



Dünyada Antibiyotik Direnci

Dr.Füsün Can

Koç Üniversitesi Tıp Fakültesi

Tıbbi Mikrobiyoloji AD

Antibiyotik Direnci Küresel Problem



- Mortality 25.000 /yıl
- Maliyet 1.500.000.000 €



- Mortality 23.000/yıl
- Maliyet 35 .000.000.000 USD

Küresel Antibiyotik Direnci



2050 Yılı

10m

ölüm

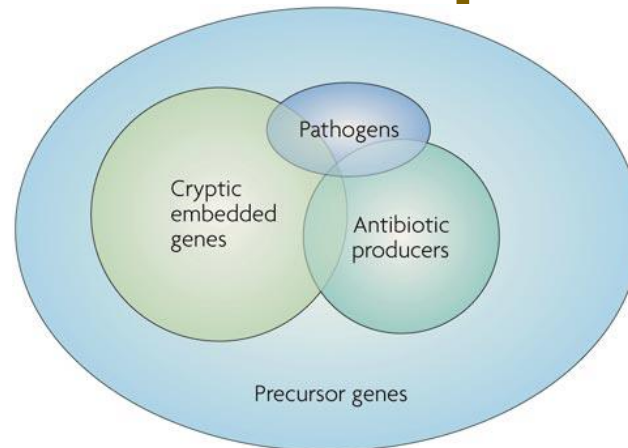
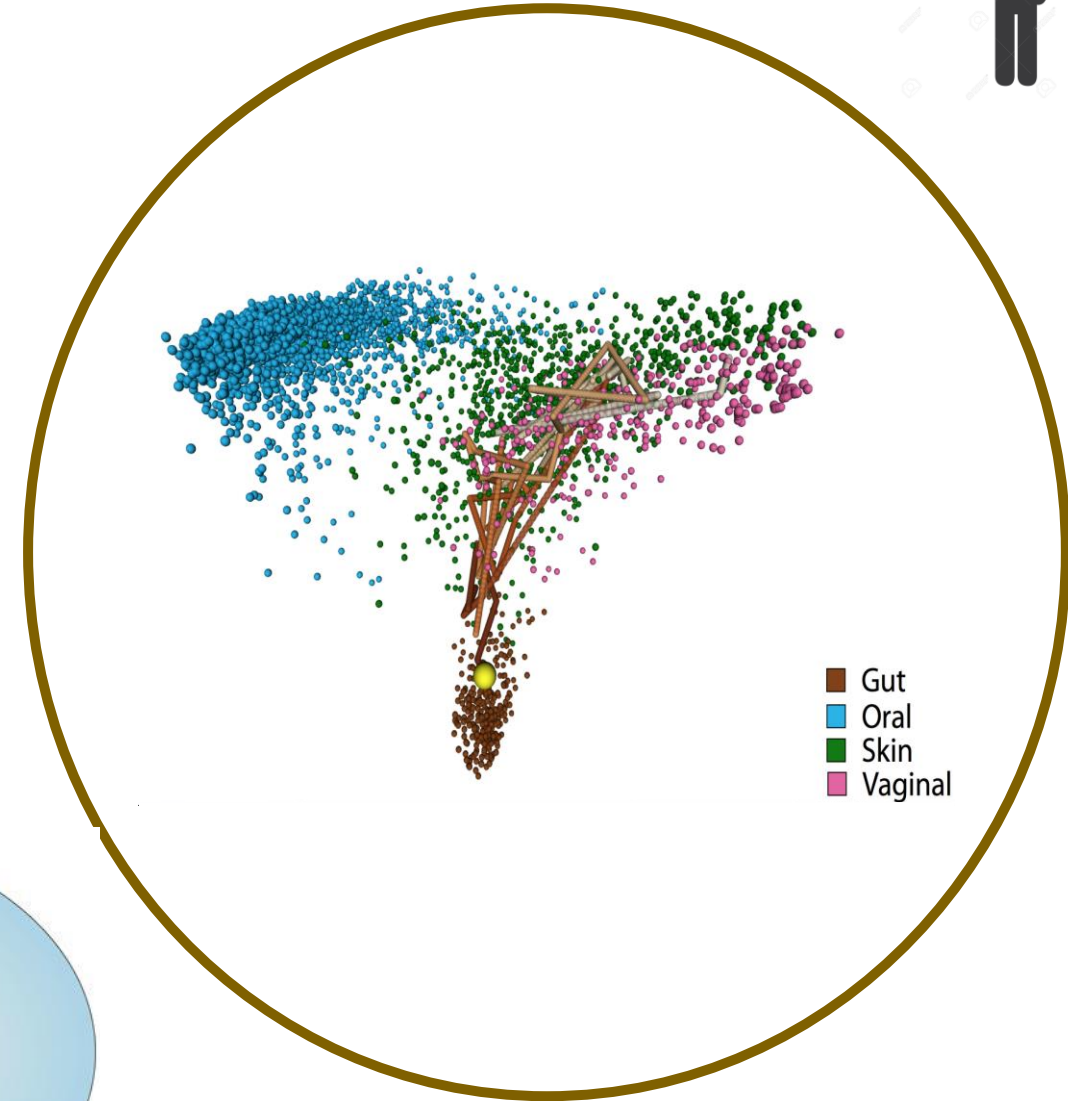
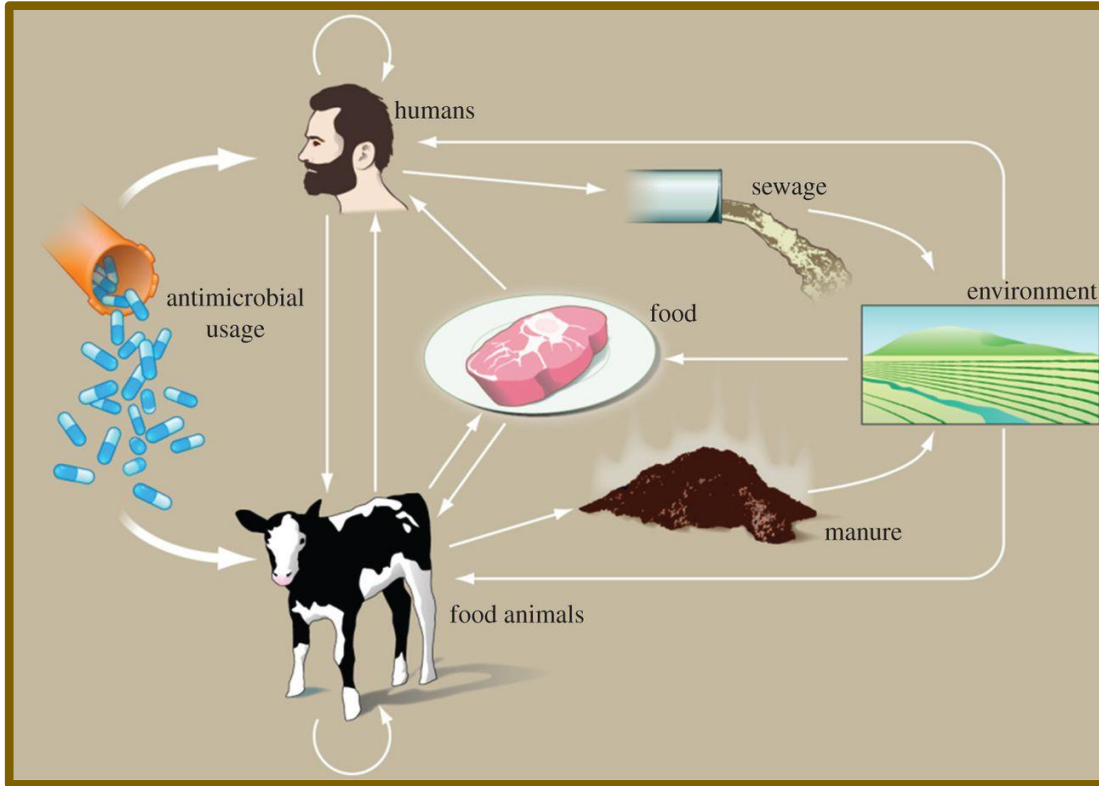


