaux, 40 mois, étude avant- après,
- Ch card (n= 10 833) + PTH PTG (n= 31 701)
- Dépistage, mupirocine + chlorhexidine x 5 j. (SASM ou SARM)  
+ vancomycine (SARM)

	Preintervention Period		Intervention Period		Rate Ratio for Bundled Intervention (95% CI)	P Value
	No. of Operations	Mean Rate (95% CI)	No. of Operations	Mean Rate (95% CI)		
All operations	28 218	36 (25-51)	14 316	21 (13-32)	<u>0.58 (0.37-0.92)<sup>a</sup></u>	.02
Urgent/emergent			1189	37 (15-88)	1.03 (0.41-2.57) <sup>a</sup>	.95
Scheduled			13 127	20 (13-30)	0.55 (0.35-0.86) <sup>a</sup>	.009
Cardiac operations	7576	46 (26-82)	3257	40 (23-70)	<u>0.86 (0.47-1.57)<sup>b</sup></u>	.63
Urgent/emergent			571	67 (32-137)	1.44 (0.53-3.91) <sup>b</sup>	.48
Scheduled			2686	33 (18-62)	0.72 (0.45-1.15) <sup>b</sup>	.17
Hip or knee arthroplasties	20 642	32 (21-48)	11 059	15 (10-24)	<u>0.48 (0.29-0.80)<sup>c</sup></u>	.005
Urgent/emergent			618	14 (3-75)	0.44 (0.07-2.72) <sup>c</sup>	.38
Scheduled			10 441	16 (10-26)	0.51 (0.30-0.85) <sup>c</sup>	.009

