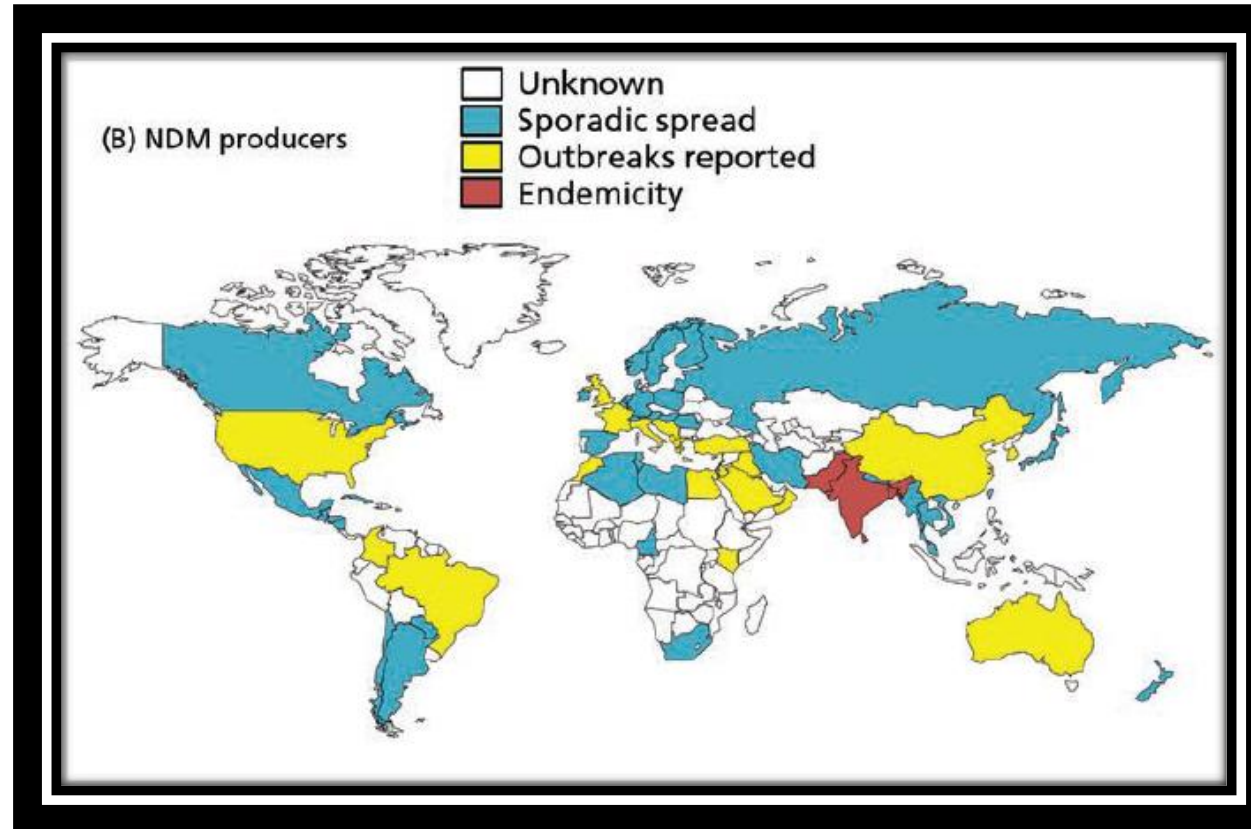
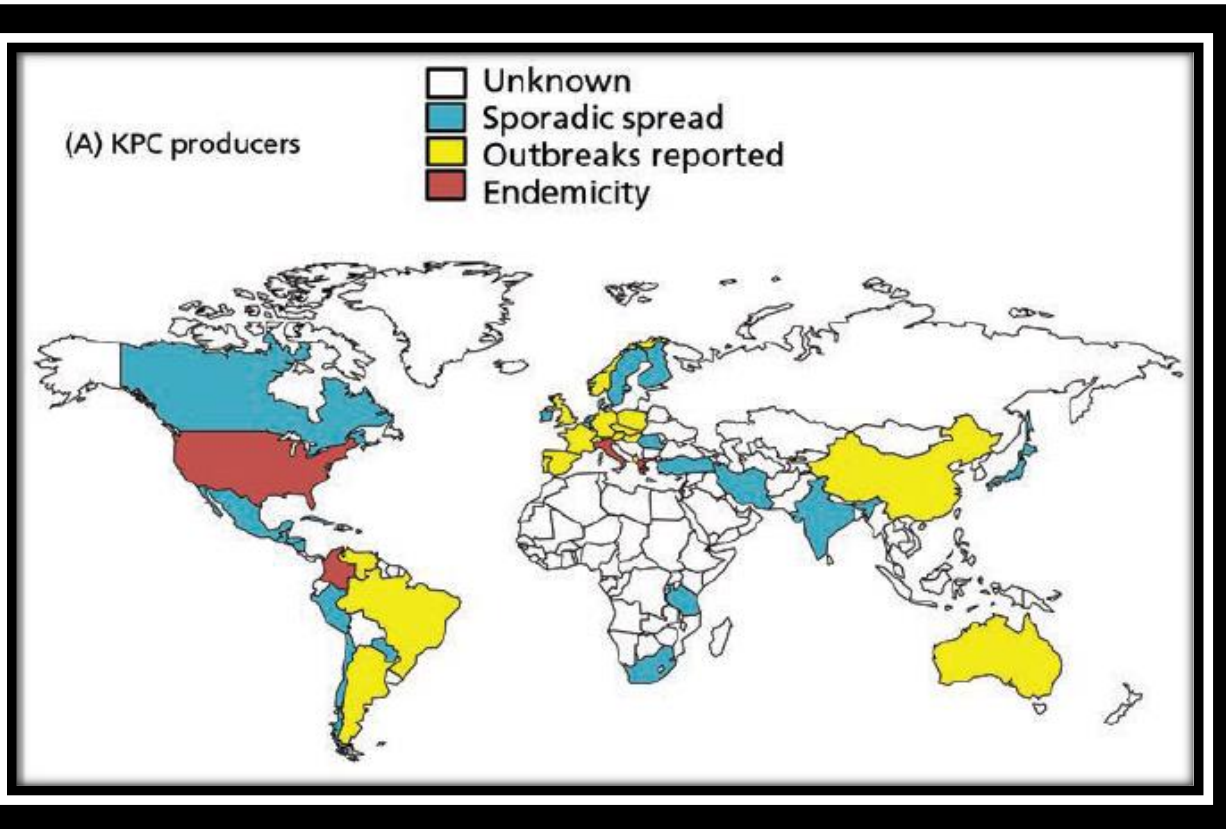


Entérobactéries Productrices de Carbapénémase Entérocoque Résistant à la Vancomycine