Maliyet

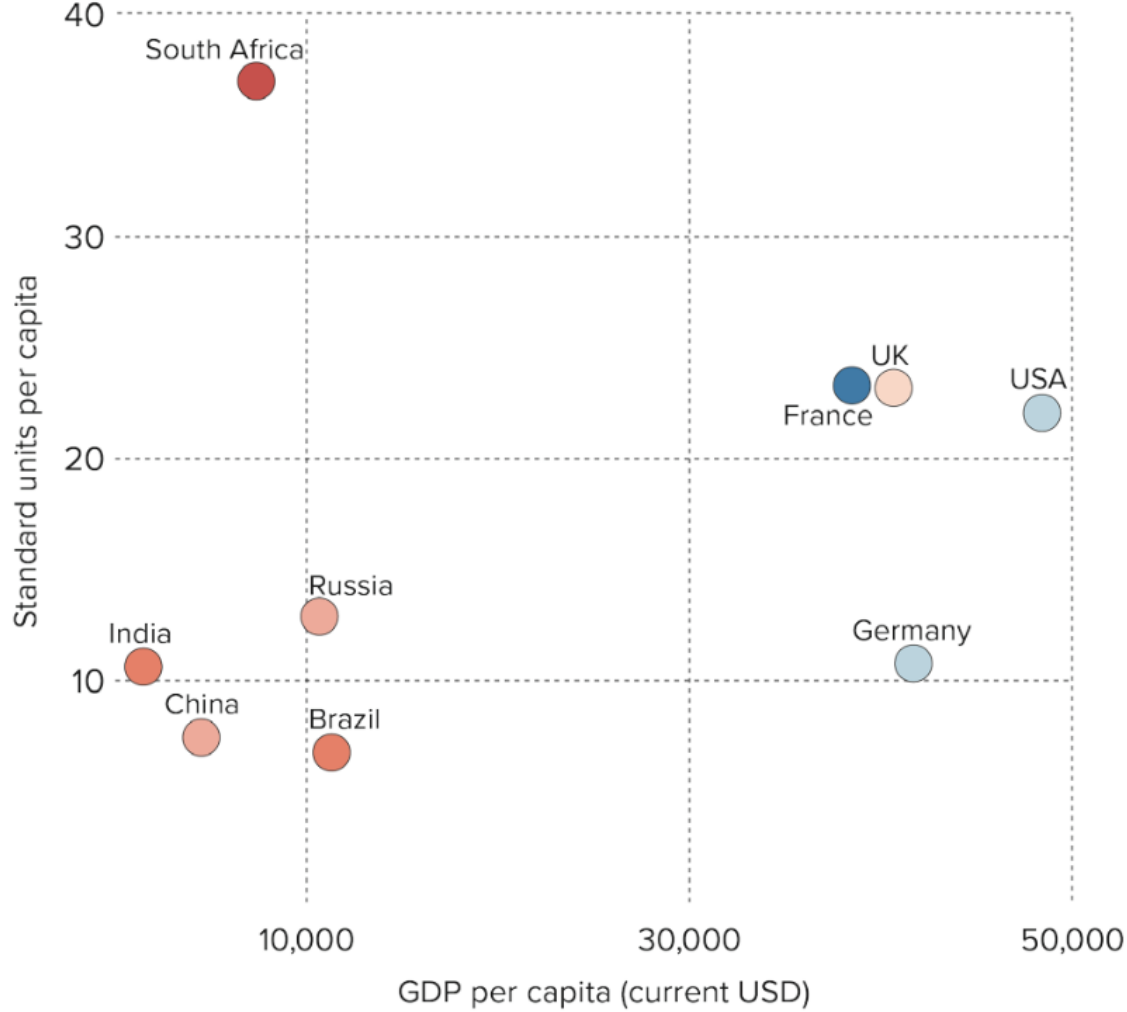
66 trilyon

Euro

Antibiyotik Direnci Tüketimin Artmasına Bağlı Artıyor



Ülkelere Göre Antibiyotik Kullanımı



- 71 ülke verilerinden toplam artış %30
- Gelişmiş ülkelerde tüketim daha fazla
- Artış oranı en fazla Düşük-Orta gelirli ülkelerde