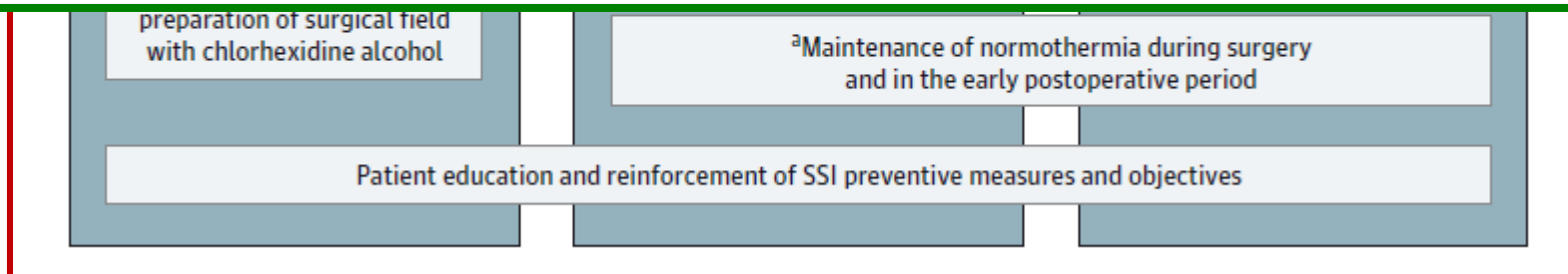


# Pré-opératoire : bundle global

- Monocentrique, étude avant-après, Ch colorectale, 5 ans,

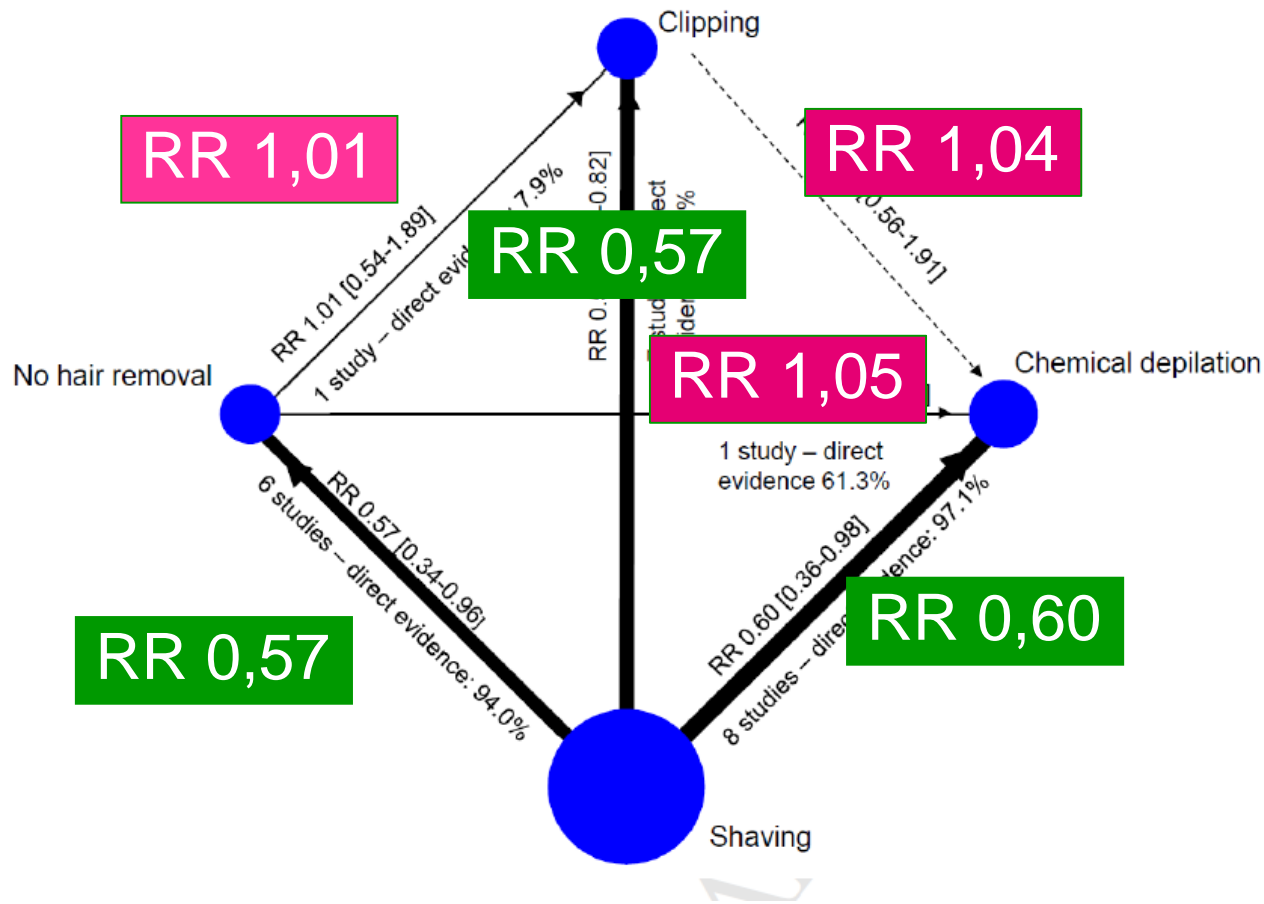


Characteristic	Prebundle Period (n = 212)	Postbundle Period (n = 212)	P Value
Superficial SSI, No. (%)	41 (19.3)	12 (5.7)	<.001
Deep SSI, No. (%)	3 (1.4)	0	.25
Organ-space SSI, No. (%)	11 (5.2)	6 (2.8)	.32
Wound disruption, No. (%)	5 (2.4)	3 (1.4)	.72
Postoperative sepsis, No. (%)	18 (8.5)	5 (2.4)	.009
Length of stay, median (Q1-Q3), d	5.5 (4-8)	5.0 (3-7)	.05
30-d Readmission, No. (%)	32 (15.1)	19 (9.0)	.14
Variable direct costs, median (Q1-Q3), \$	8391 (6781-11 311)	9681 (7915-11 745)	.70



# Préparation cutanée : dépilation

*Revue de 19 études, méta-analyse en réseau*



# Préparation cutanée : antiseptie

## *GHG-alcool vs PVI-alcool n° 1*

- RCT, monocentrique, 3,7 ans, **césarienne**,
- CHG2%-70%IPA vs PVI8,3%-72%IPA, avec applicateur
- 1147 patientes (42% en urgence)