Best off-SF2H Montpellier 2018

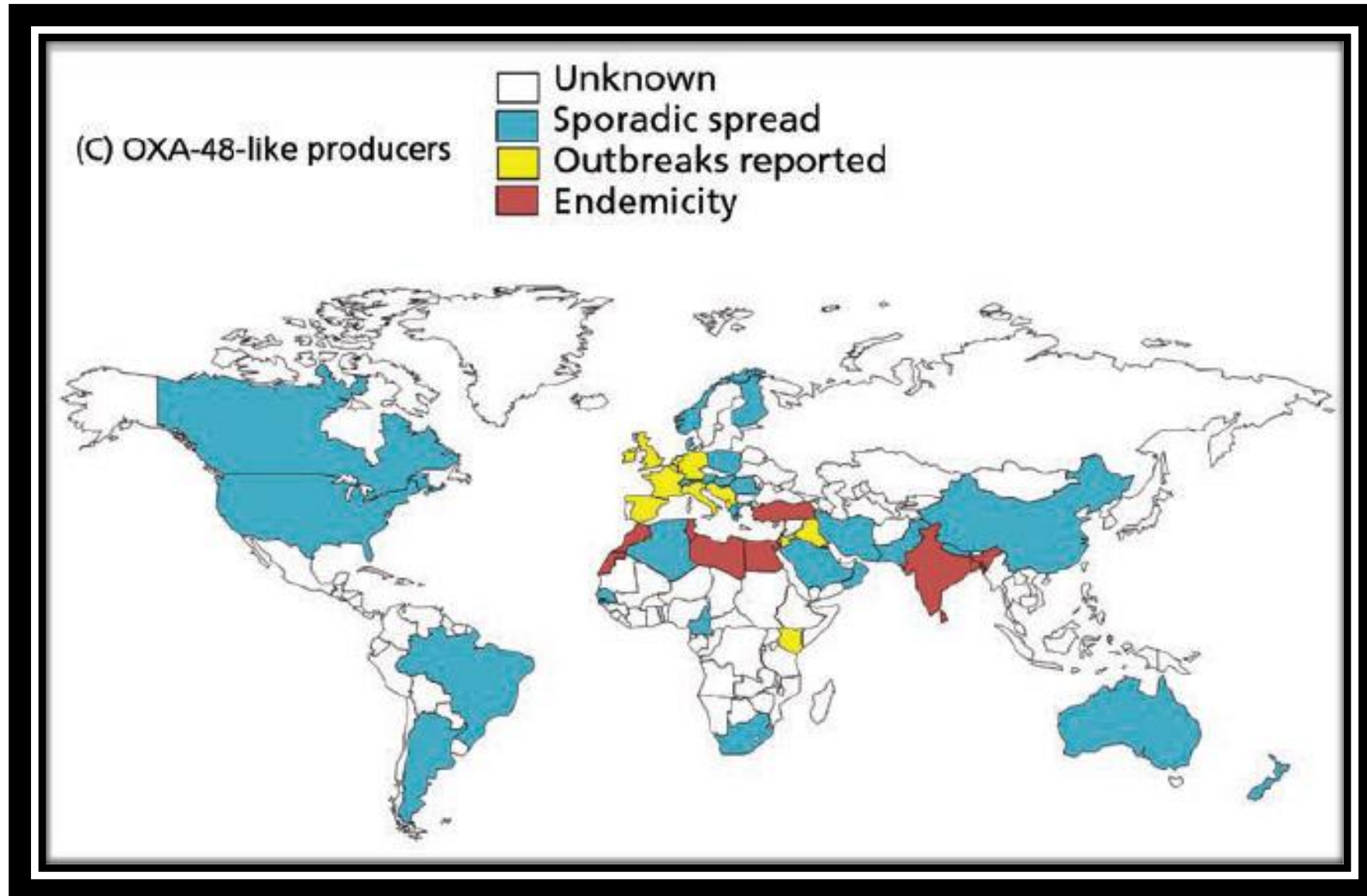
Carbapenemase-Producing Organisms: A Global Scourge

Robert A. Bonomo,¹ Eileen M. Burd,² John Conly,³ Brandi M. Limbago,⁴ Laurent Poirel,⁵ Julie A. Segre,⁶ and Lars F. Westblade⁷



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L'épidémiologie change

Carbapenem-resistant Enterobacteriaceae in the community: a scoping review

Ana M. Kelly ^{a,*}, Barun Mathema ^b, Elaine L. Larson ^{a,b}

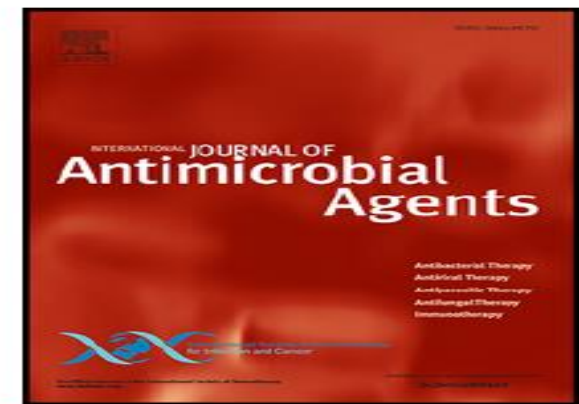
International Journal Antimicrobial Agents 2017

- La diffusion des EPC est peu connue dans la communauté
- Revue de la littérature incluant 15 études
- 10 (66%) identifient un portage/infection de **0,04% à 29,5%**

Pays	Année	Type étude	Prélèvements	Prévalence
Taiwan	2012	Rétrospective	Tous type	29,5%
USA*	2012-2013	Rétrospective		9,8%
USA	2012-2013	Rétrospective		8%
USA	2008-2012	Prospective	Clinique/colonisation	5,6%
Inde*	2011	Prospective	Gastro intestinal	9,9%
USA	2012-2013	Prospective		10,8%
Argentine	2012	Prospective	Gastro intestinal	4,9%

Outbreak of IMI-1 Carbapenemase-producing colistin-resistant
Enterobacter cloacae on the French island of Mayotte (Indian Ocean)

Guillaume Miltgen , Rémy A. Bonnin , Catherine Avril ,
Thierry Benoit-Cattin , Daniel Martak , Alexandre Leclaire ,
Nicolas Traversier , Bénédicte Roquebert ,
Marie-Christine Jaffar-Bandjee , Nathalie Lugagne ,
Laurent Filleul , Marion Subiros , Anne-Marie de Montera ,
Pascal Cholley , Michelle Thouverez , Laurent Dortet ,
Xavier Bertrand , Thierry Naas , Didier Hocquet , Olivier Belmonte



