

# Pneumopathies et Cathéters veineux



*Lu pour vous!*



Par Gabriel Birgand

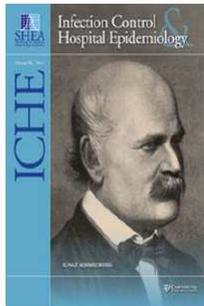
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@Gbirgand

# The Clinical Impact and Preventability of Ventilator-Associated Conditions in Critically Ill Patients Who Are Mechanically Ventilated

 CHEST™



**Preventable Proportion of Severe Infections Acquired in Intensive Care Units: Case-Mix Adjusted Estimations from Patient-Based Surveillance Data**

**Attributable mortality of ventilator-associated pneumonia: a meta-analysis of individual patient data from randomised prevention studies**

THE LANCET  
Infectious Diseases

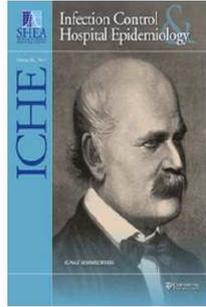
# Mortalité attribuable et PAVM

- Meta-analyse de données individuelles
  - 24 études et 6284 patients (16.8% DCD)

	Total number of patients	RRR VAP (95% CI)	RRR mortality (95% CI)	Attributable mortality (95% CI*)
All studies	6284	0.30 (0.21 to 0.38)	0.04 (-0.06 to 0.12)	13% (-0.14 to 0.38)
Trauma	1159	0.40 (0.25 to 0.52)	-0.08 (-0.45 to 0.19)	0% (-1.06 to 0.45)
Medical	3314	0.32 (0.17 to 0.43)	-0.01 (-0.14 to 0.11)	0% (-0.41 to 0.29)
Surgical	1560	0.26 (0.04 to 0.43)	0.18 (-0.01 to 0.33)	69% (0.08 to 3.60)
APACHE <20				
Unadjusted	1588	0.31 (0.10 to 0.47)	0.00 (-0.26 to 0.20)	0% (-0.94 to 0.72)
Adjusted†	1521	0.34 (0.14 to 0.49)	-0.03 (-0.31 to 0.18)	0% (-0.97 to 0.77)
APACHE 20–29	1176	0.28 (0.05 to 0.45)	0.10 (-0.12 to 0.27)	36% (-0.29 to 1.51)
APACHE ≥30	359	0.47 (0.08 to 0.70)	-0.03 (-0.39 to 0.23)	0% (-0.95 to 0.37)
SAPS 2 <35	364	0.45 (0.08 to 0.67)	-0.23 (-1.18 to 0.30)	0% (-4.48 to 0.82)
SAPS 2 35–58	723	0.38 (0.11 to 0.56)	0.18 (-0.07 to 0.38)	47% (-0.13 to 1.08)
SAPS 2 ≥58	377	0.35 (-0.05 to 0.60)	-0.12 (-0.50 to 0.16)	0% (-2.27 to 0.60)

Mortalité attribuable à la ventilation = 13%

- Risque compétitifs:
  - Risque de décès plus lié à la durée de séjour qu'à l'effet direct de la ventilation



# Quelle proportion de PAVM évitable?

- Données HELICS-ICU, 10 pays, 78222 patients
  - Nbre d’infections prévu (10% des meilleurs réa) et ajustement sur le case-mix
  - Simulation des données individuelles temporelles
  - 8% PAVM et 5% bactériémies (63% CLABSI)

Variable	No. of cases preventable <sup>a</sup> (95% CI)	Proportion of cases preventable <sup>b</sup> (95% CI)
<b>VAPs</b>	<b>3,148 (2,978–3,318)</b>	<b>.52 (0.52–0.52)</b>
VAPs per 100 patients with mechanical ventilation	6.2 (5.9–6.5)	.51 (0.51–0.51)
VAPs per 1,000 ventilator-days	8.4 (8.1–8.8)	.55 (0.54–0.55)
<b>BSIs</b>	<b>2,496 (1,596–3,396)</b>	<b>.69 (0.68–0.70)</b>
BSIs per 100 admissions	3.2 (2.0–4.3)	.68 (0.67–0.70)
BSIs per 1,000 ICU-days	3.3 (2.1–4.6)	.69 (0.69–0.70)

