



Community preparedness and resilience: the antimicrobial resistance (AMR) perspective

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Antimicrobial resistance

Carbapenem-resistant *Enterobacteriaceae*: a challenge for appropriate patient therapy



1. Klebsiella pneumoniae ESBL-CARBA > E5 CFU/mL MIC: Aztreonam = 0.25 mg/L = S MIC: Colistin = 0.12 mg/L = S MIC: Kloramfenikol = 256 mg/L = R MIC: Tobramycin = <256 mg/L = R MIC: Amikacin = <256 mg/L = R MIC: Netilmicin = <256 mg/L = R MIC: Nitrofurantoin = 512 mg/L = R MIC: Gentamicin = <256 mg/L = R Obs! Stammen bildar ESBL-CARBA (ICD-10 kod U82.2). Klinisk anmälningsplikt och smittspårningsplikt enl smittskyddslagen. Kontakta alltid vårdhygien. För mer information: www.smittskyddstockholm.se

ANTIBIOTIKUM

Ampicillin	F
Piperacillin/tazobaktam.	F
Cefadroxil	R
Imipenem	R
Meropenem	R
Ertapenem	R
Aztreonam	S
Colistin	5
Kloramfenikol	F
Tobramycin	R
Amikacin	F
Netilmicin	F
Trimetoprim	R
Trimetoprim-sulfa	R
Nitrofurantoin	R
Cefotaxim	R
Ceftazidim	R
Gentamicin	R
Ciprofloxacin	R

Svarskommentar: Sammanfattning/Övrigt:

Obs! Mycket omfattande resistensprofil. Endast känslig för colistin.

Courtesy: C. Giske. Karolinska University Hospital, Stockholm, Sweden. Photo: www.microbiologie.info.

Spread of carbapenem- resistant Enterobacteriaceae (CRE) in the EU/EEA: assessment by national experts



No case reported

Sporadic occurrence

Single hospital outbreaks

Sporadic hospital outbreaks

Regional spread

Interregional spread

Endemic situation

Not participating countries or not reporting



2015

Cross-border transfer of patients







https://antibiotic.ecdc.europa.eu/en/patient-stories





Source: Ruppé E, et al. Clin Infect Dis 2015 Aug 15;61(4):593-600. Ruppé E, et al. Eurosurveillance 2014 Apr 10;19(14). pii: 20768.



ABC – Four Corners "Rise of the Superbugs" http://www.abc.net.au/4corners/stories/2012/10/29/3618608.htm

Public transportation (buses, metro)

Porto (Portugal)

- 36% of 199 buses with MRSA
- 2 of 3 major clones are the same as in hospitals
- Association between proportion of MRSA contamination and bus serving more than 3 hospitals

• Midwestern U.S. (urban)

- 63% of 40 buses with MRSA
- New York Subway
 - Acinetobacter baumannii at 220/466 stations sampled

Source: Conceição T, et al. PLoS ONE 2014;8(11): e77812; Lutz JK, et al. Am J Infect Control 2014;42:1285-90; Afshinnekoo E, et al. Cell Systems 2015; 1: 1–15. http://dx.doi.org/10.1016/j.cels.2015.01.001.





Mobile communication devices



- 9-25% mobile communication devices with pathogenic bacteria
- 0-10% with MRSA

• UK

 16% of 390 mobile phones in 12 cities contaminated with *E. coli* (London School of Hygiene and Tropical Medicine and Queen Mary, University of London)







Hand hygiene





Carbapenem-resistant *Escherichia coli* from food and the environment, 2016-2017

Germany (ex-Italy): Venus clam from retail market

Ireland: recreational waters and sewage



Source: Roschanski, et al. Euro Surveill. 2017 Oct;22(43); Mahon, et al. Euro Surveill. 2017 Apr 13;22(15).

A plausible worst-case scenario for Sweden, 2025-2030: increasing carriage of carbapenem-resistant *Escherichia coli*



- *Q1: Could 5% of the population in southern Sweden become carriers of carbapenem-resistant* E. coli*?* Possible or even likley in 10-15 years.
- Q3: What would be the consequences of the scenario on society? Increased demand on healthcare.
- *Q4: What measures should be taken to prevent or manage the scenario?*
 - Initiate long-term screning programmes (human health, animal health, feeds, food, water, environment, outflow of sewage treatment plants, hospitals, etc.);
 - Hygienic and cleaning routines must be improved and enforced (hospitals, nursing homes, daycare centers);
 - Strategies and plans to prevent and handle this threat.

Thank you!

EUROPEAN ANTIBIOTIC



A EUROPEAN HEALTH INITIATIVE

18 November 2017

EU event, Brussels, 15 November 2017

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WORLD ANTIBIOTIC AWARENESS WEEK