	CHG-A (n= 572)	PVI-A (n= 573)	RR	P
• <b>ISO</b>	<b>23 (4,0%)</b>	<b>42 (7,3%)</b>	<b>0,55</b>	<b>0,05</b>
– Superficielle	17 (3,0%)	28 (4,9%)		0,10
– Profonde	6 (1,0%)	14 (2,4%)		0,07
• Endométrite	8 (1,4%)	11 (1,9%)		0,49
• Visite médicale	45 (7,9%)	72 (12,5%)		0,009

# Préparation cutanée : antiseptie

## *GHG-alcool vs PVI-alcool n°2*

- RCT, monocentrique, 17 mois, **césarienne programmée**,
- AS alcooliques (CHG, PVI ou CHG + PVI), mais lesquels ?
- 1404 patientes

Characteristic	Iodine (n=463)	Chlorhexidine (n=474)	Both (n=467)
Any SSI	21 (4.6)	21 (4.5)	18 (3.9)
SSI type			
Superficial	16 (3.5)	15 (3.2)	15 (3.2)
Deep	3 (0.7)	3 (0.6)	1 (0.2)
Organ			2 (0.4)

Limites :

- Quels antiseptiques ?
- Surveillance post opératoire ?

# Préparation cutanée : antiseptie

## *CHG-alcool vs iode-alcool n°3*

- Multicentrique, 2.5 ans, **Ch colorectale**
- AS alcooliques (CHG-alcool 70% vs 0.7% iode-alcool 74%)
- Analyse post-hoc, score de propension

<i>Outcome of interest</i>	<i>CHG+IPA, N (%)</i>	<i>IP+IPA, N (%)</i>	<i>Unadjusted OR<sup>a</sup> (95% CI)</i>	<i>p</i>	<i>Adjusted OR<sup>a</sup> (95% CI)</i>
Superficial SSI	24 (5.7)	7 (6.1)	0.88 (0.38–2.06)	0.77	0.81 (0.25–2.64) <sup>b</sup>
Any SSI	41 (9.7)	9 (7.8)	1.21 (0.58–2.54)	0.61	1.35 (0.56–3.27) <sup>b</sup>
Any wound complication	44 (10.4)	12 (10.4)	0.97 (0.50–1.88)	0.92	1.04 (0.47–2.31) <sup>b</sup>
Readmission within 30 d	16 (3.8)	1 (0.9)	3.07 (0.57–16.67)	0.19	7.25 (0.77–68.01) <sup>c</sup>
Total number of subjects	425	115	–	–	–

# Peri-opératoire : pansement gentamicine

- 5 hôpitaux, 31 mois, Fr col fémoral → héli-arthroplastie
- Etude randomisée, contrôlée, ouverte
- Age moyen : 82 et 83 ans, mortalité : 6.4 et 9%

End Points	Gentamicin-Collagen Sponge Group (n = 329)	Control Group (n = 355)	Total (n = 684)	Relative Risk (95% CI)	P Value
<b>Primary end point</b>					
Any SSI	16 (4.9)	19 (5.4)	35 (5.1)	0.91 (.48–1.79)	.77
<b>Secondary end points</b>					
Superficial SSI	2 (0.6)	3 (0.8)	5 (0.7)	0.72 (.12–4.28)	.99
Deep SSI	14 (4.3)	16 (4.5)	30 (4.4)	0.94 (.47–1.90)	.87
Surgical revision for SSI	11 (3.3)	13 (3.7)	24 (3.5)	0.91 (.41–2.0)	.81
Soft tissue debridement	9 (2.7)	9 (2.5)	18 (2.6)	1.08 (.43–2.69)	.87
Hospital stay, d, mean (SD)	6.8 (5.65)	6.4 (4.51)	6.6 (5.11)		.26
Δ serum creatinine, μmol/L, mean (SD) <sup>a</sup>	3.63 (17.9)	0.06 (17.2)	1.8 (17.6)		.02
<b>Bacterial etiology of deep SSI</b>					
	(n = 14)	(n = 16)	(n = 30)		
<i>Staphylococcus aureus</i>	5 (1.5)	7 (2.0)	12 (1.8)	0.77 (.25–2.44)	.65
CoNS	4 (1.2)	2 (0.6)	6 (0.9)	2.16 (.40–11.7)	.44
Gram-negative	1 (0.3)	1 (0.3)	2 (0.3)	1.08 (.07–17.2)	.99
Polymicrobial	1 (0.3)	3 (0.8)	4 (0.6)	0.36 (.04–3.44)	.63
Enterococci	0	1 (0.3)	1 (0.1)	1.00 (.99–1.01)	.99
Culture negative	3 (0.9)	2 (0.6)	5 (0.7)	1.62 (.27–9.63)	.68