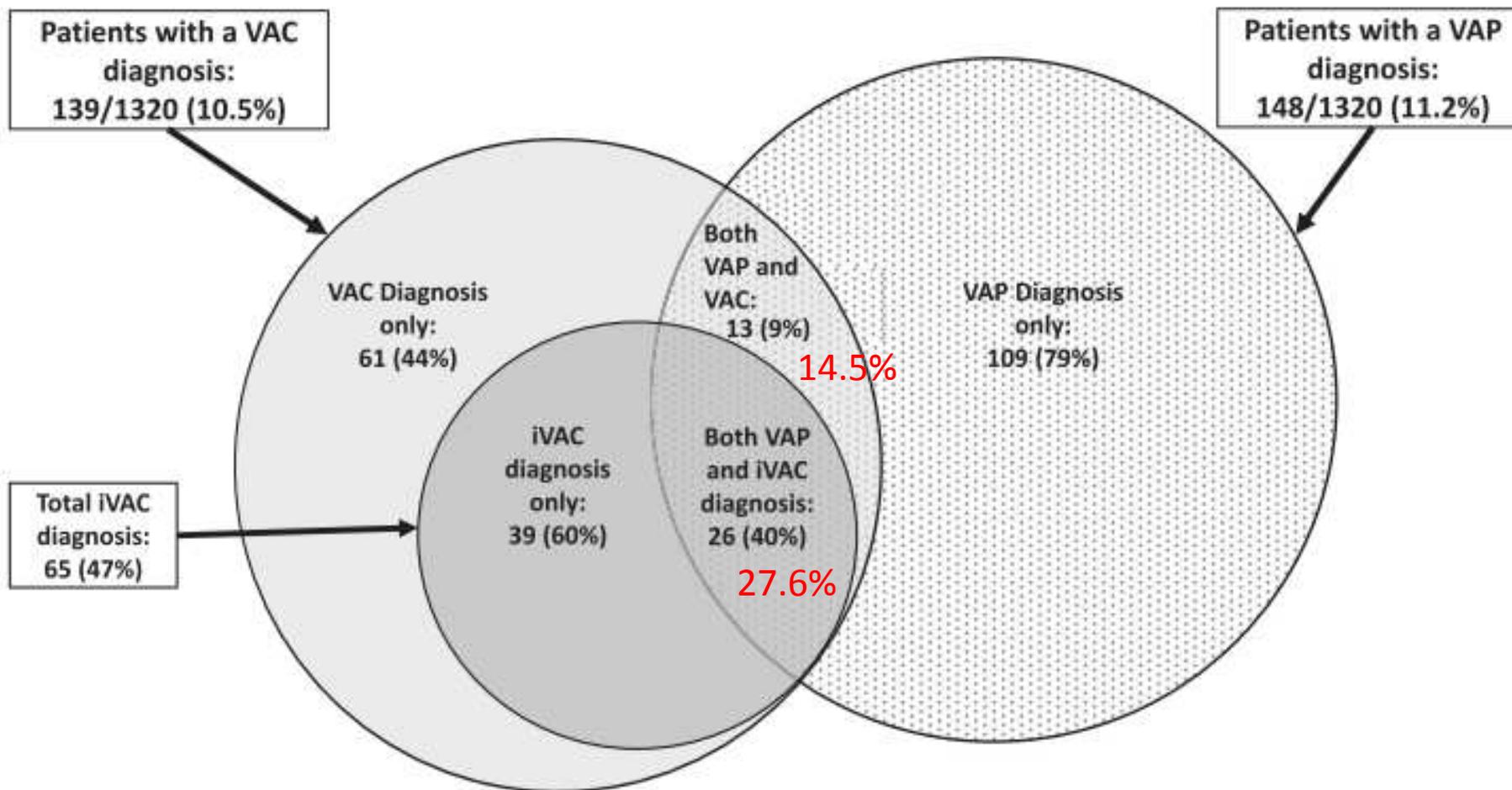
# Surveillance des PAVM

- Diagnostic PAVM subjectif: algorithm CDC
  - PAVM: Radio + Pus trachéale +/- T° +/- Leuco
  - Base OUTCOMEREA: Evènements associés à la ventilation

