



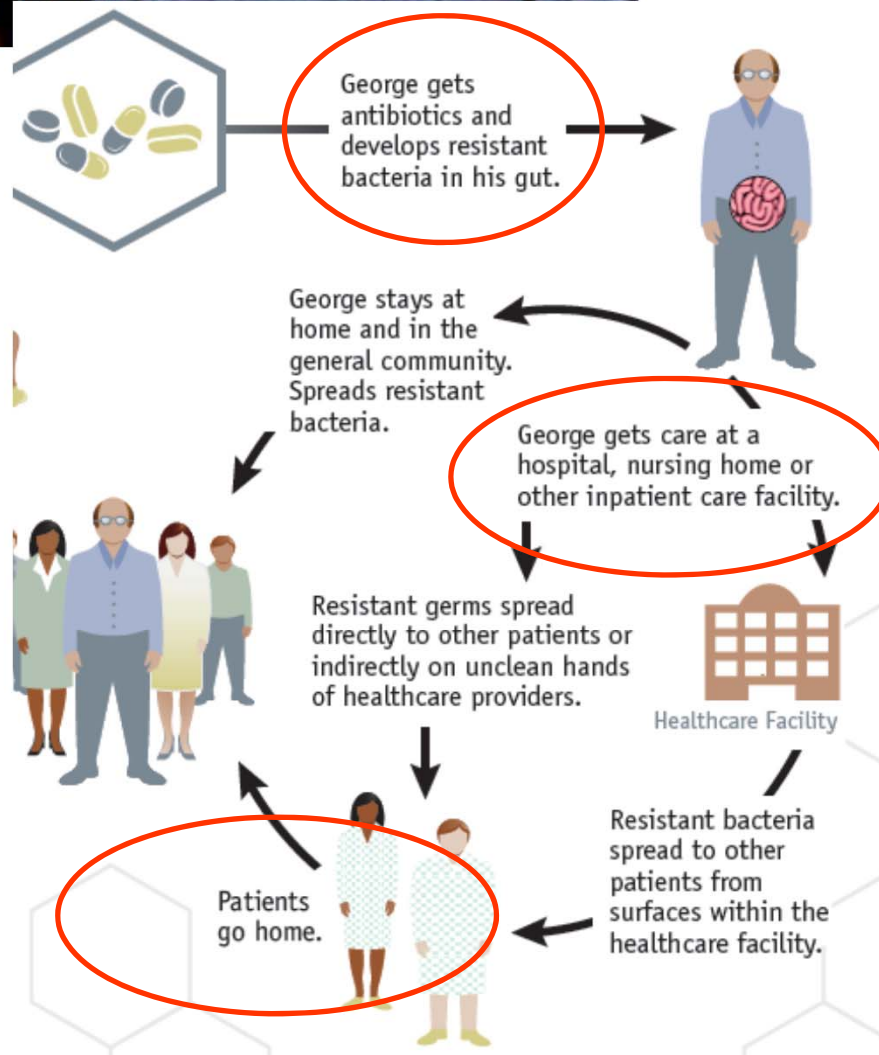
Emerging MDROs outside of the hospital

ANTIBIOTIC RESISTANCE THREATS in the United States, 2013

Agencia sanitaria e social



Area Rischio infettivo



ML Moro



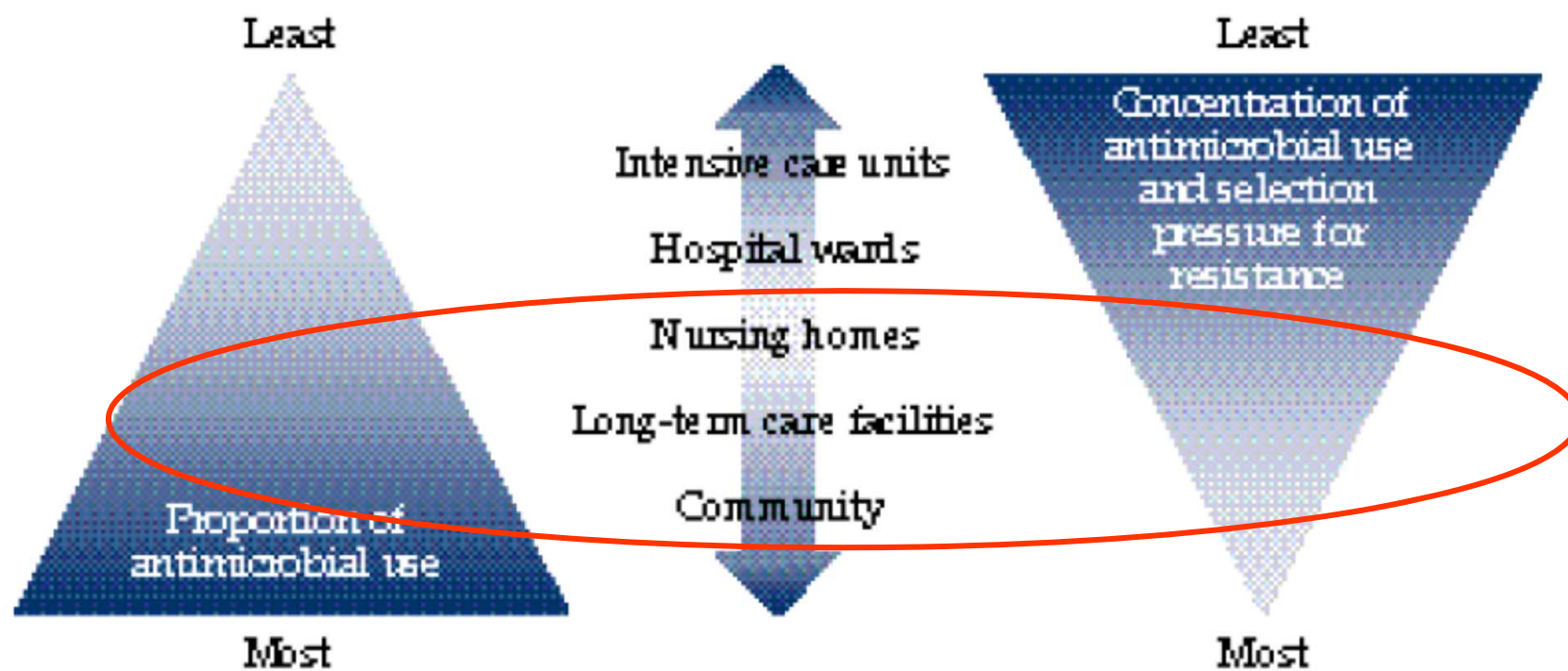
Antimicrobial Resistance in the community

Respiratory infections
Urinary tract infections
Skin infections

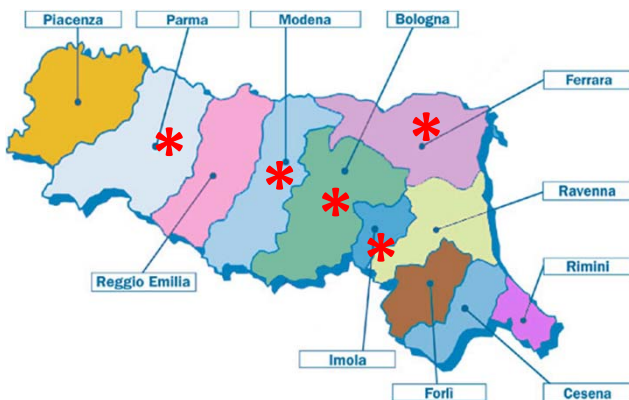
S.pneumoniae
S.pyogenes
MDR Enterobacteriaceae
MRSA
C.difficile



THE PYRAMIDS OF ANTIMICROBIAL USE AND SELECTION FOR ANTIMICROBIAL RESISTANCE



SMAC. The past of least resistance, 1998



Linking regional databases

LAB

- ✓ All hospital laboratories
- ✓ Hosp. Patients
- ✓ LTCFs residents
- ✓ Patients at home

AFO, FED,

AFT

- ✓ Drug prescriptions
(hospital,
community)