# Ventilation du bloc opératoire

*Positive approach: LAF protects from surgical site contamination*

- One single orthopaedic unit:
  - Consecutive air sampling (20-minutes periods) = 255 samples
  - 30 procedures in conventional Or → 32/91 (35%) >10 UFC/m<sup>3</sup>
  - 33 procedures in OR with LAF → 2/164 (1%) >10 UFC/m<sup>3</sup>

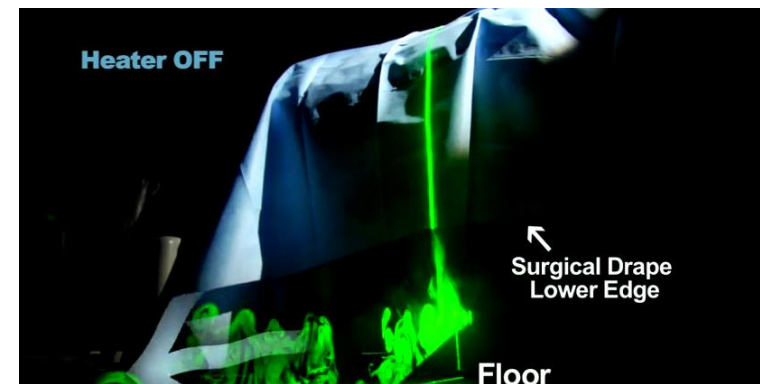
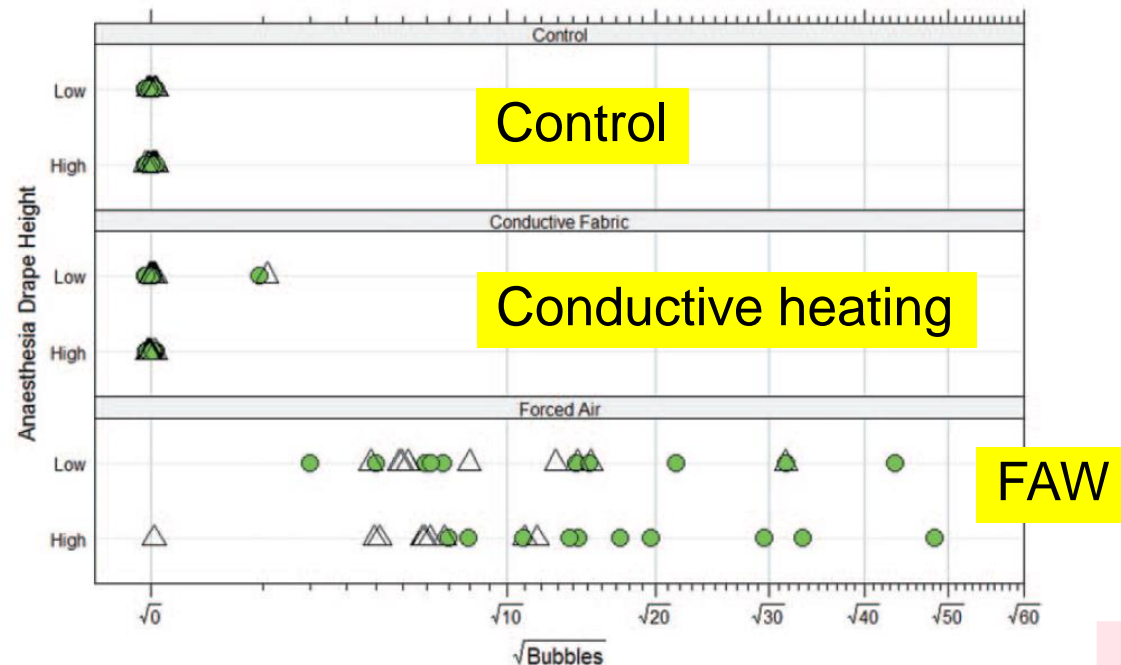
Impact of door opening and presence in the OR on CFU/m<sup>3</sup>