Percentage change in per capita antibiotic consumption, 2000-2010



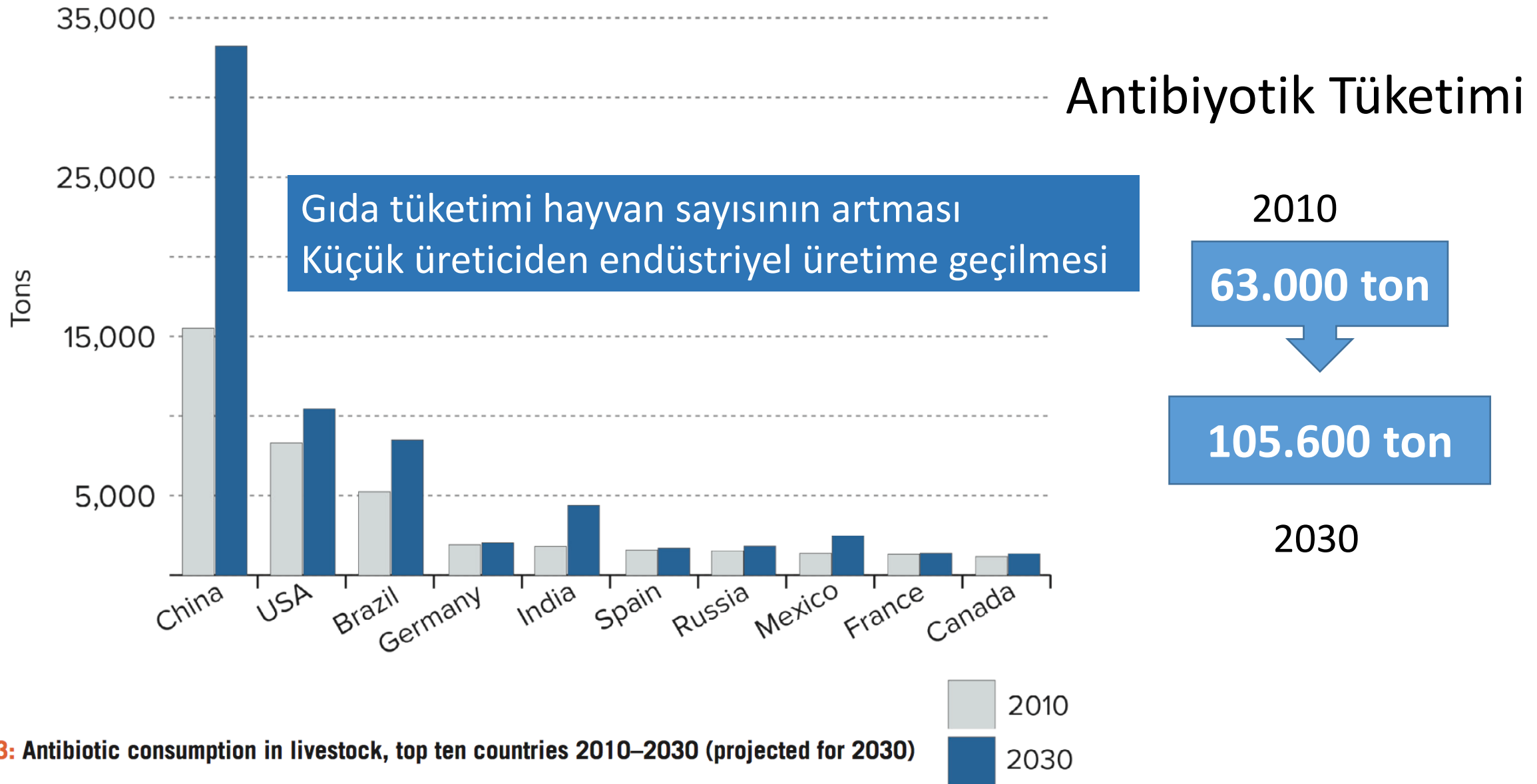


FIGURE ES-3: Antibiotic consumption in livestock, top ten countries 2010–2030 (projected for 2030)