FAR

- ✓ Long-term care
facilities residents

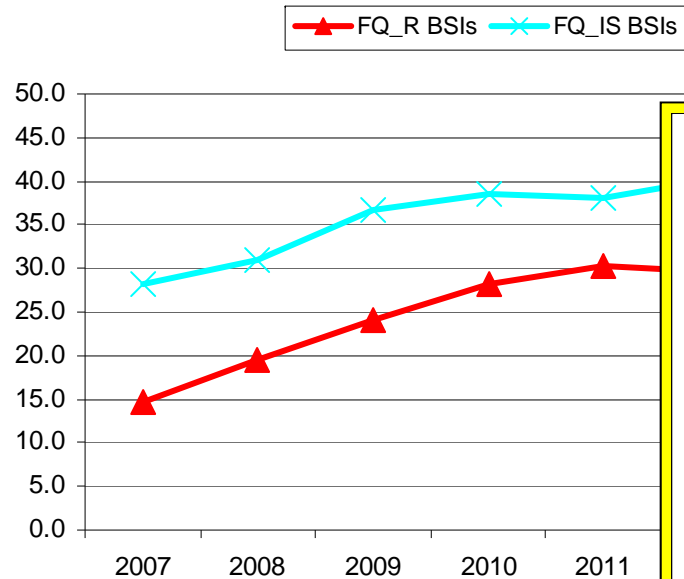


MDROs in urinary tract infections

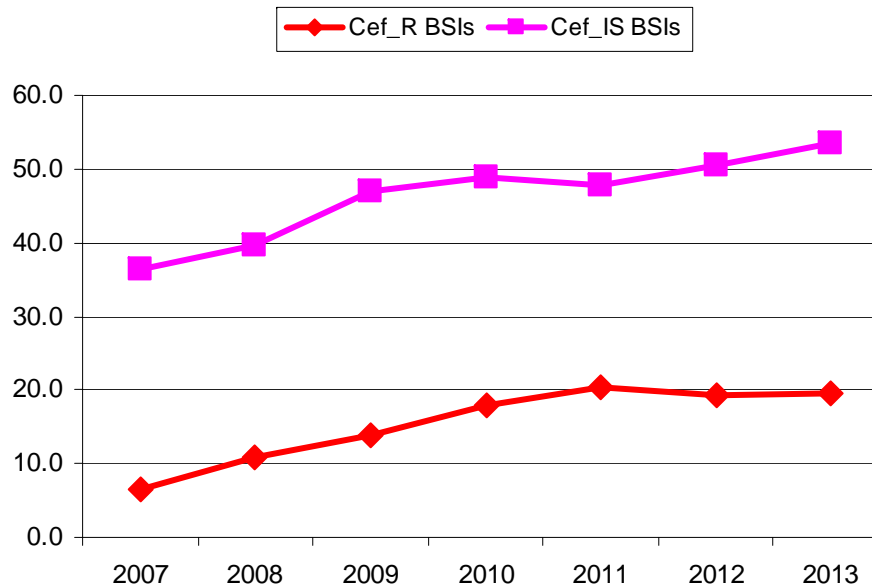


The incidence of E.coli bacteremias is significantly increasing (ER region 2007-2013)

Incidence of patients with Escherichia coli bloodstream infections (BSIs) by sensitivity to fluorochinolones (cases/100.000 inhabitants)