	IRR changes, CFU/m <sup>3</sup>	95% Confidence interval	P
Door openings in			
Displacement ventilation	1.033	1.014-1.05	<.001
Laminar airflow	0.990	0.927-1.058	.78
Number of people present*			
Displacement ventilation	1.127	1.079-1-177	<.001
Laminar airflow	.925	0.806-1.062	.27

# Ventilation du bloc opératoire

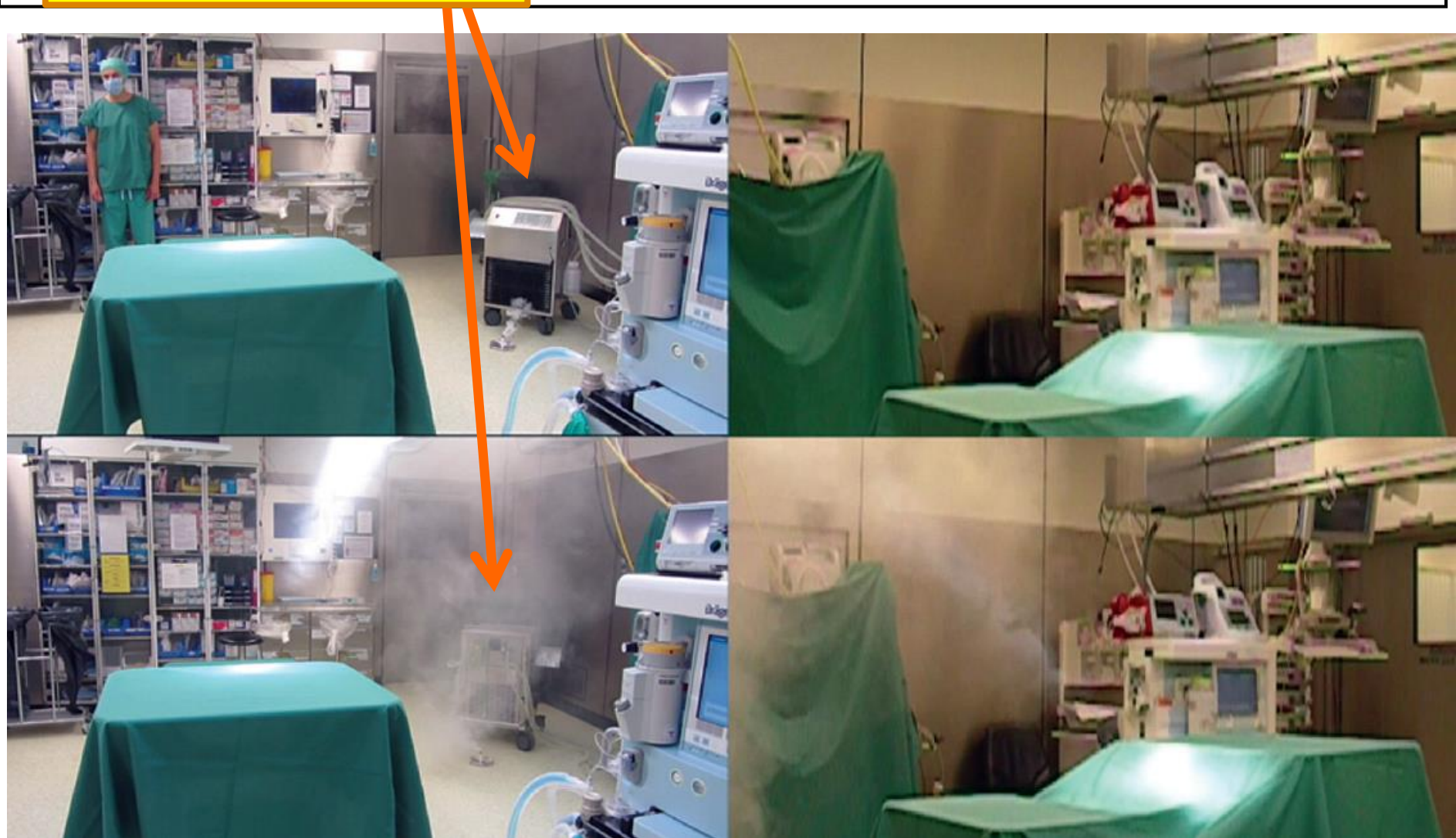
## Forced air warming

- Simulation of “heat bubbles” from the anaesthesia site
- Mobilisation of bubbles into the sterile surgical site