- 17 patients, 18 souches (Octobre 2015 – Janvier 2017)
- Colonisés ou infectés à *Enterobacter cloacae* Imipenem R
- 16/18 identiques appartenant au clone ST820
- Porteurs du gène *bla*_{IMI-1}

Outbreak of IMI-1 Carbapenemase-producing colistin-resistant
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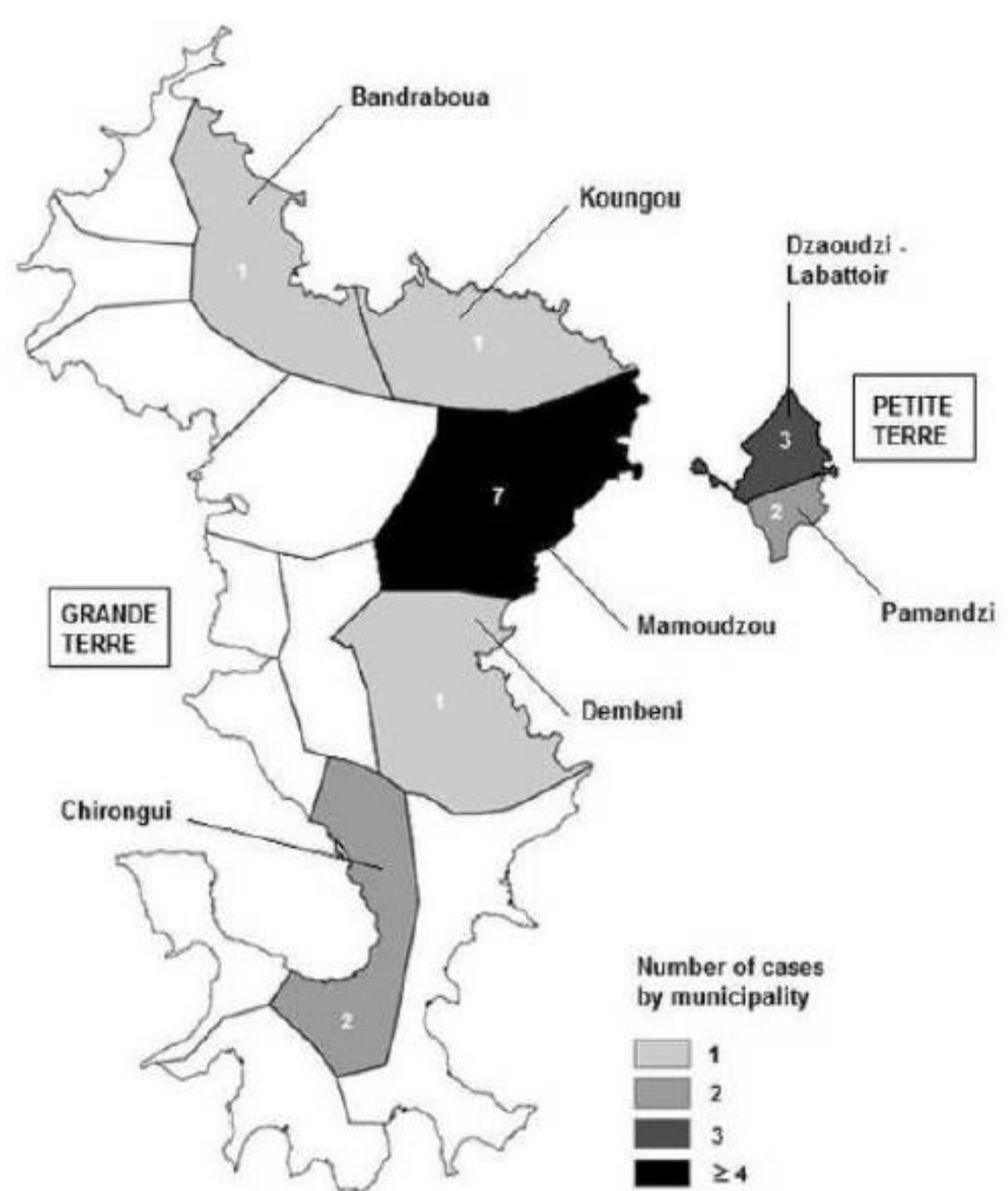
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 Laurent Fille
 Pascal Chol
 Xavier Bertr



Isolate ID	Date of isolation (MM-YYYY)	Hospital ^a	Hospital unit ^b	Gender/age	Time between admission and detection (days)	Co-colonisation with ESBL-E ^c	Type of ESBL-E ^c
E1	10-2015	MMC	ICU	Female, 65 year-old	1	Yes	<i>E. coli</i>
E2	11-2015	FGUH	Cardiology	Male, 57 year-old	1	Yes	<i>E. coli</i>
E3	11-2015	MMC	ICU	Male, 5 year-old	1	Yes	<i>E. coli</i>
E4	11-2015	FGUH	ICU	Male, 49 year-old	6	No	
E5	01-2016	MMC	ICU	Female, 51 year-old	1	Yes	<i>E. coli</i>
E6	02-2016	MMC	ICU	Female, 29 year-old	7	No	
E7	02-2016	MMC	ICU	Female, 17 year-old	1	No	
E8	03-2016	MMC	ICU	Male, 51 year-old	4	Yes	<i>E. coli</i>
E9	04-2016	FGUH	Visceral pediatric surgical unit	Female, 1 year-old	1	Yes	<i>K. pneumoniae</i>
E10	05-2016	FGUH	Gynecology and Obstetrics unit	Female, 29 year-old	4	Yes	<i>E. coli</i>
E11	05-2016	FGUH	Cardio-thoracic surgery	Female, 17 year-old	1	Yes	<i>E. coli</i>
E12a	06-2016	MMC	Neonatal ICU	Male, 4 month-old	1	Yes	<i>E. coli</i>
E12b	06-2016	MMC	Neonatal ICU	Male, 33 year-old	1		
E13	09-2016	MMC	ICU	Female, 32 year-old	1	Yes	<i>K. pneumoniae</i>
E14	10-2016	MMC	Dialysis center	Male, 72 year-old	0	Yes	<i>E. coli</i>
E15	11-2016	MMC	ICU	Female, 64 year-old	1	Yes	<i>E. coli</i>
E16	01-2017	MMC	Dialysis center	Female, 18 year-old	0	No	
E17	01-2017	FGUH	Visceral pediatric surgical unit	Male, 2 year-old	1	No	

Outbreak of IMI-1 Carbapenemase-producing colistin-resistant *Enterobacter cloacae* on the French island of Mayotte (Indian Ocean)

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Maitrise des épidémies

Risk factors for KPC-producing *Enterobacteriaceae* acquisition and infection in a healthcare setting with possible local transmission: a case control study

- Etude cas-témoin, retrospective
- Patients colonisés ou infectés à KPC (Cas) et les 4 patients consécutifs non colonisés/infectés
- 34 cas, 136 témoins