Source: Van Boeckel et al. 2015

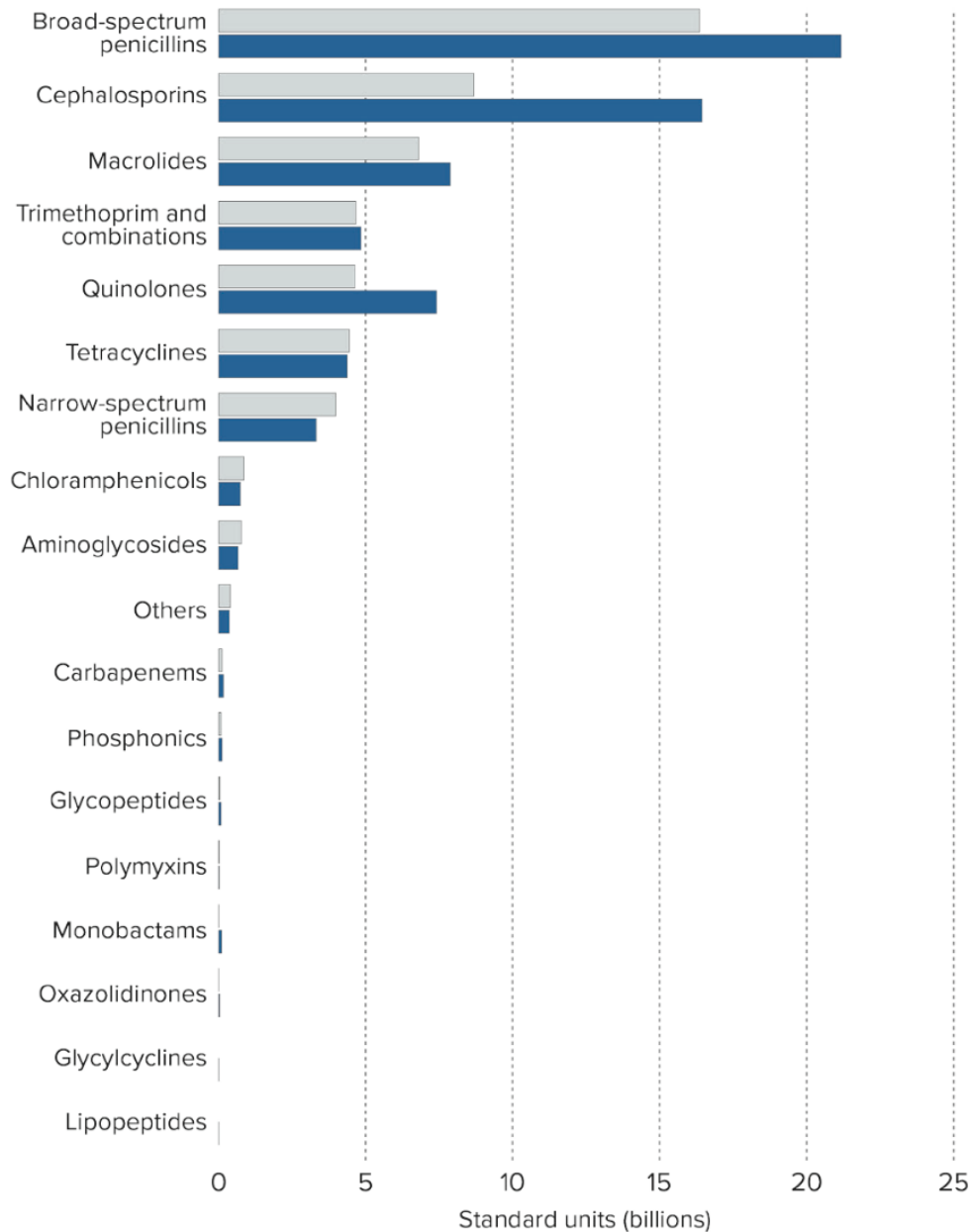


FIGURE 2-1: Global antibiotic use by class, 2000–2010

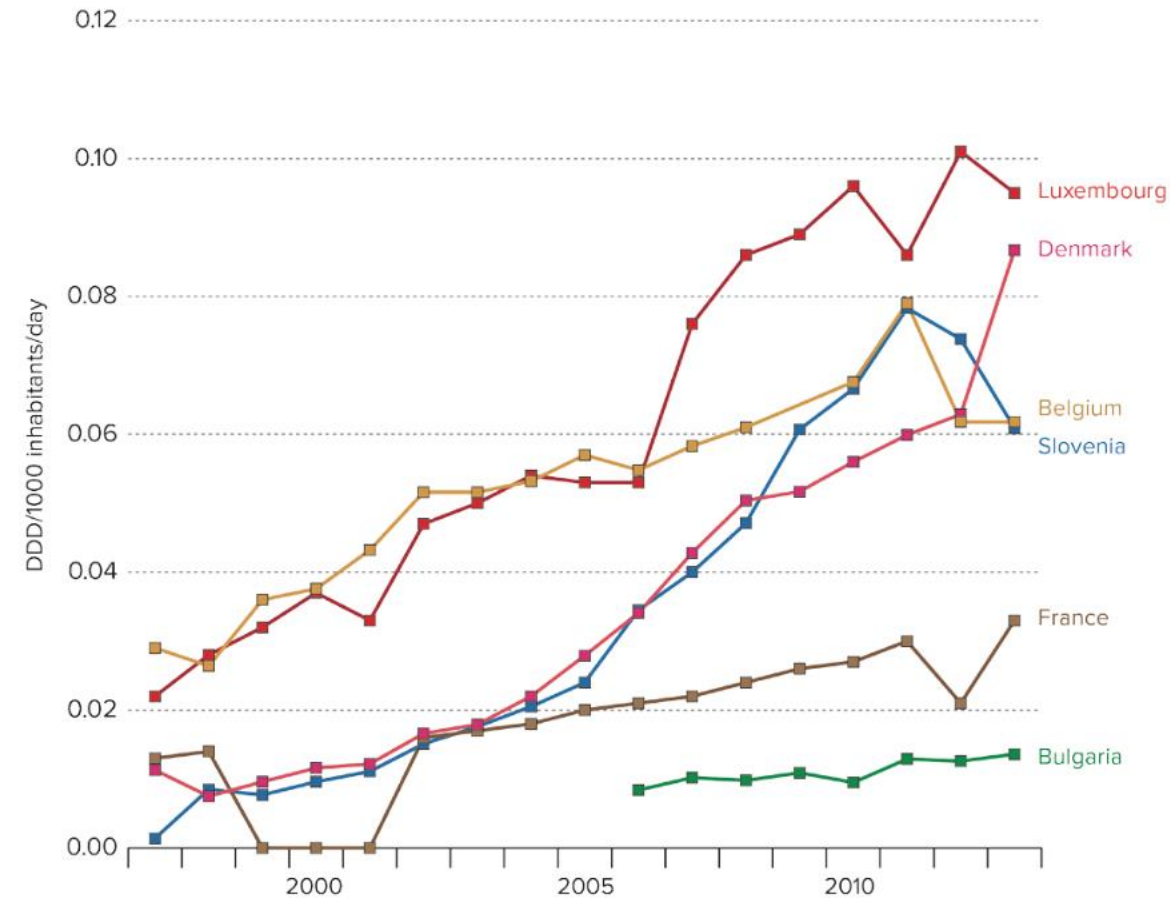


FIGURE 2-3: Carbapenem consumption in the hospital sector in selected European countries, 1997–2013