# Sens du générateur thermique

## Break of *Mycobacterium chimaera* open-Chest Heart Surgery

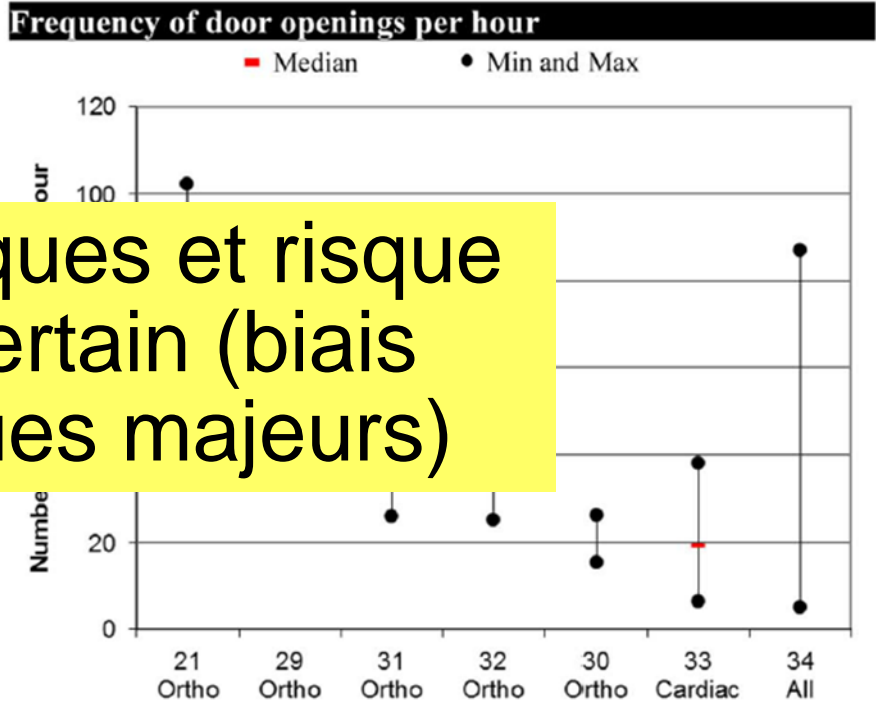
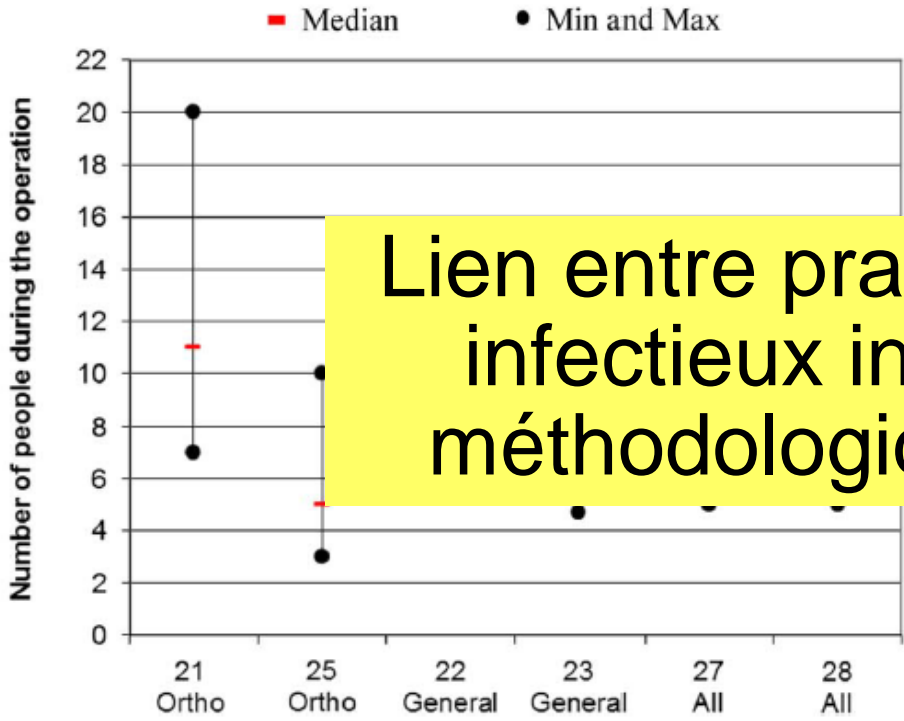