Variable	Multivariate Analysis		
	OR	(95% CI)	<i>p</i> -value
Length of stay >28 days of hospital admission, in the last 12 months	52.91	(9.65-290.17)	<0.001
Central line catheterisation in the last 30 days	12.64	(2.50-64.03)	0.002
Any exposure to broad-spectrum antibiotic in the last 30 days	7.39	(1.36-40.20)	0.021

The association between infection control interventions and CRE incidence in an endemic hospital

Khetam Hussein, MD, Galit Rabino, RN, Orna Eluk, RN, Sigal Warman, RN, Shimon Reisner, MD, Yuval Geffen, PhD, Larisa Halif, Mical Paul, MD

J Hosp Inf 2018

- Début de l'épidémie/endémie en 2006
- 965 lits, dont 44 en réanimation, peu de chambre individuelles
- Etude quasi expérimentale

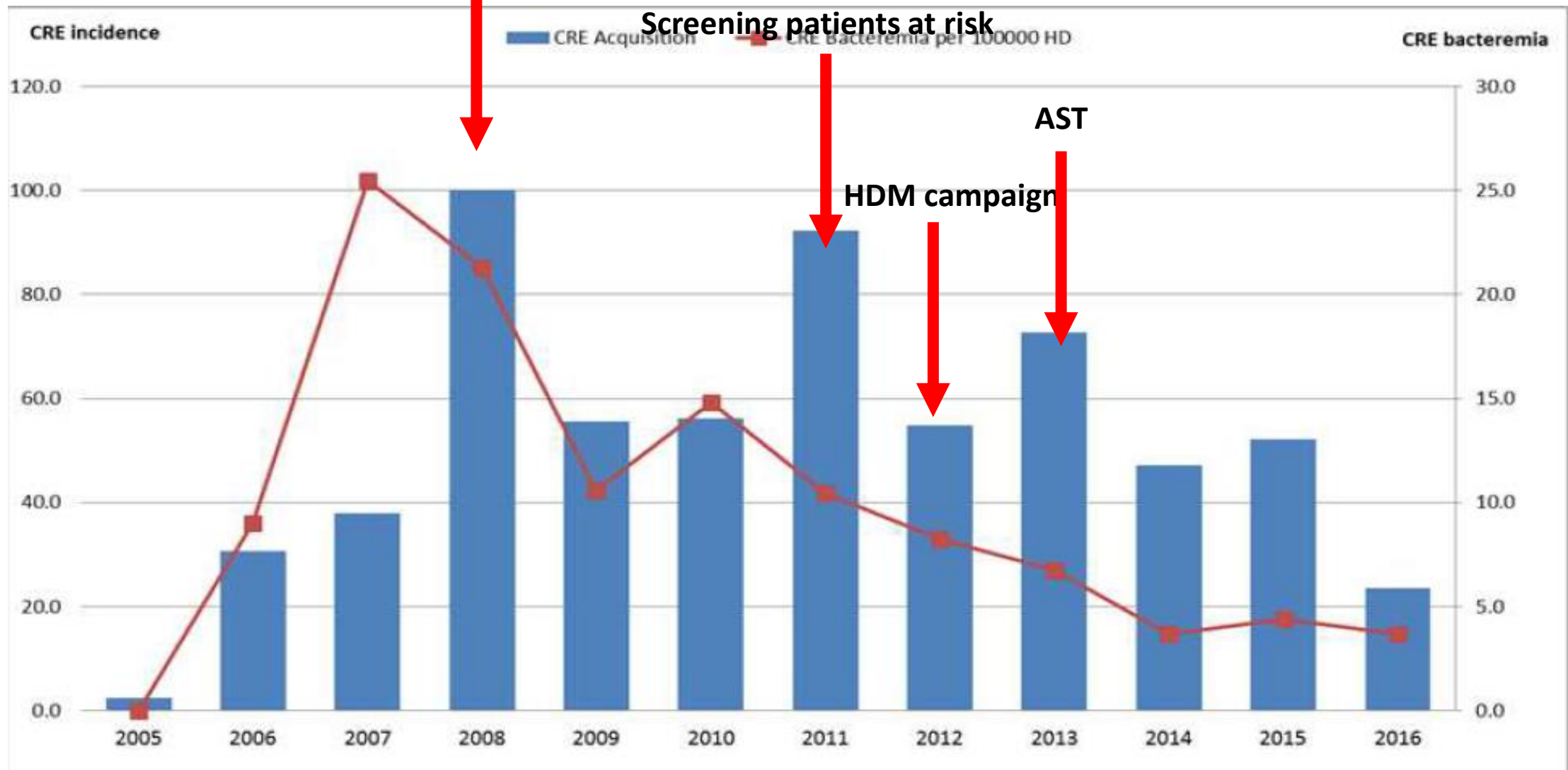
	Cohorting	Screening	autres
2006-2008	Patients en médecine et Réanimation (04/2008)	Recherche contacts Janv 2008	
2010-2011	+IDE (Janv 2011)	Admission patients à risque (04/2011)	Hygiéniste (11/2011)
2011-2013			Horaire laboratoire (02/2012) HDM campagne (04/2012) AST (03/2013) Feedback (04/2013) Référents (10/2013)