Source: ESAC-Net 2015

**A defined daily dose (DDD) of antibiotics
per 1000 people**



İngiltere



Türkiye

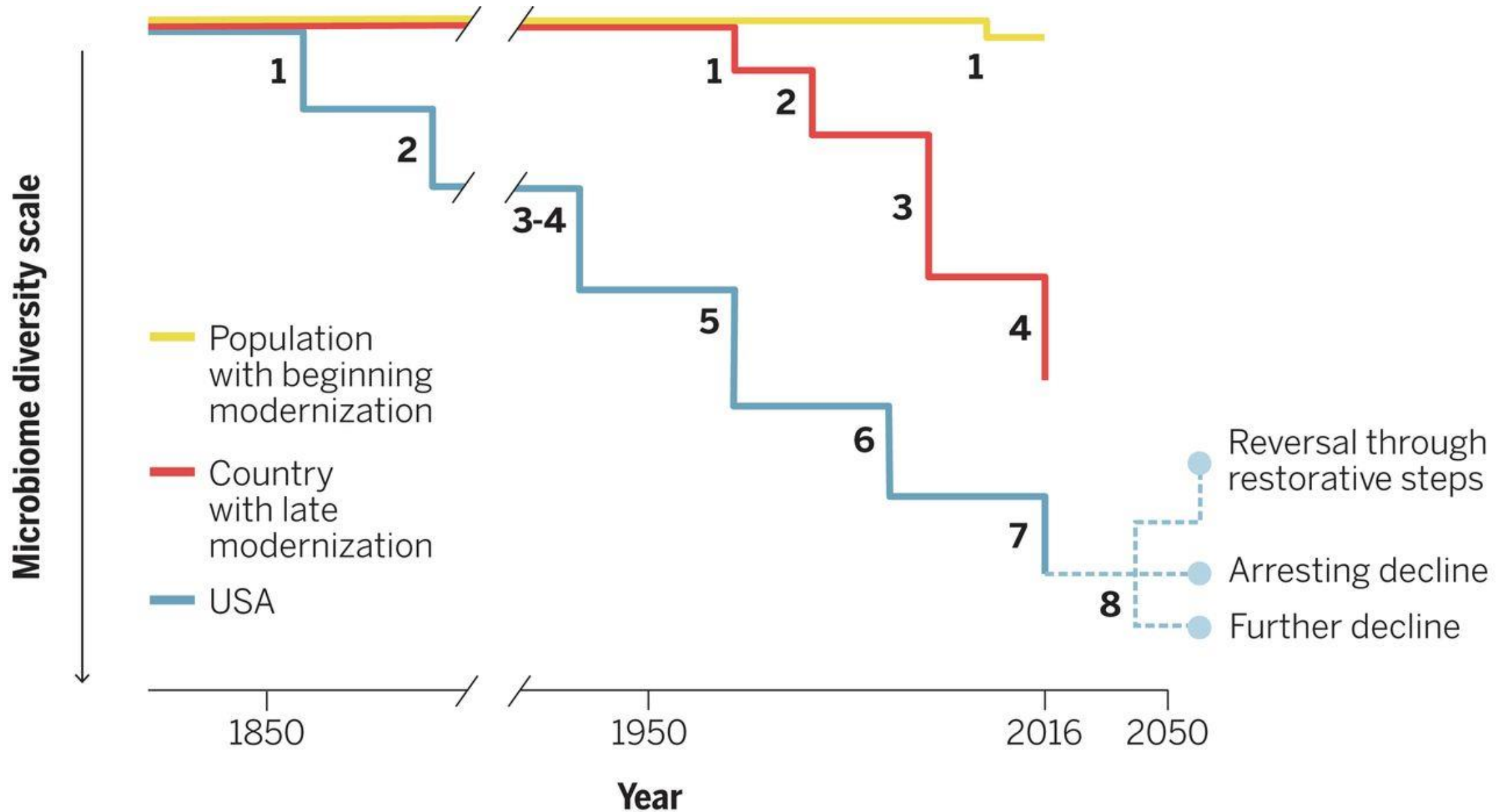
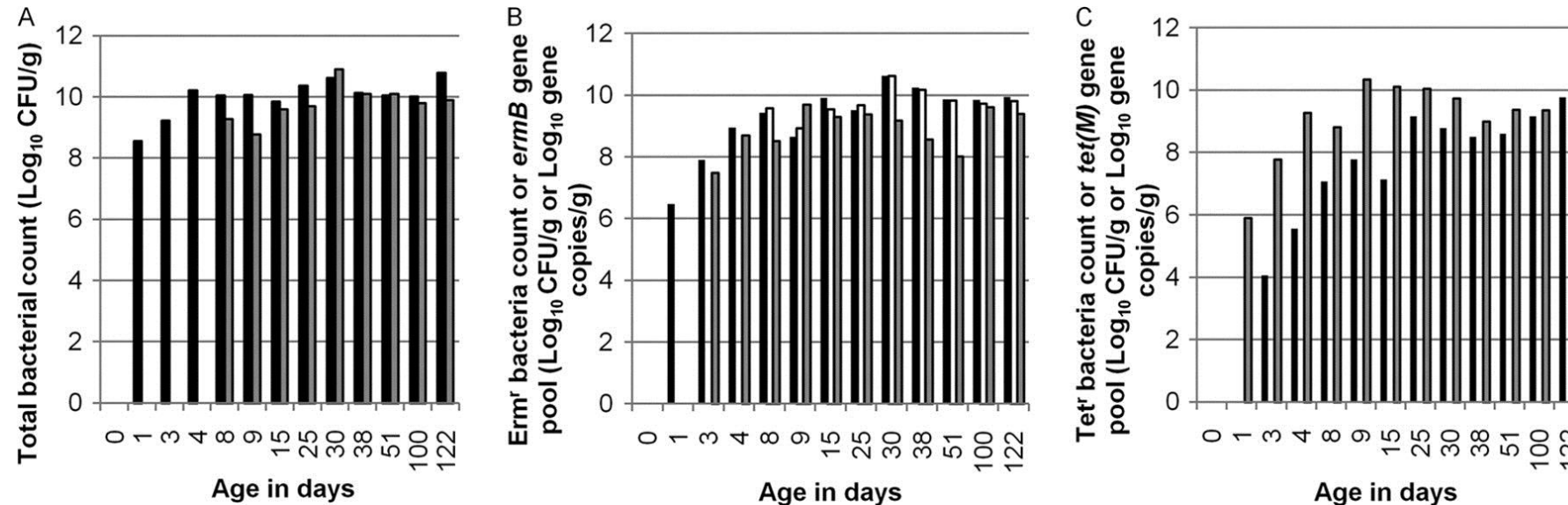


Fig. 1 Models of microbiota change in different societies.