Sax H et al, Clin Infect Dis 2015 ; Sommerstein, R et al, Emerg Infect Dis 2016

# Influence of Staff Behavior on Infectious Risk in Operating Rooms: What Is the Evidence?

## Fréquentation en salle

## Ouverture des portes



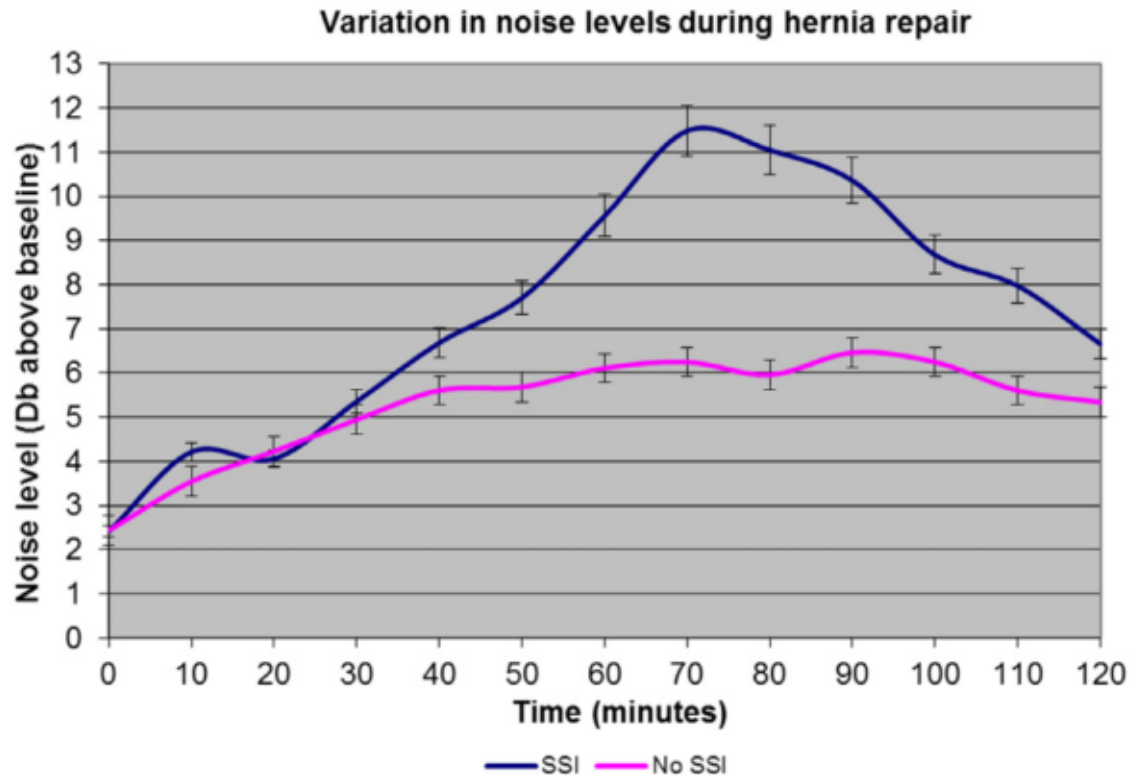
Lien entre pratiques et risque infectieux incertain (biais méthodologiques majeurs)

# Impact of noise

- **Objective:** correlation between noise level and SSI
- **Population:** 64 inguinal hernias, 5 superficial SSIs