**Cohorting patient
Screening contacts**

**Cohorting IDE+ patient
Screening patients at risk**

AST

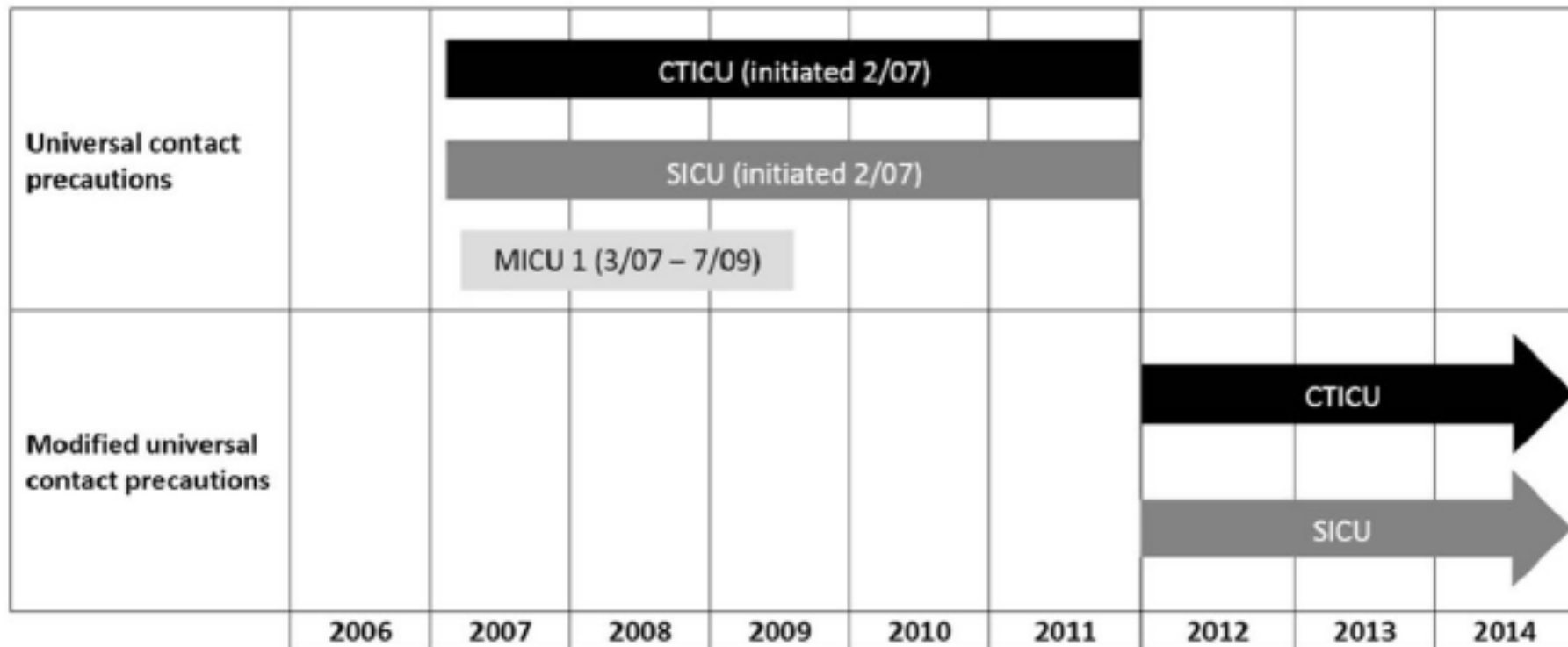
HDM campaign



Long-Term Impact of Universal Contact Precautions on Rates of Multidrug-Resistant Organisms in ICUs: A Comparative Effectiveness Study

Yoko Furuya *et al*, ICHE 2018

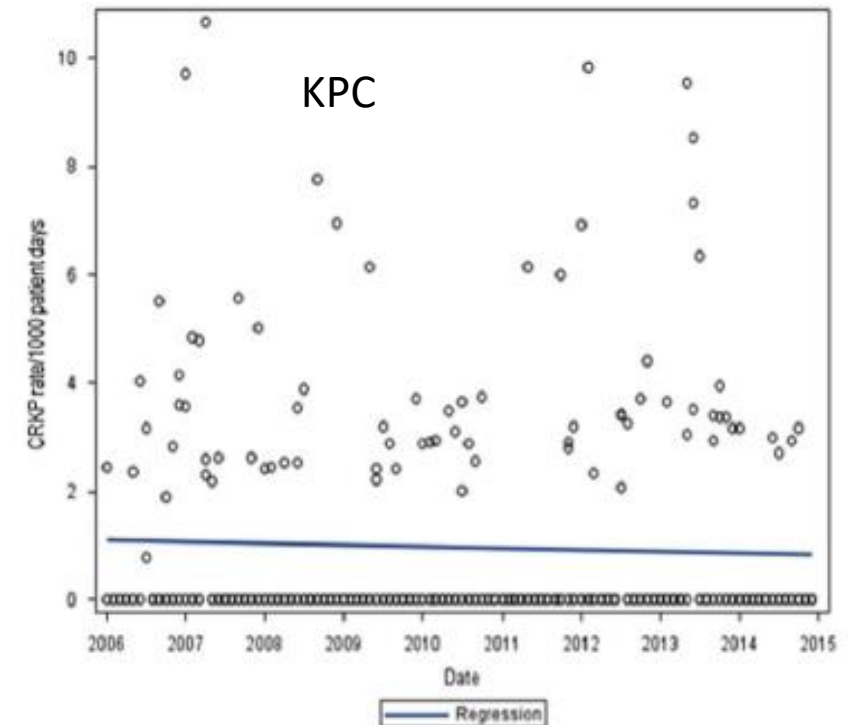
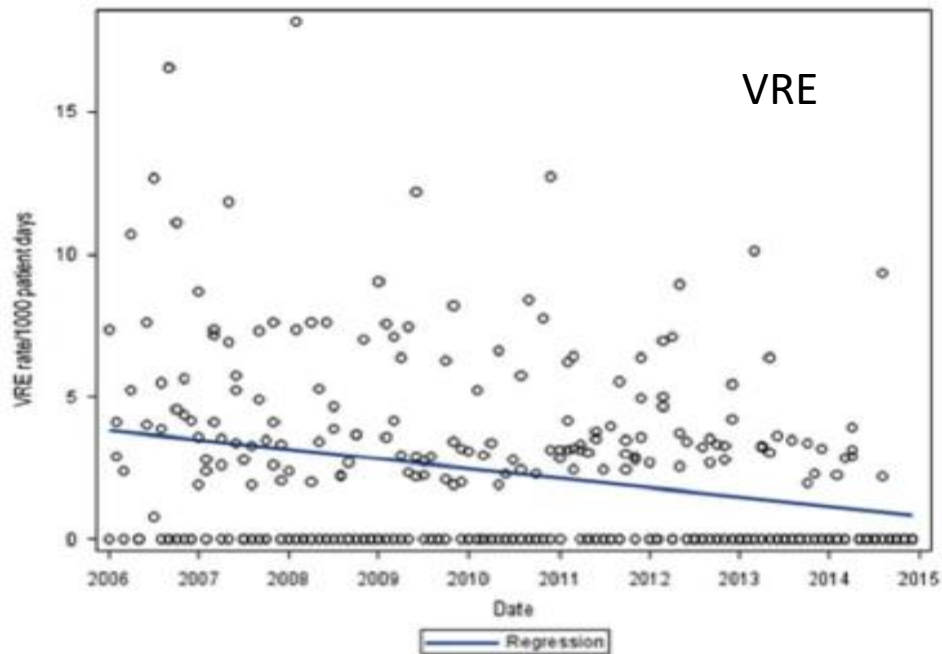
- Evaluer l'impact des PCC universelles en réanimation (2006-2014)
- Retrospective, non randomisée
- Etude des densités d'incidence (SARM, VRE, CarbaR, Kp)



Long-Term Impact of Universal Contact Precautions on Rates of Multidrug-Resistant Organisms in ICUs: A Comparative Effectiveness Study