3028 pts ventilés	Condition associé à ventilation (VAC)	Infections liées complications de ventilation (iVAC)
Déterioration respi	77%	77%
Synd Rep Infl Sys		70%
ATB		29%
VPP	0.32 (0.30–0.34)	0.50 (0.47–0.53)
VPN	0.90 (0.88–0.92)	0.86 (0.84–0.87)

**Indicateur de BU ATB =  $\sphericalangle$  VAC et  $\sphericalangle$  ATB**  
**VAE = bon indicateur qualité mais prévention difficile à construire**

# Surveillance des PAVM



**Effect of Oropharyngeal Povidone-Iodine Preventive Oral Care on Ventilator-Associated Pneumonia in Severely Brain-Injured or Cerebral Hemorrhage Patients: A Multicenter, Randomized Controlled Trial\***



**Reducing ventilator associated pneumonia in adult patients through high standards of oral care: A historical control study**

**Oral hygiene care for critically ill patients to prevent ventilator-associated pneumonia (Review)**



**Preintubation Application of Oral Chlorhexidine Does Not Provide Additional Benefit in Prevention of Early-Onset Ventilator-Associated Pneumonia**



**Reappraisal of Routine Oral Care With Chlorhexidine Gluconate for Patients Receiving Mechanical Ventilation Systematic Review and Meta-Analysis**

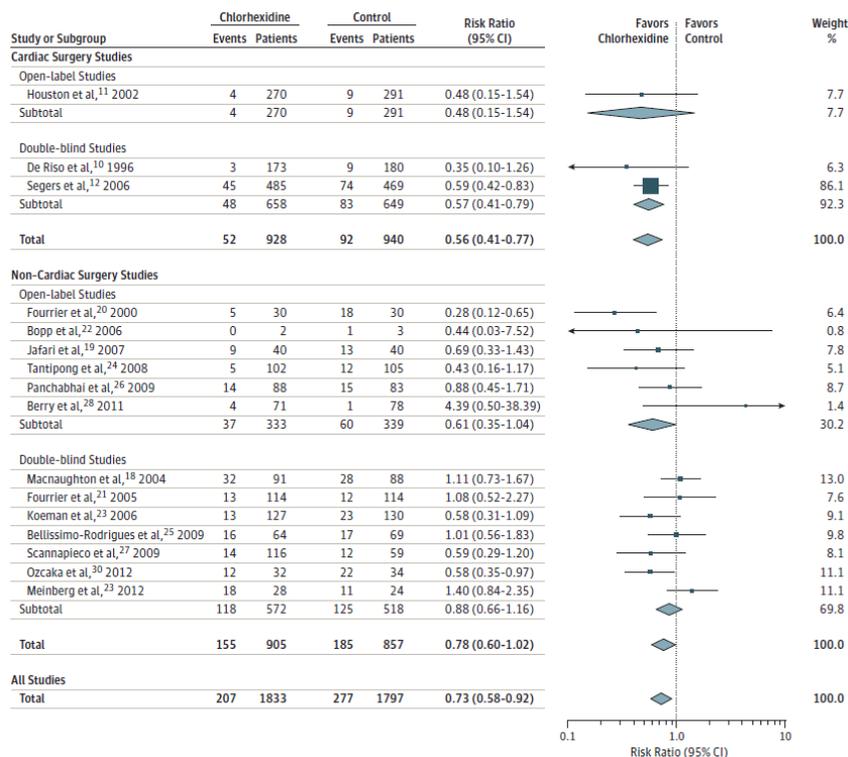
## Soins de bouche des patients de réanimation pour prévenir les PAVM