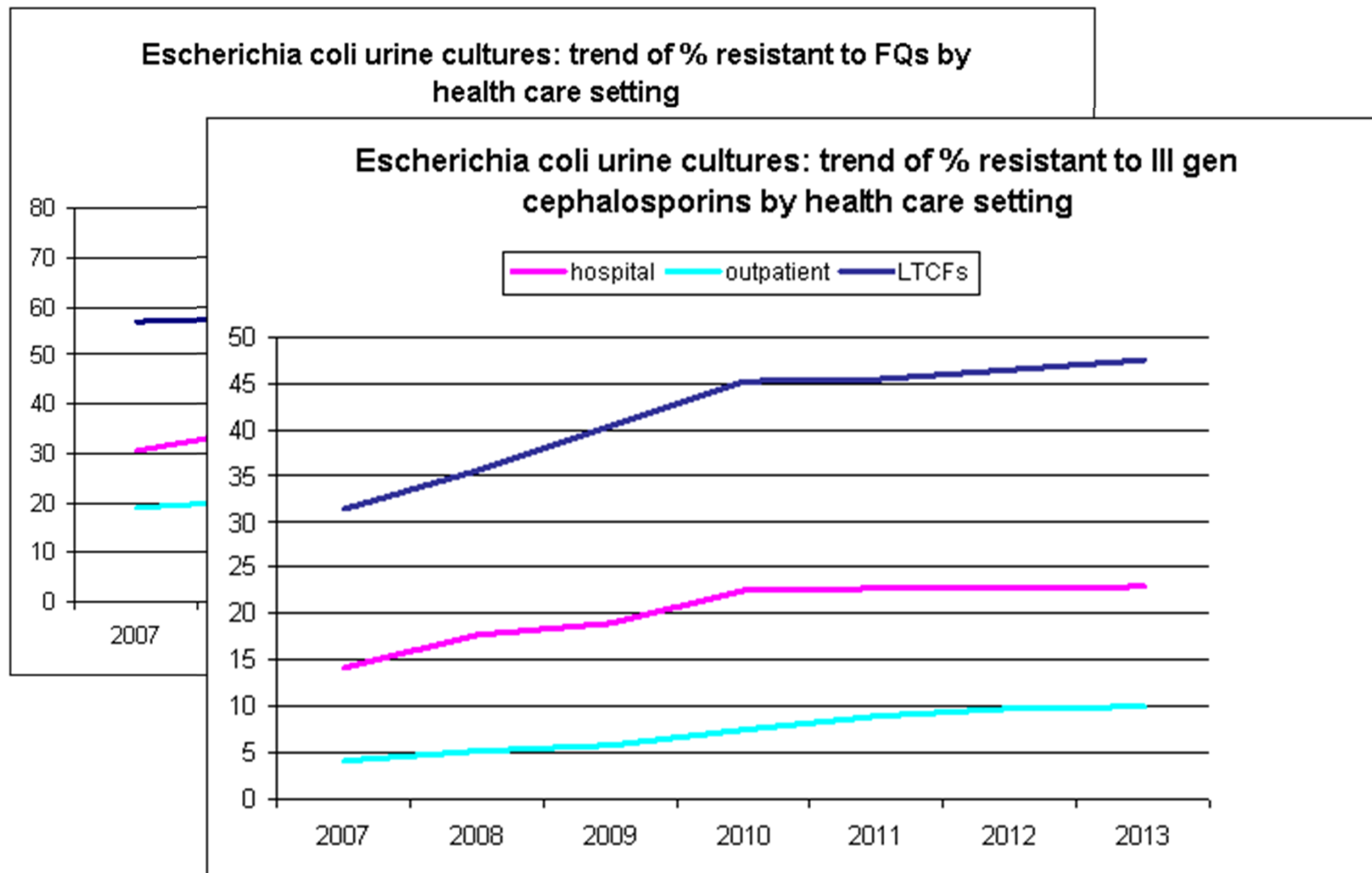


Incidence of patients with Escherichia coli bloodstream infections (BSIs) by sensitivity to 3rd gen. cephalosporins (cases/100.000 inhabitants)



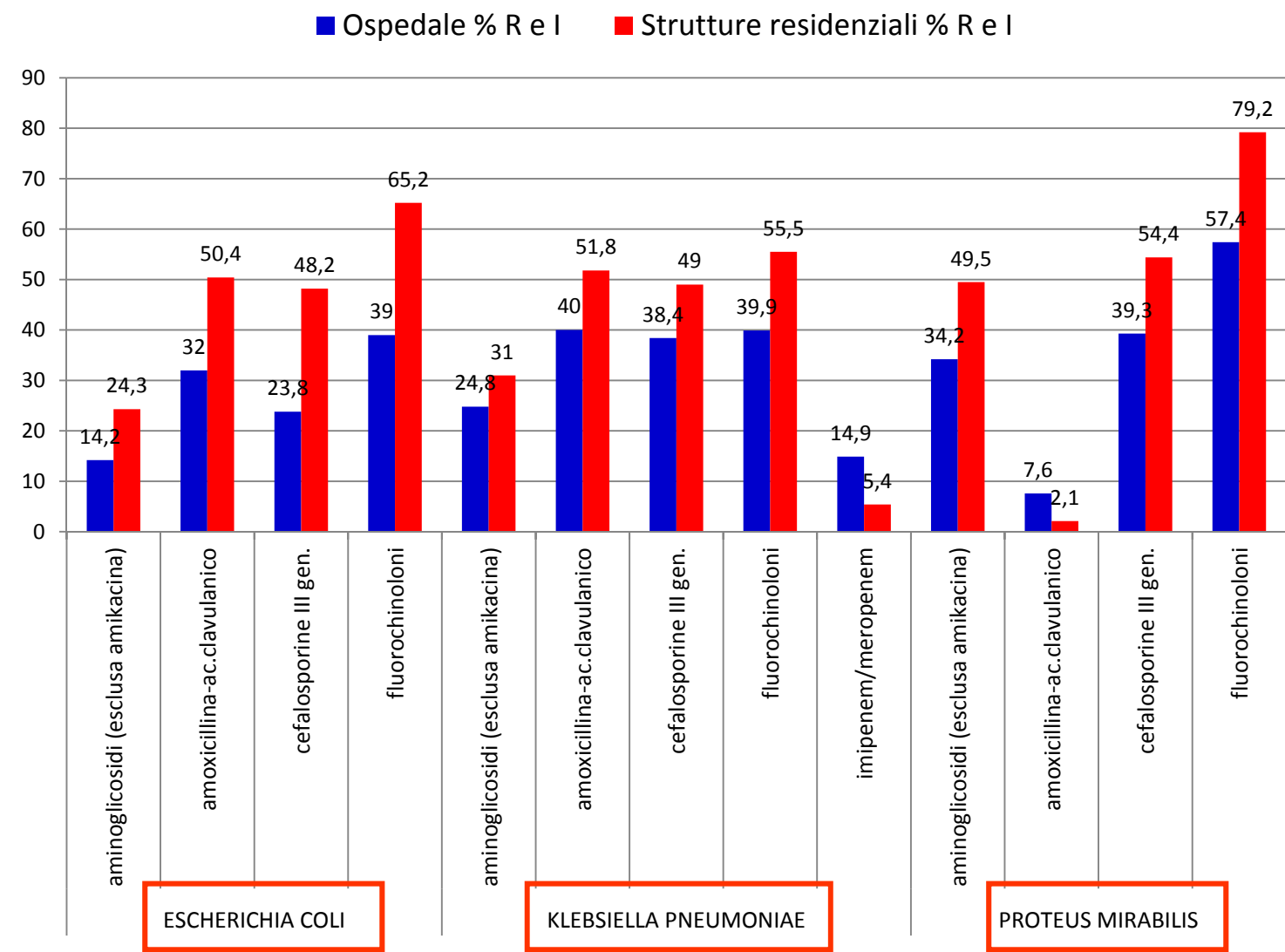


The proportion of resistant E.coli UTIs is a problem (ER region 2007-2013)