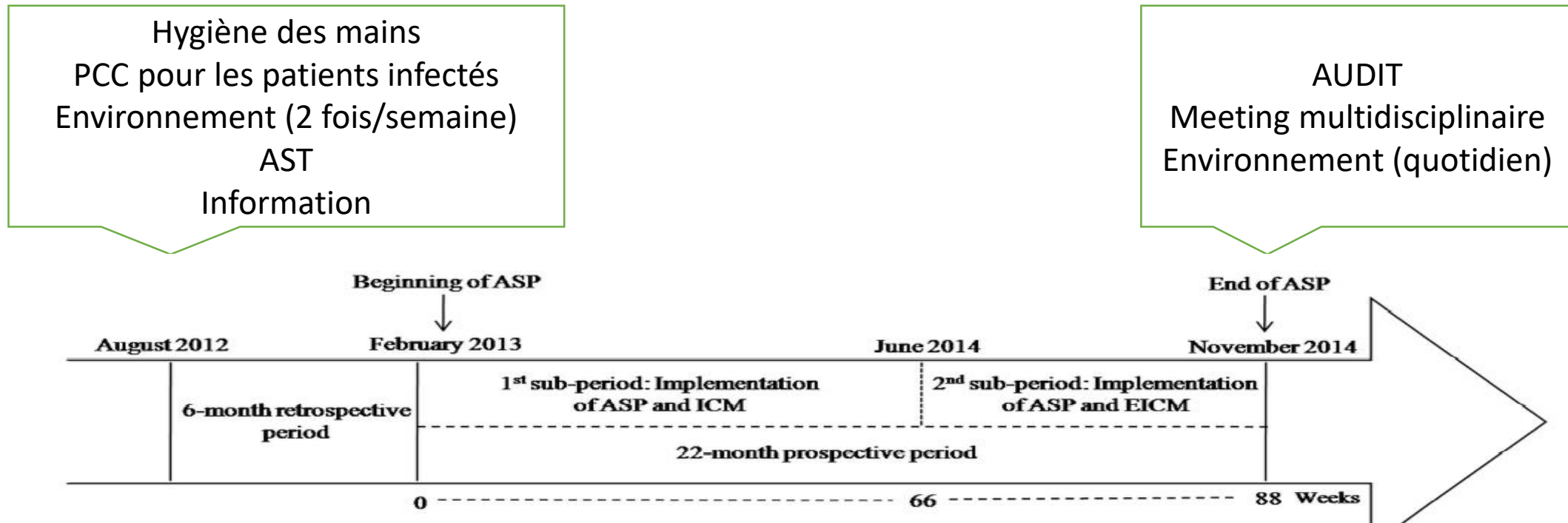
Yoko Furuya *et al*, ICHE 2018

- Evaluer l'impact des PCC universelles en réanimation (2006-2014)
- Retrospective, non randomisée
- Etude des densités d'incidence (SARM, VRE, CarbaR, Kp)



Impact of active surveillance and infection control measures on carbapenem-resistant Gram-negative bacterial colonization and infections in intensive care

- Etude quasi expérimentale
- Unité de réanimation endémique (*KPC-Pseudomonas aeruginosa* RCarba)



Impact of active surveillance and infection control measures on carbapenem-resistant Gram-negative bacterial colonization and infections in intensive care

Hygiène des mains
 PCC pour les patients infectés
 Environnement (2 fois/semaine)
 AST
 Information

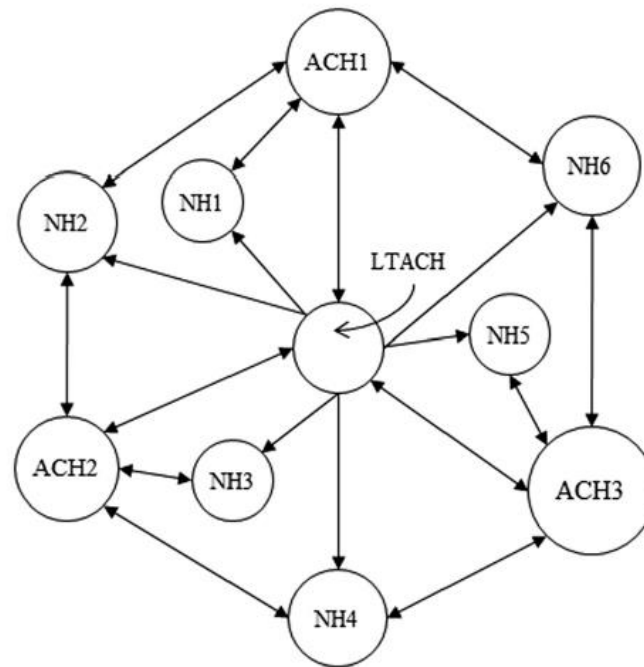
AUDIT
 Meeting multidisciplinaire
 Environnement (quotidien)

	Periode 1	Periode 2
CRGNB infection	34	180/266
HDM (IDE)	58%	92%
HDM (Geste aseptique)		
Docteurs	29%	62%
IDE	50%	76%
Précautions complémentaires		
Docteurs	46%	66%
IDE	55%	71%
COLONISATION	78%	68%

CRKP 45%
 CRAB 18%
 CRPA 18%

The Potential for Interventions in a Long-term Acute Care Hospital to Reduce Transmission of Carbapenem-Resistant Enterobacteriaceae in Affiliated Healthcare Facilities

- Modèle mathématique (6 Nursing homes, 3 Acute Care Hospital and 1 LTCAH)
- LTCAH : dépistage et amélioration de l'isolement



The Potential for Interventions in a Long-term Acute Care Hospital to Reduce Transmission of Carbapenem-Resistant Enterobacteriaceae in Affiliated Healthcare Facilities

Toth *et al*, Clin Inf Dis 2017

- Modèle mathématique, incluant les données d'études prospectives

	Model A			Model B		
	No Intervention Average (90% VI)	Intervention Average (90% VI)	Average Effect	No Intervention Average (90% VI)	Intervention Average (90% VI)	Average Effect
Prevalence at 5 y, %						
Region	21 (18–25)	6.1 (1.3–11)	–71%	8.7 (5.1–12)	0.5 (0–1.4)	–94%
LTACH	49 (36–62)	12 (1.2–24)	–77%	27 (12–43)	1.4 (0–6.0)	–95%
ACH	6.5 (3.9–9.5)	2.0 (0.3–4.4)	–70%	2.5 (0.7–4.4)	0.2 (0–0.9)	–91%
NH	28 (23–33)	8.3 (1.8–15)	–70%	10 (6.2–14)	0.6 (0–1.7)	–94%
5-y total transmissions						
Region	3749 (2571–4550)	794 (214–1479)	–79%	1533 (613–2233)	113 (41–219)	–93%
LTACH	1511 (1079–1798)	189 (51–342)	–88%	1022 (422–1452)	44 (11–96)	–96%
ACH	1363 (872–1748)	370 (104–693)	–73%	347 (126–537)	54 (22–99)	–84%
NH	876 (580–1080)	236 (54–462)	–73%	163 (51–253)	14 (3–31)	–92%