Acquired Antibiotic Resistance: Are We Born with It?

Lu Zhang,^{1†} Daniel Kinkelaar,^{1†‡} Ying Huang,¹ Yingli Li,^{1§} Xiaojing Li,^{1¶} and Hua H. Wang^{1,2*}

Department of Food Science and Technology,¹ and Department of Microbiology,² The Ohio State University, Columbus, Ohio 43210



Assessment of AR in fecal samples from baby Q between the newborn stage and 4 months of age.

Direnç genleri doğum sırasında kazanılıyor

Gram Pozitiflerde Antibiyotik Direnci



Metisilin Dirençli *Staphylococcus aureus*

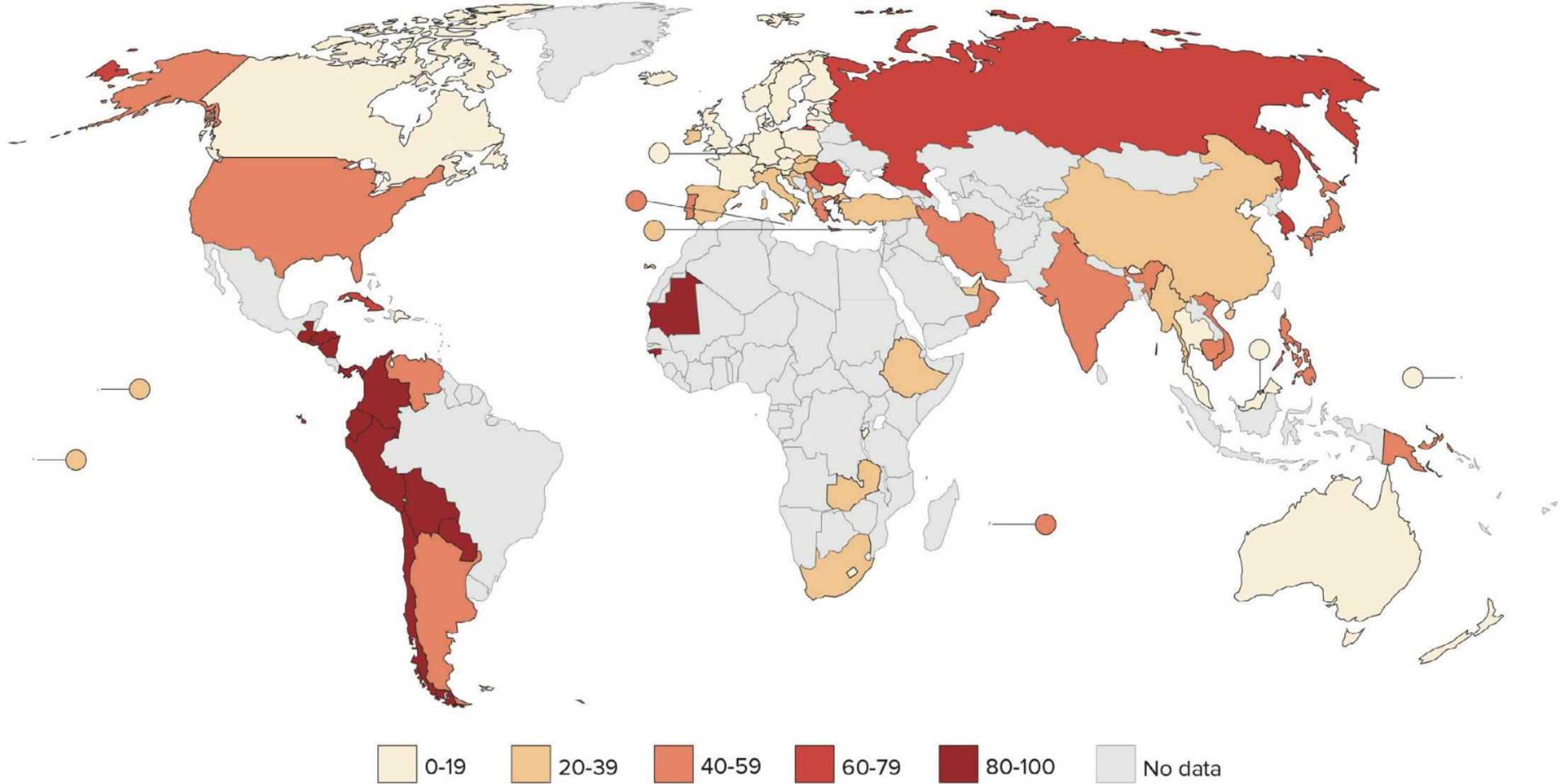


FIGURE 1-11: Percentage of *Staphylococcus aureus* isolates that are methicillin resistant (MRSA), by country (most recent year, 2011–14)