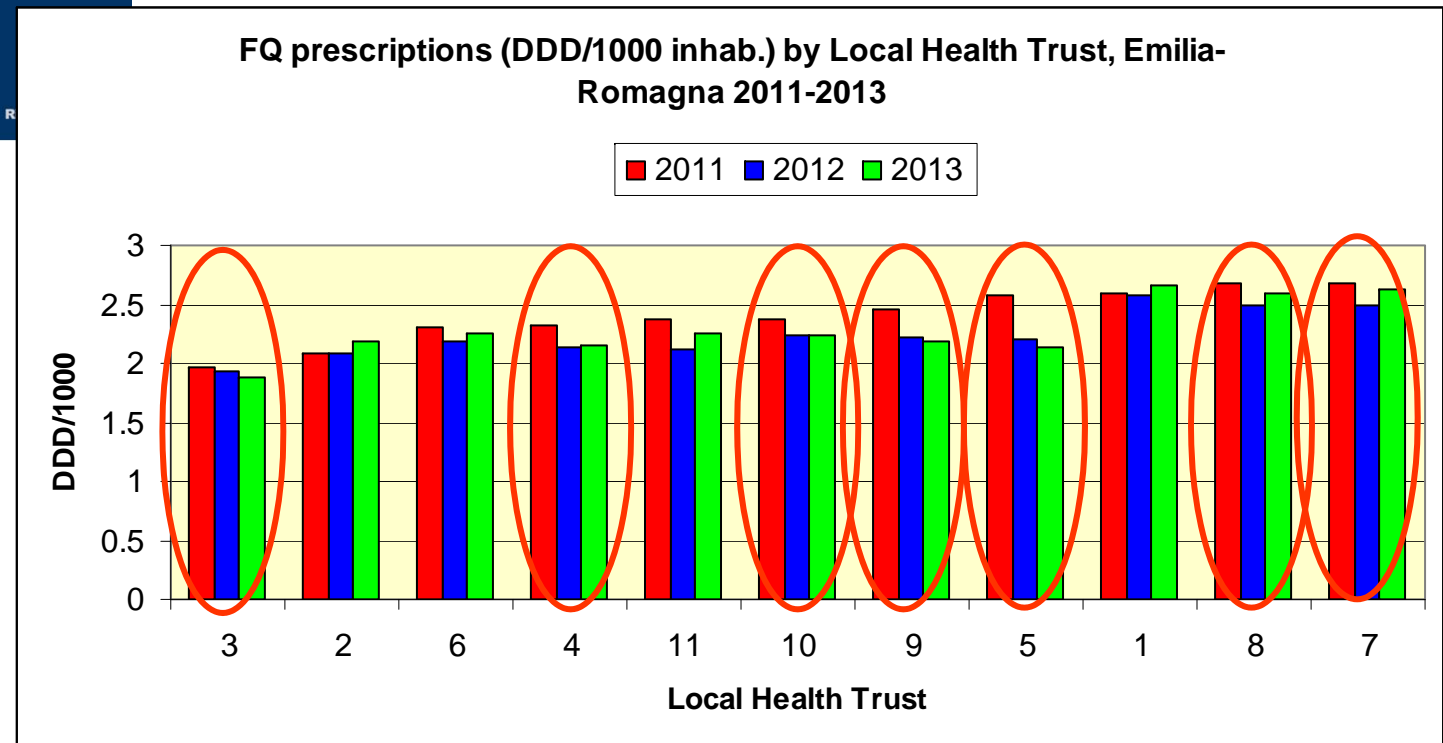
Regional laboratory information system

Urine cultures, Emilia-Romagna 2013 (4,5 millions inhab.)