- CHG vs Placebo:
  - 17 RCT: PAVM → OR 0.60 (0.47-0.77),  $P < 0.001$
- Brosse à dent vs bâtonnet:
  - 4 RCT: PAVM → 0.69 (0.36-1.29),  $P = 0.24$
- Brosse à dent électrique vs manuelle
  - 1 seule étude, pas d'évidence
- Autres produits
  - PVPI > solution saline, faible évidence
  - Solution saline = pulsée ou écouvillon



# Soins de bouche des patients de réanimation pour prévenir les PAVM

- Meta-analyse de 16 études
  - Soins quotidien chlohexidine vs produit neutre
  - 3 études en chir cardiaque et 13 autres spécialités



Baisse des PAVM en chirurgie cardiaque  
RR= 0.56 (0.41-0.77)

Pas d'impact dans les autres spécialités  
RR= 0.78 (0.60-1.02)

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**Critical Care  
Medicine**



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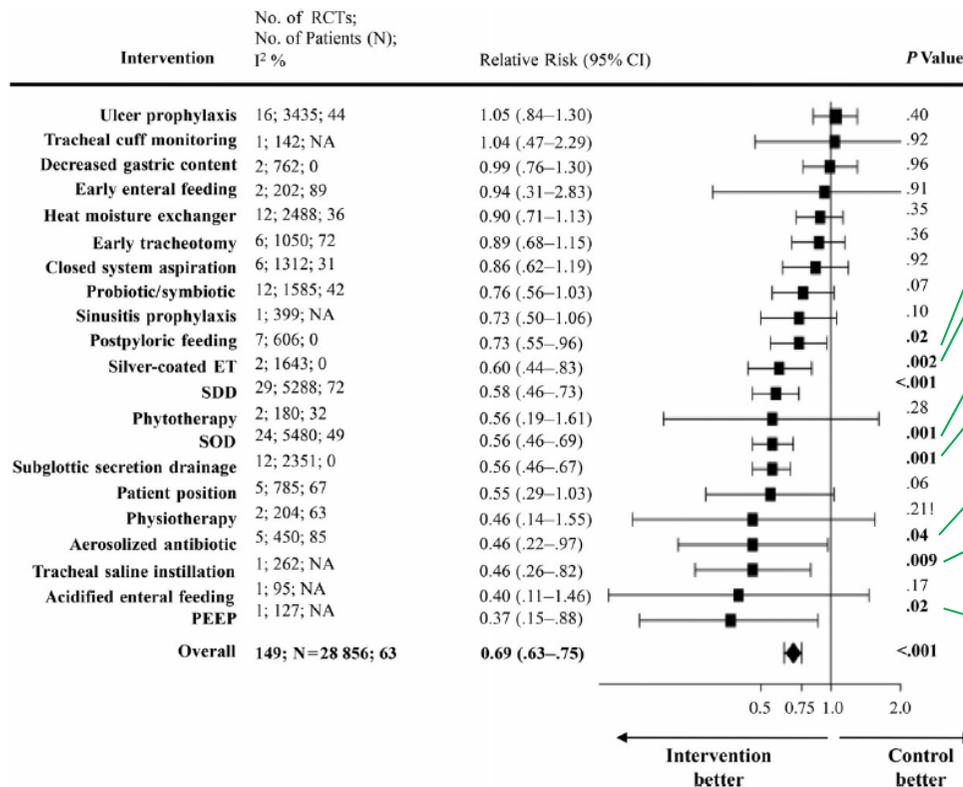
**CHEST**

**JAMA**  
Internal Medicine

**Reappraisal of Routine Oral Care With Chlorhexidine Gluconate for Patients Receiving Mechanical Ventilation Systematic Review and Meta-Analysis**