Surveillance -52%

Amélioration de l'isolement -6%

Surveillance -85%

Amélioration de l'isolement -18%

Control of carbapenemase-producing Enterobacteriaceae outbreaks in acute settings:
An evidence review

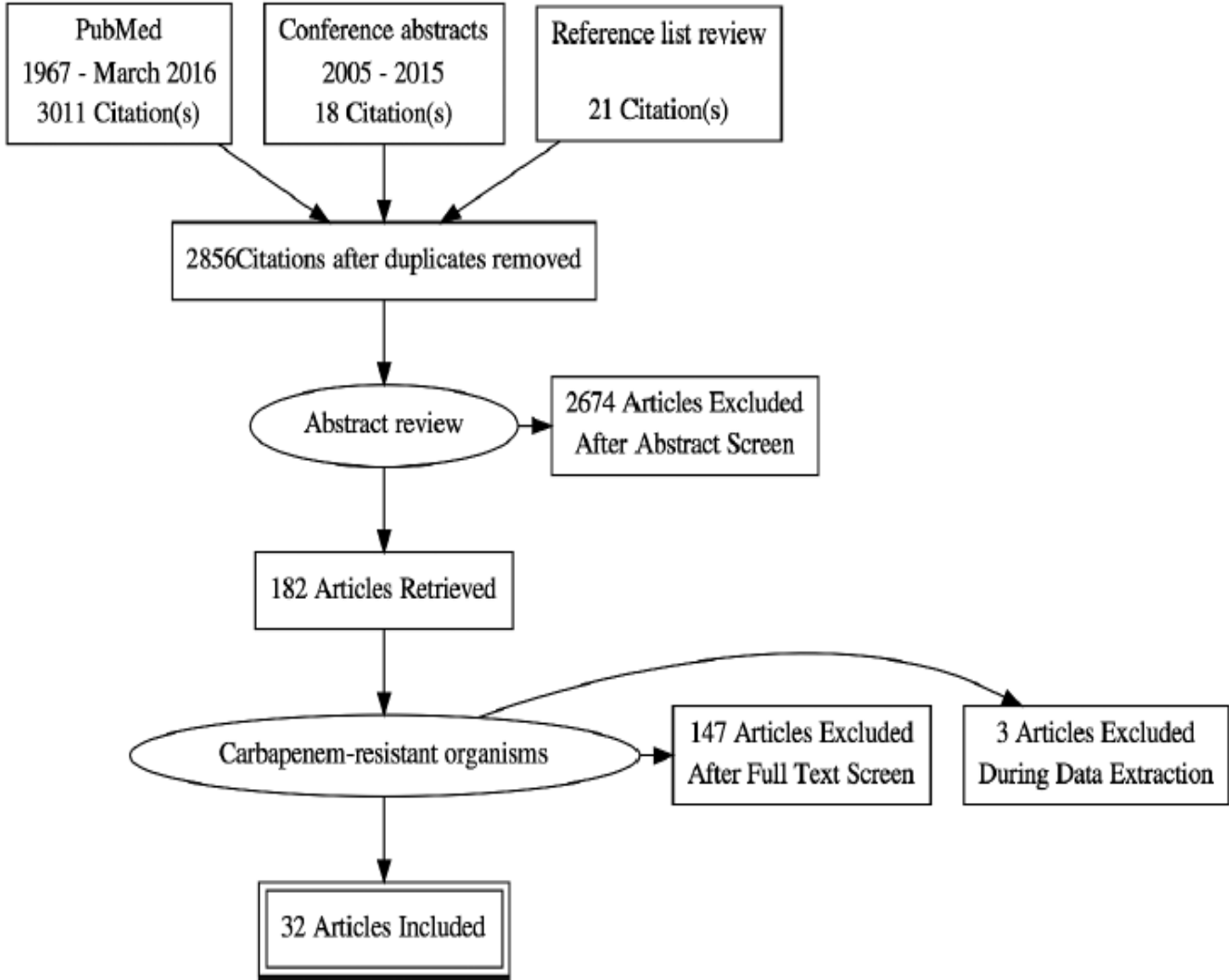
Clare E. French, Dr Caroline Coope, Lucy Conway, Julian PT. Higgins, Janet McCulloch, George Okoli, Bharat C. Patel, Isabel Oliver



- 98 études, 53 en Europe
- 7 permettant d'évaluer (correctement) les mesures de maîtrise
- Epidémies maîtrisées dans 73% des situations

Dépistage	Environnement	Isolement patients	Cohorting	Gants-Surblouse	Entretien environnement	Fermeture d'unité	ATB Maitrise	Education staff	HDM
85	35	51	52	78	56	13	18	57	61

The Hospital Water Environment as a Reservoir for Carbapenem-Resistant Organisms Causing Hospital-Acquired Infections—A Systematic Review of the Literature



The Hospital Water Environment as a Reservoir for Carbapenem-Resistant Organisms Causing Hospital-Acquired Infections—A Systematic Review of the Literature

Gordon *et al*, Clin Inf Dis 2017

- 32 publications reportent la présence dans les « eaux hospitalières »
- Prélèvements effectués au cours des épidémies (Réanimation)
- *Pseudomonas aeruginosa* (VIM) et *Klebsiella pneumoniae*

