

Enterobacter aerogenes: relative frequency among Enterobacter infections varies by infection site, sex, age and hospital speciality

0059

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Background

- Enterobacteriaceae are an important cause of bacteraemia and hospital-onset (>48 hours) lower respiratory tract infections (hLRTI).
- In the UK, 2% of bacteraemias and 17% of hLRTIs caused by Enterobacteriaceae involve *Enterobacter* (Public Health England, 2015; BSAC, unpublished data).

Methods

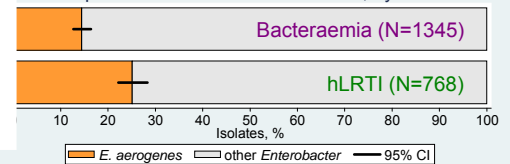
- In total, 70 clinical laboratories in the UK and Ireland contributed 768 isolates of *Enterobacter* spp. from hLRTI (Oct 2008–Sept 2014) and 1345 from blood (Jan 2008–Dec 2014).
- The isolates were re-identified centrally. MICs were determined by BSAC agar dilution and interpreted using BSAC/EUCAST breakpoints (see protocol at www.bsacsurv.org).
- All antimicrobial agents were tested for the entire period except colistin which was tested for the period 2010–2014 and tigecycline for 2008–2013.

Frequency among Enterobacter infections

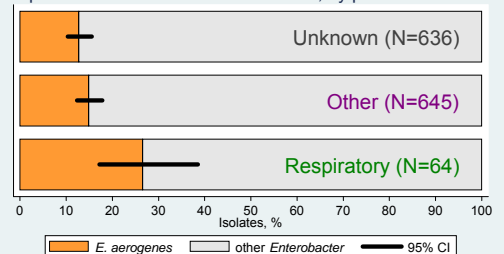
- *E. aerogenes* were strikingly more prevalent among *Enterobacter* from hLRTIs (25% vs bacteraemia (14%) (Box 1).
- Similarly, among *Enterobacter* bacteraemias, 17/64 (27%) with suspected respiratory origin involved *E. aerogenes* vs 96/645 (15%) of those from other origins (primarily line, urinary and gastrointestinal).

Patient characteristics		N (%) of <i>E. aerogenes</i> among all <i>Enterobacter</i> isolates			
		hLRTIs (hospital >48 hrs)		Bacteraemia	
Sex	Female	34/228	(15%)	59/531	(11%)
	Male	159/540	(29%)	135/811	(17%)
Age	0–4 years	9/81	(11%)	10/112	(9%)
	5–64 years	70/282	(25%)	71/550	(13%)
	≥65 years	114/405	(28%)	112/673	(17%)
Speciality	non-ICU	74/371	(20%)	157/1158	(14%)
	ICU	117/379	(31%)	34/159	(21%)

Species in Enterobacter infections, by site

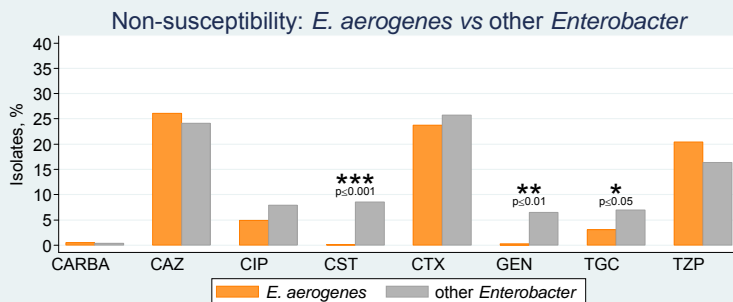


Species in Enterobacter bacteraemia, by probable source



Non-susceptibility of E. aerogenes

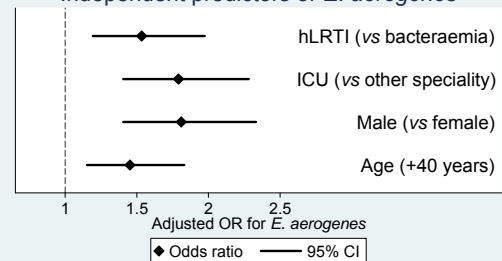
- The *E. aerogenes* isolates (n=387) were significantly less likely than other *Enterobacter* (n=1726) to be non-susceptible (NS) to colistin (0 vs 8.5%), gentamicin (0.3 vs 6.5%) and tigecycline (3.0 vs 6.9%).



Predictors of infection caused by E. aerogenes

- Male sex, older age and intensive care location were also independently associated with *E. aerogenes* infections vs infections caused by other *Enterobacter* species.

Independent predictors of E. aerogenes



Conclusions

- *E. aerogenes* was clearly and independently associated with men, older age, intensive care, and hLRTIs (vs blood infections).
- Other *Enterobacter* species were more likely than *E. aerogenes* to be non-susceptible to colistin, gentamicin and tigecycline.

References: Public Health England (2015). *Health Protection Report 9(37)* [Accessed online]

Abbreviations: CARBA=carbapenem (imi- or mero-penem), CAZ=ceftazidime, CI=confidence interval, CIP=ciprofloxacin, CST=colistin, CTX=cefotaxime, GEN=gentamicin, hLRTI=hospital-onset (>48 hours) lower respiratory tract infections, ICU=intensive care unit, OR=odds ratio, TGC=tigecycline, TZP=piperacillin-tazobactam.

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Organism ID and Susceptibility Testing (2015): S. Mushtaq and staff at Public Health England⁶ Collecting Laboratories: See www.bsac.org.uk

Sponsors 2008–2014: Astellas, AstraZeneca, Basilea, Bayer, Cempra, Cerexa, Cubist, J&J/Janssen-Cilag, Melinta (associate), Novartis, Pfizer, Wyeth (2014 in bold)

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