# La prévention des pneumopathies pour réduire la mortalité en réanimation

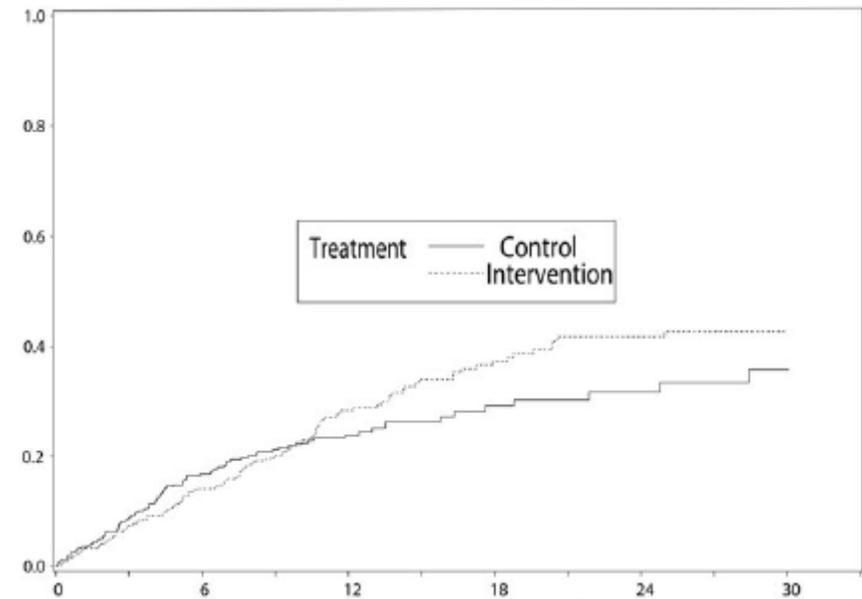
- Méta-analyse: 145 RCT (25856 patients)
  - PAS: 14.9% intervention vs 21.7% témoin



- Nutrition post-pylorique
- Sonde imprégnée d'argent
- Décolonisation digestive
- Décolonisation oropharyngée
- Drainage des sécrétion subglottiques
- Aérosol d'ATB
- Pression expiratoire positive

## Prévention des pneumopathies en EHPAD

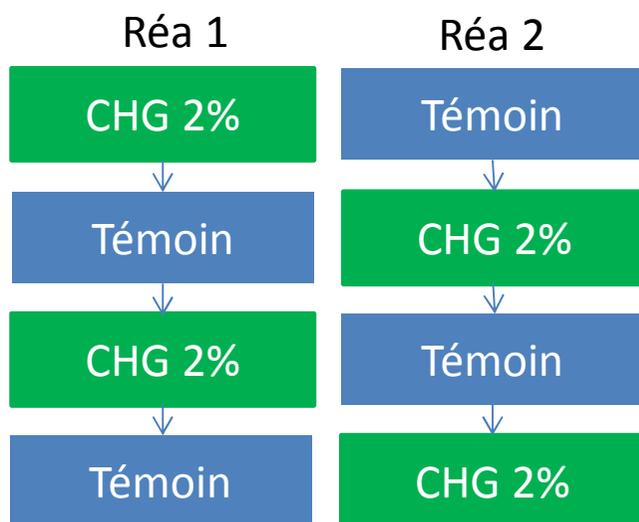
- Essai randomisé en cluster:
  - 434 vs 400 Pts, 18 EHPAD
- Intervention:
  - Brossage de dents CHG 0,12%
  - Position droite repas
- Critère: pneumopathie et infection basse



Outcomes	Total (N = 834)		Adjusted Cox Model <sup>a</sup>		
	No. (%)	Rate <sup>b</sup> (95% CI)	Hazard Ratio	(95% CI)	P Value
First Pneumonia <sup>c</sup>	213 (25.5)	0.27 (.22–.33)	1.12 <sup>d,e</sup>	(.84–1.50)	.44
First LRTI	225 (27.0)	0.28 (.23–.34)	1.07	(.79–1.46)	.65
Death	210 (25.2)	0.22 (.19–.26)	1.16	(.88–1.53)	.29

## Toilette à la chlorhexidine et IAS

- Essai randomisé en cluster en cross-over
  - 5 Réanimations adultes (n=10783), Toilette quotidienne CHG 2%
  - Infections CVC (4/4), sonde urinaire (21/32), PAVM (17/8), *C.diff* (13/16)