The proportion of resistant E.coli UTIs is a problem (ER region 2007-2013)





MDROs in LTCFs



Prevalence/incidence of colonization/ infection with MDRO in LTCFs vary by:

Prevalence of
resistance in the
country/region/
acute care facility

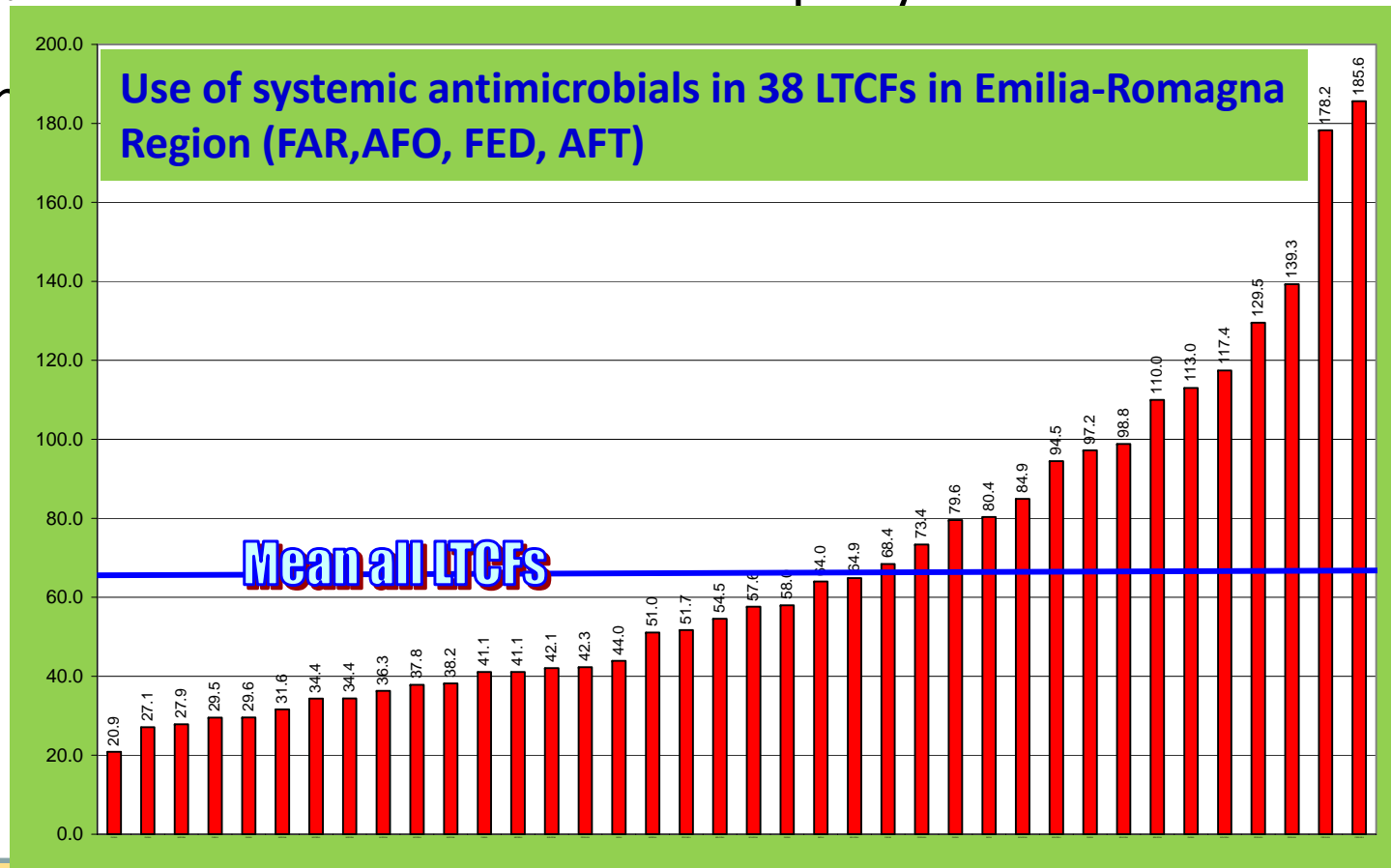
LTCFs case-mix (% of
residents with
invasive devices, % of
bedridden residents)