Metisilin Dirençli *Staphylococcus aureus*

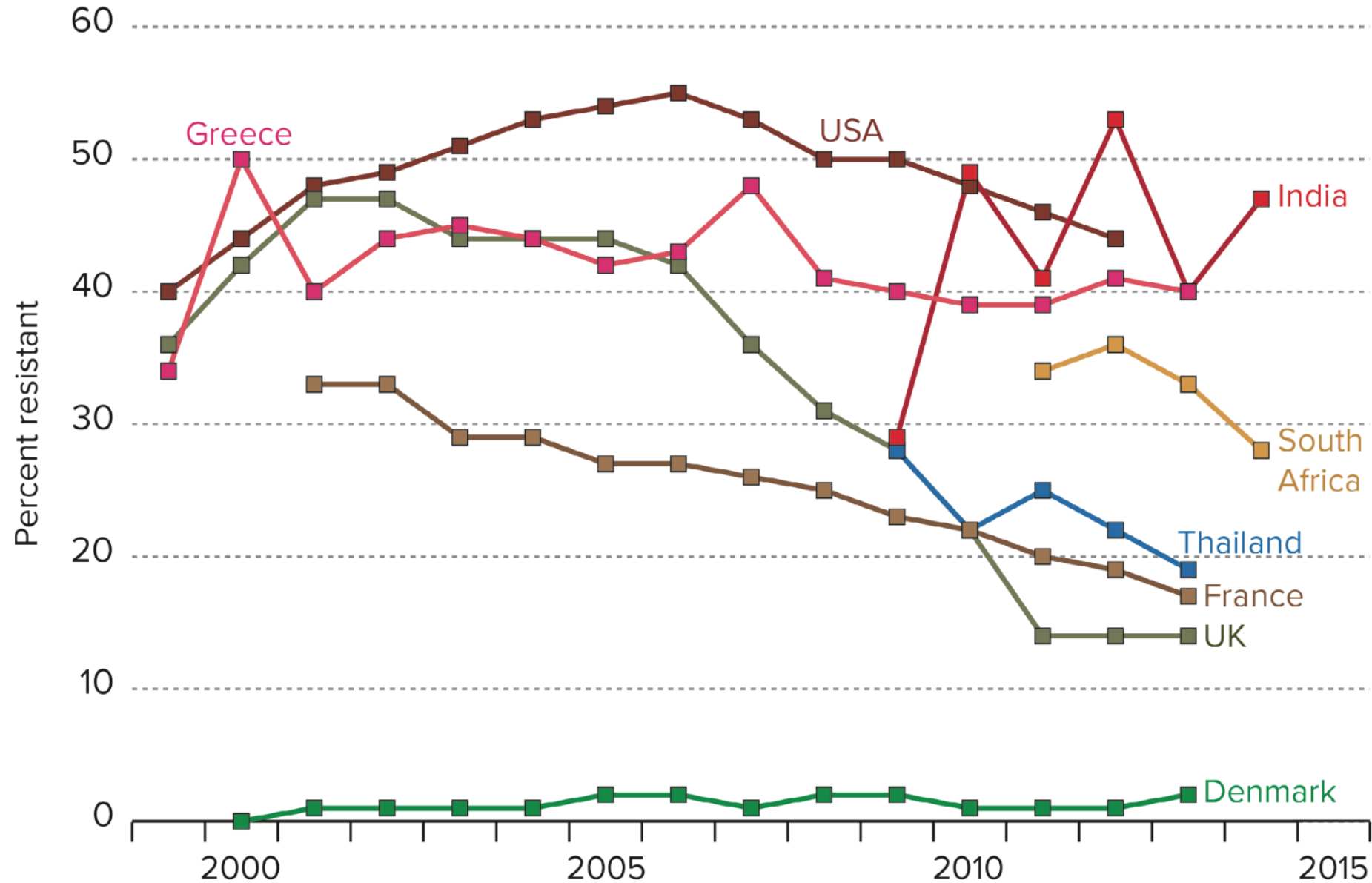
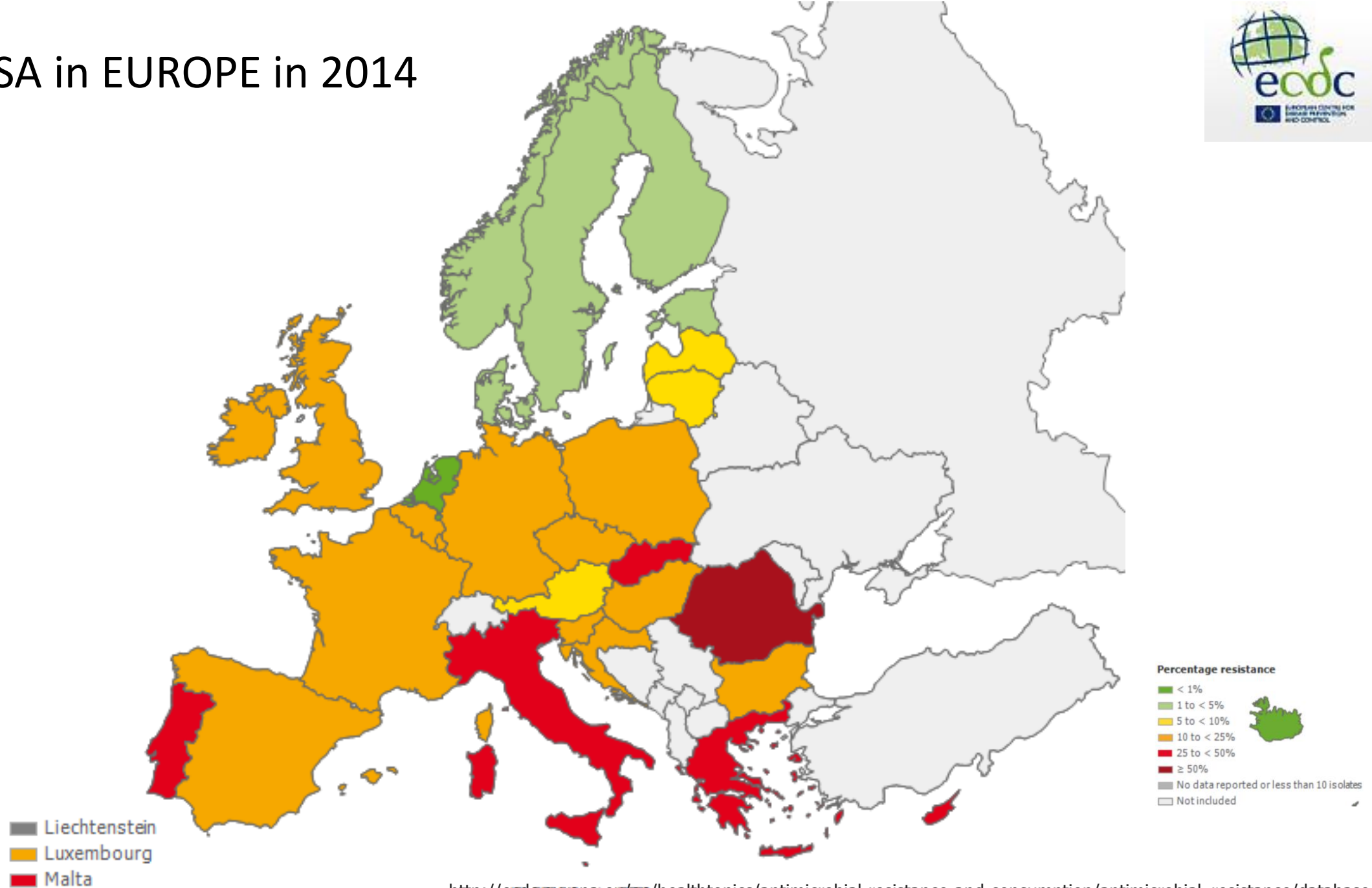
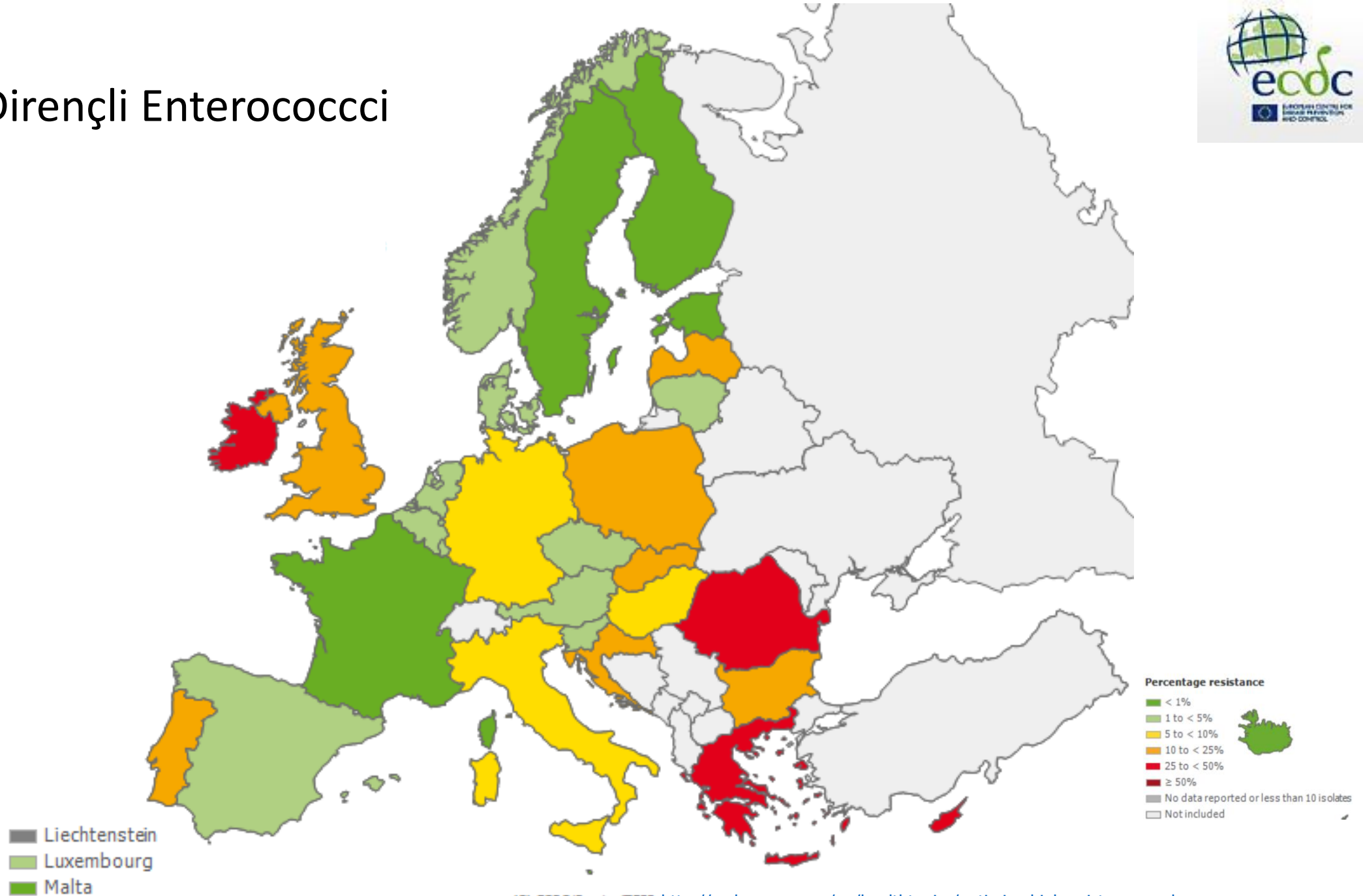