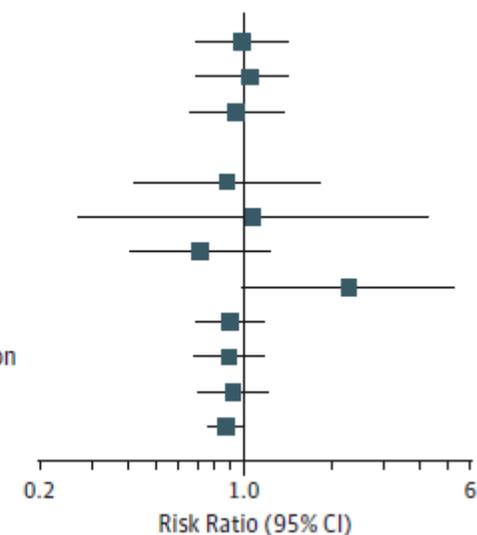
Analyses of primary composite outcome

Intention-to-treat  
As treated  
Adjusted

Secondary outcomes

CDI  
CLABSI  
CAUTI  
VAP  
MDRO  
Blood culture contamination  
HABSI  
In-hospital mortality

**RRa: 0.94 (0.65-1.37) p=0.83**



# Ethanol Lock and Risk of Hemodialysis Catheter Infection in Critically Ill Patients

A Randomized Controlled Trial



Clinical Infectious Diseases

Antimicrobial Lock Solutions as a Method to Prevent Central Line–Associated Bloodstream Infections: A Meta-analysis of Randomized Controlled Trials

Adjunctive management of central line-associated bloodstream infections with 70% ethanol-lock therapy

Journal of Antimicrobial Chemotherapy



Central Catheter–Associated Bloodstream Infection Reduction With Ethanol Lock Prophylaxis in Pediatric Intestinal Failure

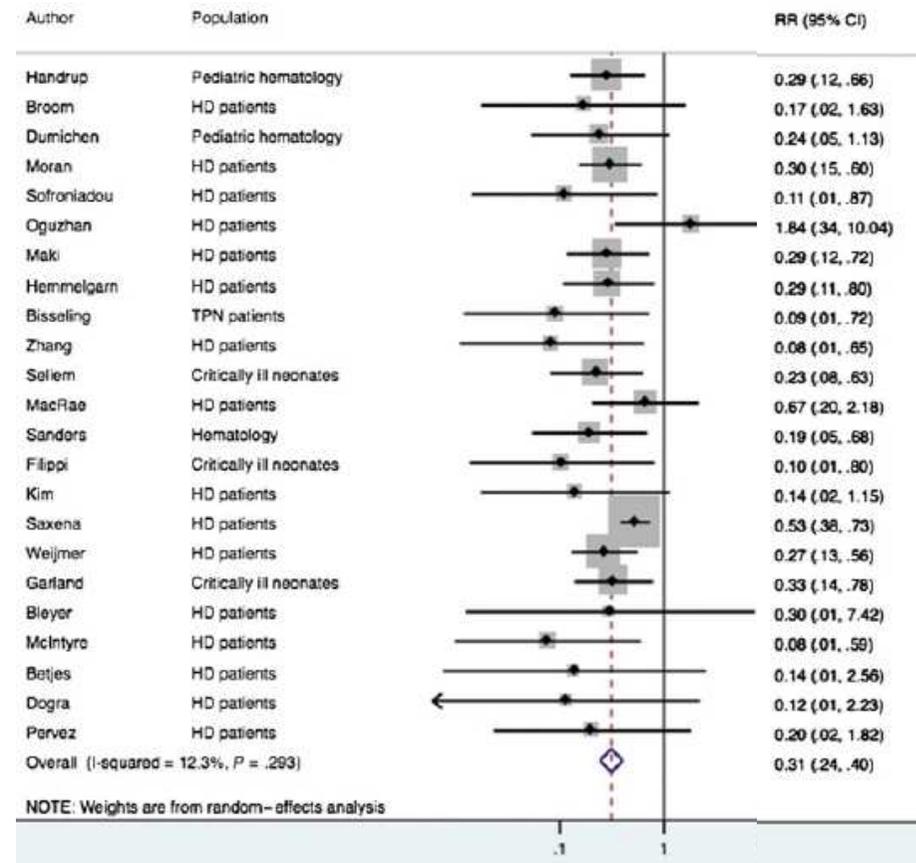
Taurolidine Lock Is Superior to Heparin Lock in the Prevention of Catheter Related Bloodstream Infections and Occlusions