Quality of
infection control
programs and
antimicrobial
stewardship



Antibiotic use

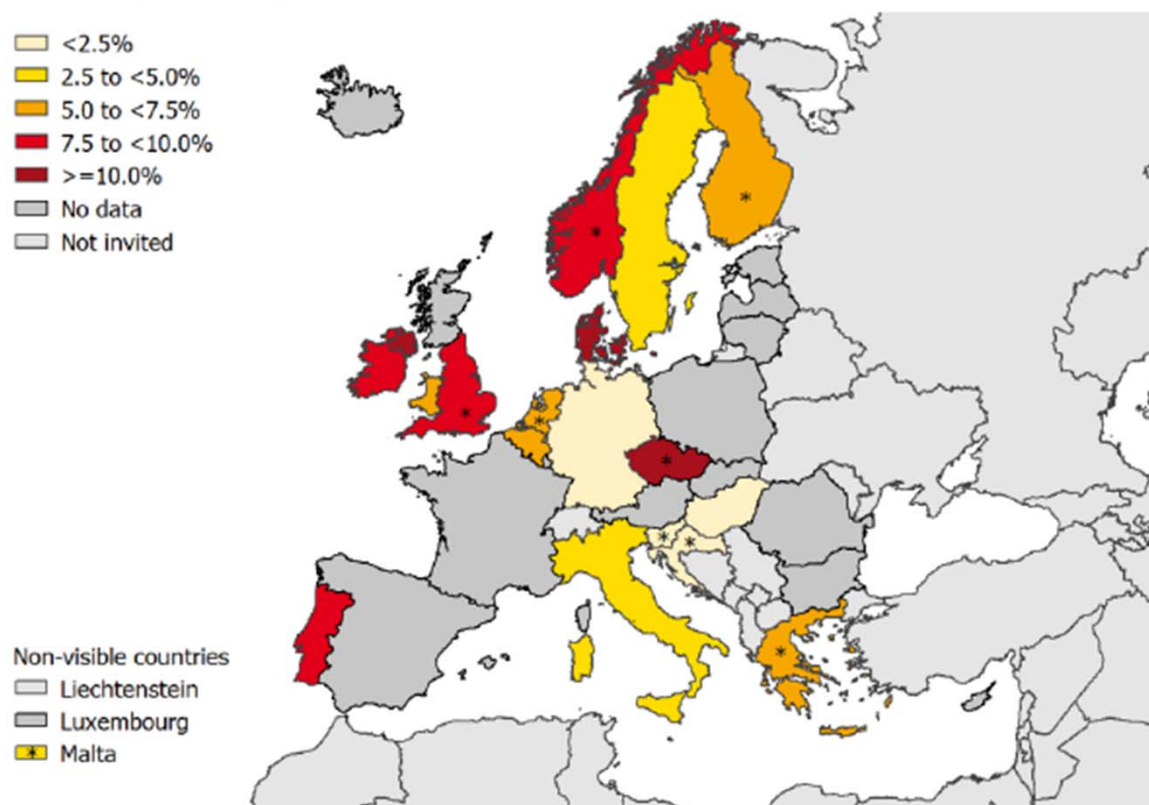
- 4.0-7.3 courses/1000 resident days
- 47%-79% of residents at least 1 course per year
- Frequenza



Dulon M et al, BMC Infect Dis 2011; 11: 138; Rooney PJ, JAC 2009; 64:635; van der Mee-Marquet N, ICHE 2010; 31: 968; Van Buul LW, JAMDA 13 (2012) 568.e1-568.e13



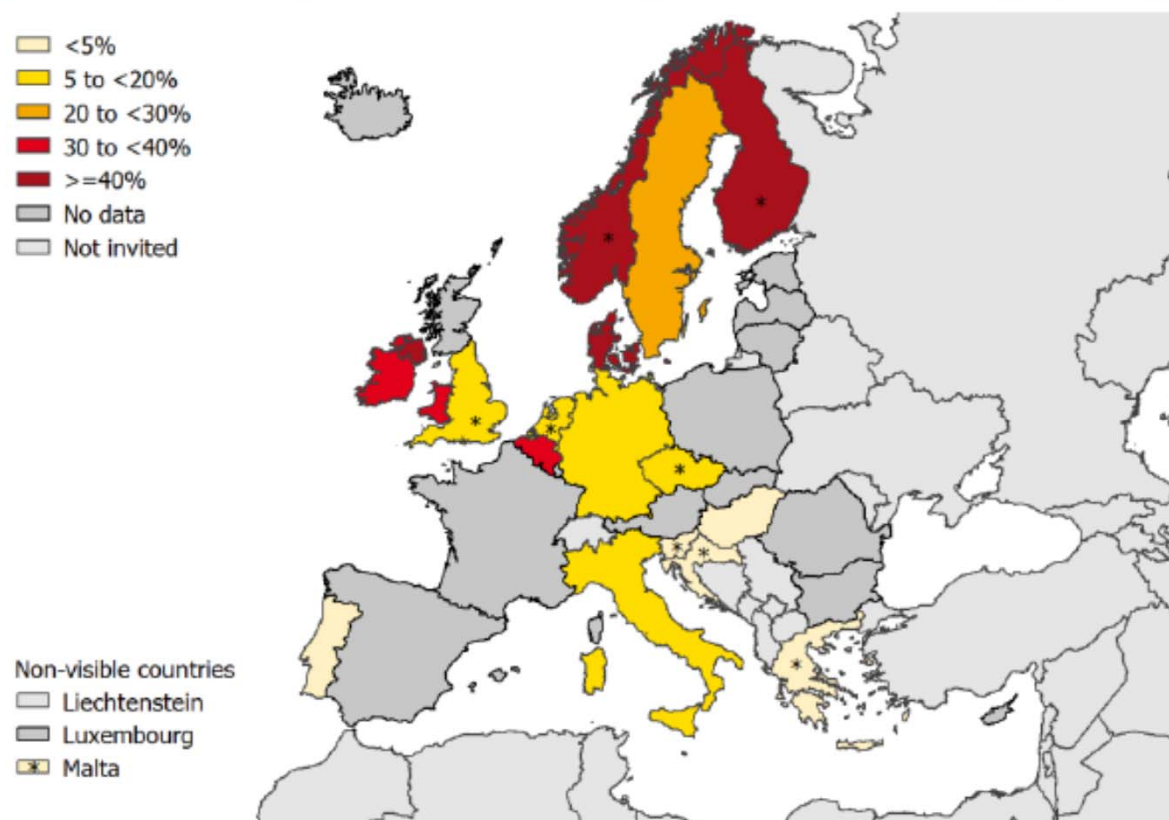
Figure 24. Prevalence of eligible LTCF residents receiving at least one antimicrobial agent on the day of the PPS, HALT-2, 2013