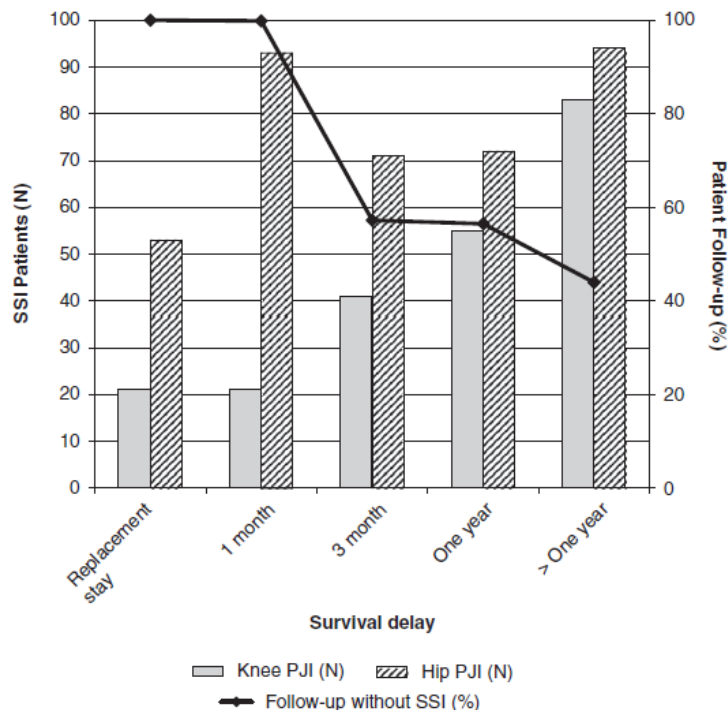
## *Most frequent noise sources:*

- Music
- Discussions outside the patient's care



# Surgical Site Infection After Primary Hip and Knee Arthroplasty: A Cohort Study Using a Hospital Database

- 32 678 PTH/PTG dans 39 ES (région centre) en 5 ans
- Codage CCAM/MSI, chainage des hospitalisations
- Taux d'ISO : 1,31%



## Facteurs de risque d'ISO :

- Age >75ans, sexe masculin, maladie hépatique/alcoolisme, escarre, I rénale chronique, dénutrition, obésité

## Mais :

- Qualité des données MSI?
- Score ASA?
- Urgence (fracture du col fémoral) ?
- Perdus de vue ?

# Matching Bacteriological and Medico-Administrative Databases Is Efficient for a Computer-Enhanced Surveillance of Surgical Site Infections: Retrospective Analysis of 4,400 Surgical Procedures in a French University Hospital

- Nantes, deux ans, 4400 gestes de 9 spécialités, ISO : 2,5%
- Algorithmes : administratif/bactériologie (<J40 ou <J400)/les 2
- Référence = surveillance clinique

Algorithm and SSI depth	Sensitivity	Specificity	Positive predictive value
1 <b>MSI</b>			
Superficial	24.1 (8.6–39.7)	97.6 (97.1–98)	6.2 (1.8–10.6)
Deep	25.3 (15.9–34.7)	97.9 (97.4–98.3)	18.6 (11.4–25.8)
All	25 (17.0–33.0)	98 (97.6–98.4)	24.8 (16.8–32.7)
2 <b>Bacterio</b>			
Superficial	58.6 (40.7–76.5)	90.1 (89.2–91.0)	3.8 (2.0–5.5)
Deep	96.4 (92.4–99.2)	91.4 (90.6–92.2)	17.7 (14.2–21.3)
All	86.6 (80.3–92.9)	91.7 (90.9–92.6)	21.5 (17.7–25.3)
3 <b>MSI + bactério</b>			
Superficial	65.5 (48.2–82.8)	89.4 (88.4–90.3)	3.9 (2.2–5.7)
Deep	98.8 (96.4–100)	90.7 (89.8–91.6)	16.9 (13.6–20.3)
All	90.2 (84.7–95.7)	91.1 (90.2–91.9)	20.9 (17.2–24.5)

# Strategies to Prevent Surgical Site Infections in Acute Care Hospitals: 2014 Update