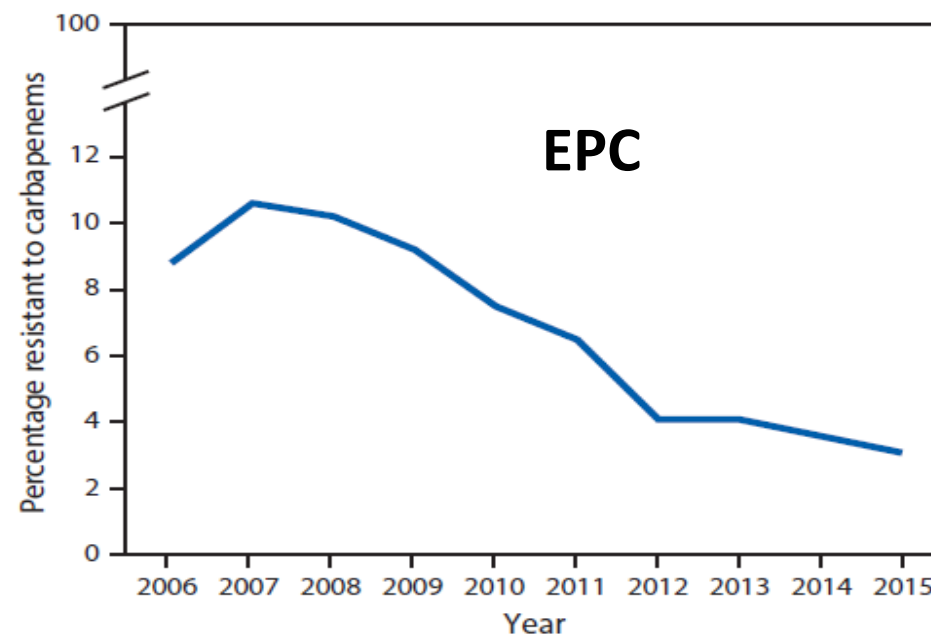
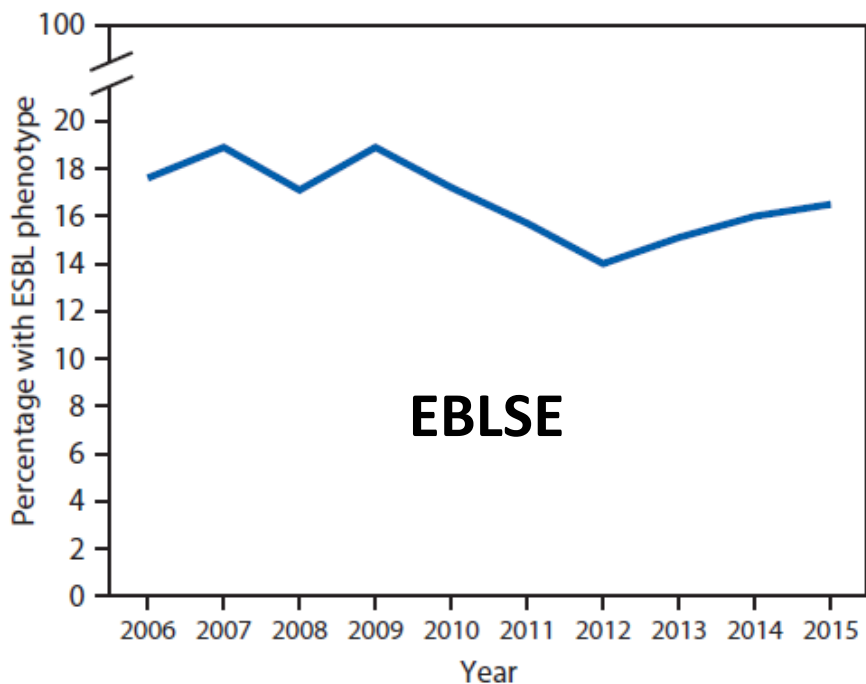
Réservoirs	Studies, No. (N = 32)
Drains/drainage systems	17
Sink surfaces	14
Faucets	8
Water	3
Inflatable hair wash basin	2
Sensor mixer taps	1
Water/tea dispenser	2
Shower/shower equipment	3
Toilet bowl/brush	2

26/32 : prélèvements autres (matériels, anti septiques)
15/32 prélèvements positifs (autres que milieux hydriques)
25/32 entretien de l'environnement
22/25 décontamination « réussie »

Faut-il s'inquiéter ?

Vital Signs: Containment of Novel Multidrug-Resistant Organisms and Resistance Mechanisms — United States, 2006–2017

- 2006 - 2015
- Diminution de l'incidence des prélèvements cliniques (IU sur sonde et ILKT)
- EBLSE (-2% par an) et CPE (-15% par an)



Vital Signs: Containment of Novel Multidrug-Resistant Organisms and Resistance Mechanisms — United States, 2006–2017

TABLE 1. Carbapenemase testing, by organism — Antibiotic Resistance Laboratory Network laboratories and CDC laboratory, specimens collected January 1–September 30, 2017

Organism	Total		KPC		NDM		OXA-48		VIM		IMP	
	Tested* no.	Positive† no. (%)	Tested no.	Positive no. (%)	Tested no.	Positive no. (%)	Tested no.	Positive no. (%)	Tested no.	Positive no. (%)	Tested no.	Positive no. (%)
Total	5,776	1,426 (25)	5,755	1,234 (21)	5,570	134 (2.4)	5,323	65 (1.2)	4,724	30 (0.6)	4,068	16 (0.4)
Enterobacteriaceae	4,442	1,401 [§] (32)	4,430	1,232 (28)	4,247	134 (3.2)	4,050	65 (1.6)	3,448	12 (0.3)	2,827	11 (0.4)
<i>Klebsiella</i> spp.	1,439	942 (65)	1,437	862 (60)	1,359	74 (5.4)	1,295	42 (3.2)	1,114	4 (0.4)	744	1 (0.1)
<i>E. coli</i>	789	144 (18)	783	83 (11)	755	43 (5.7)	719	20 (2.8)	665	0 (0)	585	0 (0)
<i>Enterobacter</i> spp.	1,538	201 (13)	1,537	194 (13)	1,468	14 (1.0)	1,387	0 (0)	1,201	0 (0)	1,063	3 (0.3)
Other	346	72 (21)	345	53 (15)	336	3 (0.9)	322	2 (0.6)	256	7 (2.7)	238	7 (2.9)
Unspecified	330	42 (13)	328	40 (12)	329	0 (0)	327	1 (0.3)	212	1 (0.5)	197	0 (0)
<i>Pseudomonas aeruginosa</i>	1,334	25 [§] (1.9)	1,325	2 (0.2)	1,323	0 (0)	1,273	0 (0.0)	1,276	18 (1.4)	1,241	5 (0.4)

Vital Signs: Containment of Novel Multidrug-Resistant Organisms and Resistance Mechanisms — United States, 2006–2017

TABLE 2. Screening tests for carbapenem-resistant Enterobacteriaceae colonization, by facility type — Antibiotic Resistance Laboratory Network laboratories and CDC laboratory, specimens collected January 1–September 30, 2017

Carbapenemase	Total*		Post-acute care facility†		Short-stay acute care hospital	
	Screened [§] no.	Positive no. (%)	Screened no.	Positive no. (%)	Screened no.	Positive no. (%)
Total	1,489	171 [¶] (11)	1,074	147 (14)	365	21 (5.8)
KPC	1,480	122 (8.2)	1,065	103 (10)	365	16 (4.4)
NDM	1,480	6 (0.4)	1,065	6 (0.6)	365	0 (0)
OXA-48	1,311	0 (0)	896	0 (0)	365	0 (0)
VIM	1,488	34 (2.3)	1,073	30 (2.8)	365	4 (1.1)
IMP	1,311	9 (0.7)	896	8 (0.9)	365	1 (0.3)

GUIDELINES ARTICLE

Open Access



Infection prevention and control measures and tools for the prevention of entry of carbapenem-resistant *Enterobacteriaceae* into healthcare settings: guidance from the European Centre for Disease Prevention and Control

Magiorakos *et al.* *Antimicrobial Resistance and Infection Control* (2017) 6:113