* Poor or very poor national representativeness of LTCF sample



Figure 28. Percentage of antimicrobials prescribed for uroprophylaxis, HALT-2, 2013



* Poor or very poor national representativeness of LTCF sample



Prevalence of colonization with MRSA in LTCFs

Country	Study Year	Swab sites	% MRSA
Germany	1999-2000	Nares, skin defects	1.1 (0.75-1.47)
Germany	2000-2001	Nares, throat, wounds	3.0 (2.1-4.2)
Northern Ireland	2005-2006	Nares, urine, wounds, inv.devices	23.8 (18.8-27.7)
Belgium	2005	Nares, throat, wounds, urine in cath.	19.5 (16.4-21.5)
UK	2005	Nares	22.0 (18-27)
Italy	2006	Nares	7.8 (5.7-10.4)

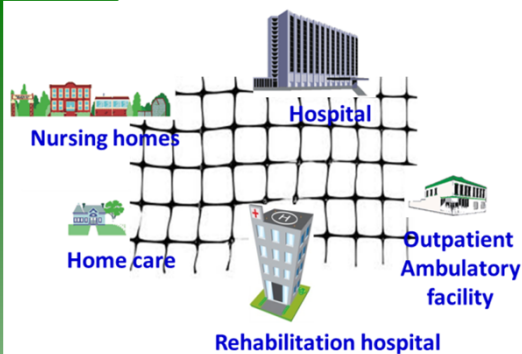




Prevalence of fecal colonization with MDRO-GNB in LTCFs

Country	Study Year	Type of MDRO	Swab sites	% MDRO
Northern Ireland (20 NHs)	2005-2006	ESBL producer E.coli	Fecal sample	40.5
Italy (1 NH)	2006	<ul style="list-style-type: none"> •ESBL producers •MBL producers 	Urine, rectal, inguinal, oropharyngeal	<ul style="list-style-type: none"> •75 • 6
France (1 NH)	2009	ESBL producers E.coli	Urine	22

Rooney PJ, JAC 2009; 64:635; March A, Clin Microbiol Infect 2010; 16:934; van der Mee-Marquet N, ICHE 2010; 31: 968;



The risk for the healthcare service net: a population perspective

Active surveillance for asymptomatic carriers of carbapenemase-producing *Klebsiella pneumoniae* in a hospital setting

C. Gagliotti^{a,*}, V. Ciccarese^b, M. Sarti^b, S. Giordani^b, A. Barozzi^b, C. Braglia^b, C. Gallerani^b, R. Gargiulo^b, G. Lenzotti^b, O. Manzi^b, D. Martella^b, M.L. Moro^a

Table I

Screening of hospital inpatients for detection of asymptomatic rectal carriers of carbapenemase-producing *Klebsiella pneumoniae* (Nuovo S. Agostino Estense hospital, August to December 2011)

Patient category	Screening tests		Patients	
	No.	No. positive	No.	No. positive
Epidemiological link to case patients (nursed in the same unit)	2586	151 (5.8%)	1064	54 (5.1%)
Transferred from other hospital	82	2 (2.4%)	77	2 (2.6%)
Transferred from long-term health facility	52	3 (5.8%)	33	2 (6.1%)
Recent in-hospital stay (discharged by 60 days)	93	4 (4.3%)	56	1 (1.8%)
Patients admitted to intensive care and post-acute units	655	8 (1.2%)	457	6 (1.3%)
Total	3468	168 (4.8%)	1687	65 (3.9%)

- In Italy, the incidence of KPC has dramatically increased by 2010
- A regional intervention starting on July 2011 was effective in inverting this trend



Conclusions

- ✓ The **burden of MDROs UTis in the community is significant, especially in LTCFs**
- ✓ **The risk of MDROs colonization in LTCFs is significant** as well as colonization pressure at hospital admission
- ✓ **Modifiable risk factors** are:
 - antimicrobial pressure (outpatient and LTCFs)
 - invasive devices (frequency of use and infection control measures) (LTCFs)
 - transmission (through the hands)