# Verrou antibiotiques prophylactique

- Méta-analyse de 23 RCT et 2896 patients

- Genta (5), Vanco (2), Cefotax, Mino, Amik...
- Taurolidine (4), Ethanol (2), Citrate (2)
- ATB vs heparine
  - 69% réduction CLABSI
  - 32% réduction d'infect. locales
- Pas d'impact sur mortalité et complications



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## Pose des CVC par les infirmières

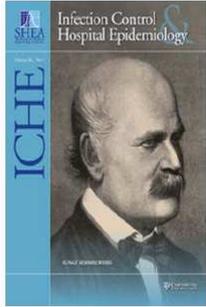
- 1 hôpital: 4760 cathéter posés en 13 ans
  - 3 IDE spécialisées (formation + 20 poses assistées)
  - Site de pose choisi par la réa, 61% pour ATB



CVC	Jug inter (n=93)	Sous clavier (n=2383)	Fémoral (n=163)	p
Pas de complication	92%	92%	94%	0.74
CRBSI (/1000 jr KT)	1 (0.1)	10 (0.03)	1 (0.8)	0.33
PICC	Basilique (n=1402)	Antécubitale (n=142)	Céphalique (n=377)	p
Pas de complication	75%	79%	43%	<0.01
CRBSI (/1000 jr KT)	0	0	1 (0.25)	0.27

0.2 CRBSI/1000 jr cathéter vs 0.2-4.2 dans études récentes

Alexandrou et al CCM 2014



# CVC hors réanimation

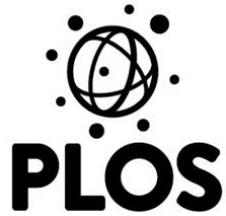
- Epidémiologie dans 1 hospital de 1200 lits
  - 156 CLABSI pour 136 patients,
  - 58% en hématologie, 76% tunnelisés, 21% PICC
  - 2.1 vs 1.5 pour 1000 jours KT en reanimation

*Tedja et al ICHE 2014*

- 1 hospital de 880 lits
  - 113 CLABSI pour 104 patients, 16 jrs après admission
  - 10.6% dialysés 48h avant, 67% hématologie
  - 23% Entérocoques, 49% PICC

18, 23, 27% (dialyse) de mortalité

*Rhee et al ICHE 2015*



## Perception des soins de cathéter veineux périphériques

- Etude qualitative:
  - 10 médecins, 18 infirmières, 10 pharmaciens, 1 SF
  - 4 hôpitaux Anglais

- Thèmes:

- Fragmentation du management/soins
- Sentiment de frustration
- Non respect des recommandations locales
- Faible risque des CVP pour le patient

Manque de vue  
d'ensemble

Ambiguïté des tâches

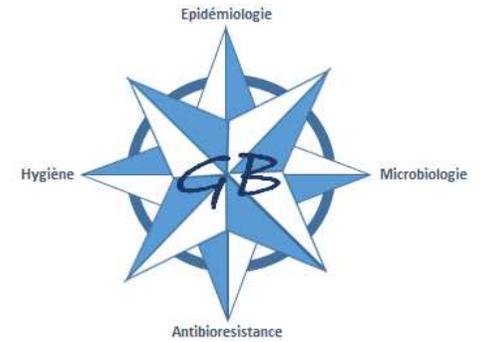
Evidence?

En attendant l'année prochaine...



## Comparaison de 4 stratégies pour prévenir l'infection sur CVC: CLEAN

- Essai randomisé en cluster: 11 réanimations
  - 2% chlorhexidine/70% vs 5% povidone iodine/69% ethanol
  - Détersion vs pas de détersion
- Première étude et réponses très attendues...
- Extrapolation à:
  - la préparation cutanée de l'opéré?
  - La pose de cathéter veineux périphérique?



Merci pour votre attention

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