FIGURE ES-1¹: Percentage of *Staphylococcus aureus* isolates that are methicillin resistant (MRSA) in selected countries, 1999–2014

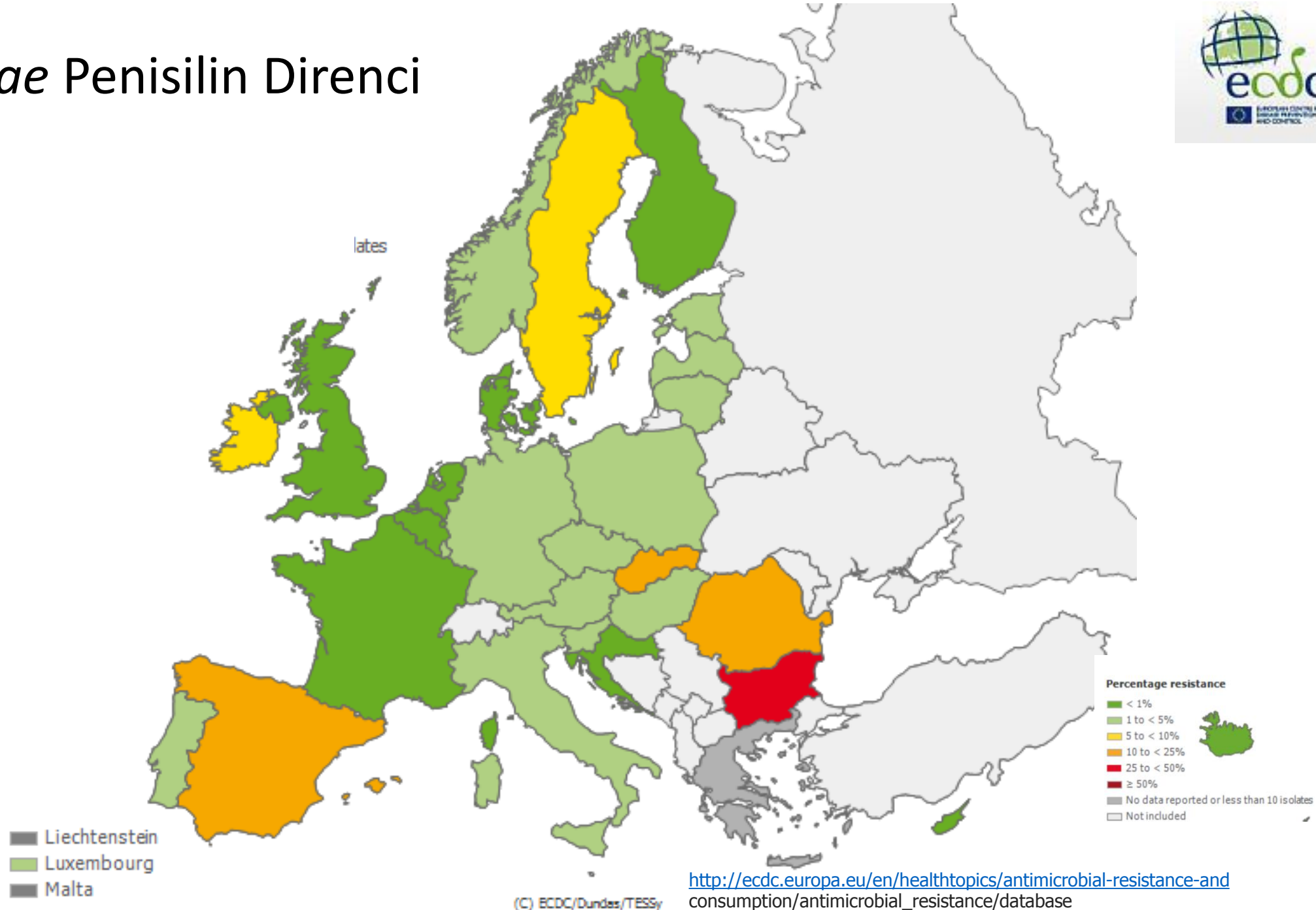
MRSA in EUROPE in 2014



Vancomisin Dirençli Enterococccci



S.pneumoniae Penicillin Resistance



Gram Negatiflerde Direnç



ESBL Pozitif E.coli

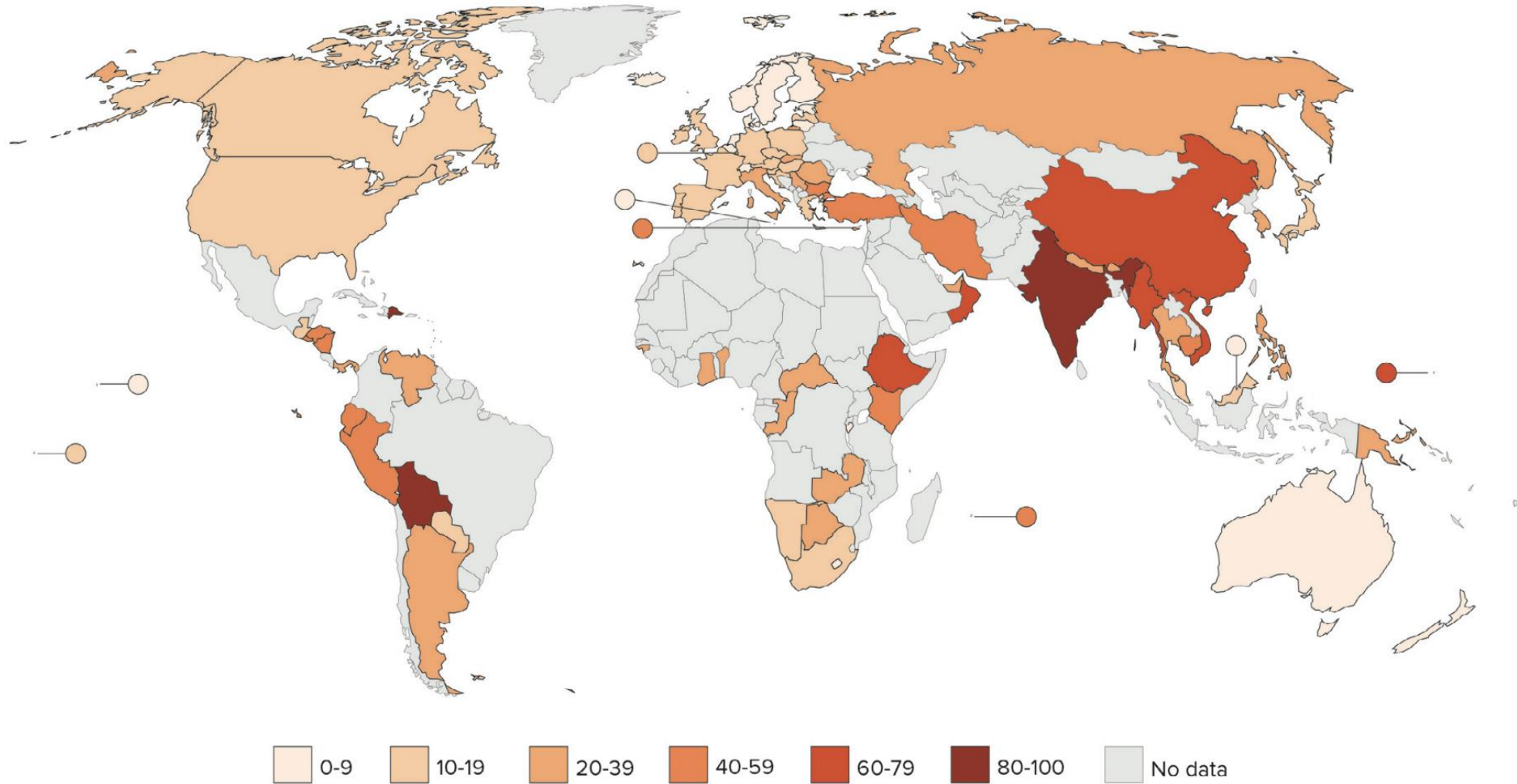
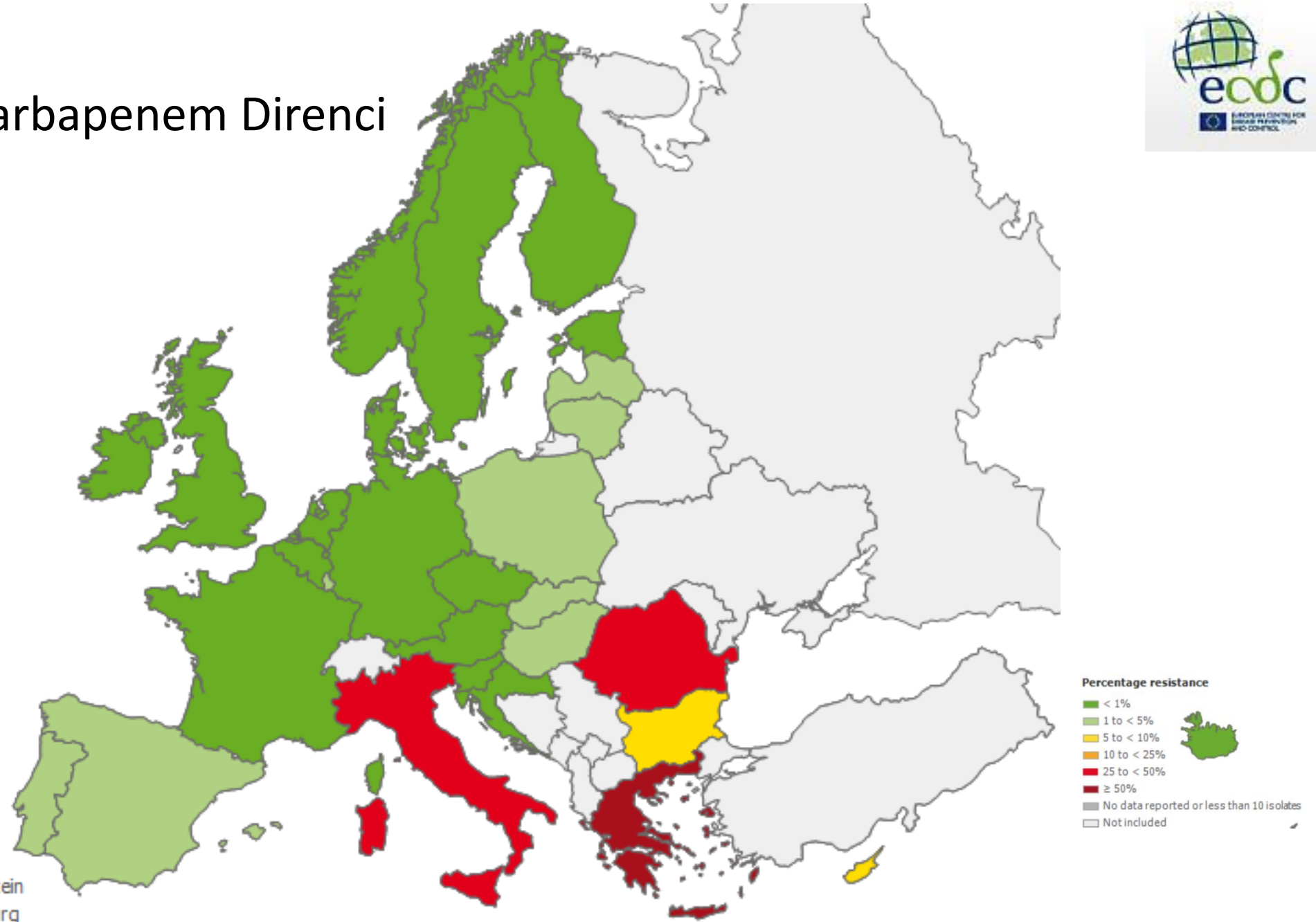


FIGURE 1-2: Percentage of extended-spectrum beta-lactamase producing *Escherichia coli**, by country (most recent year, 2011–2014)

K.pneumoniae Karbapenem Direnci



K.pneumoniae Karbapenem Direnci

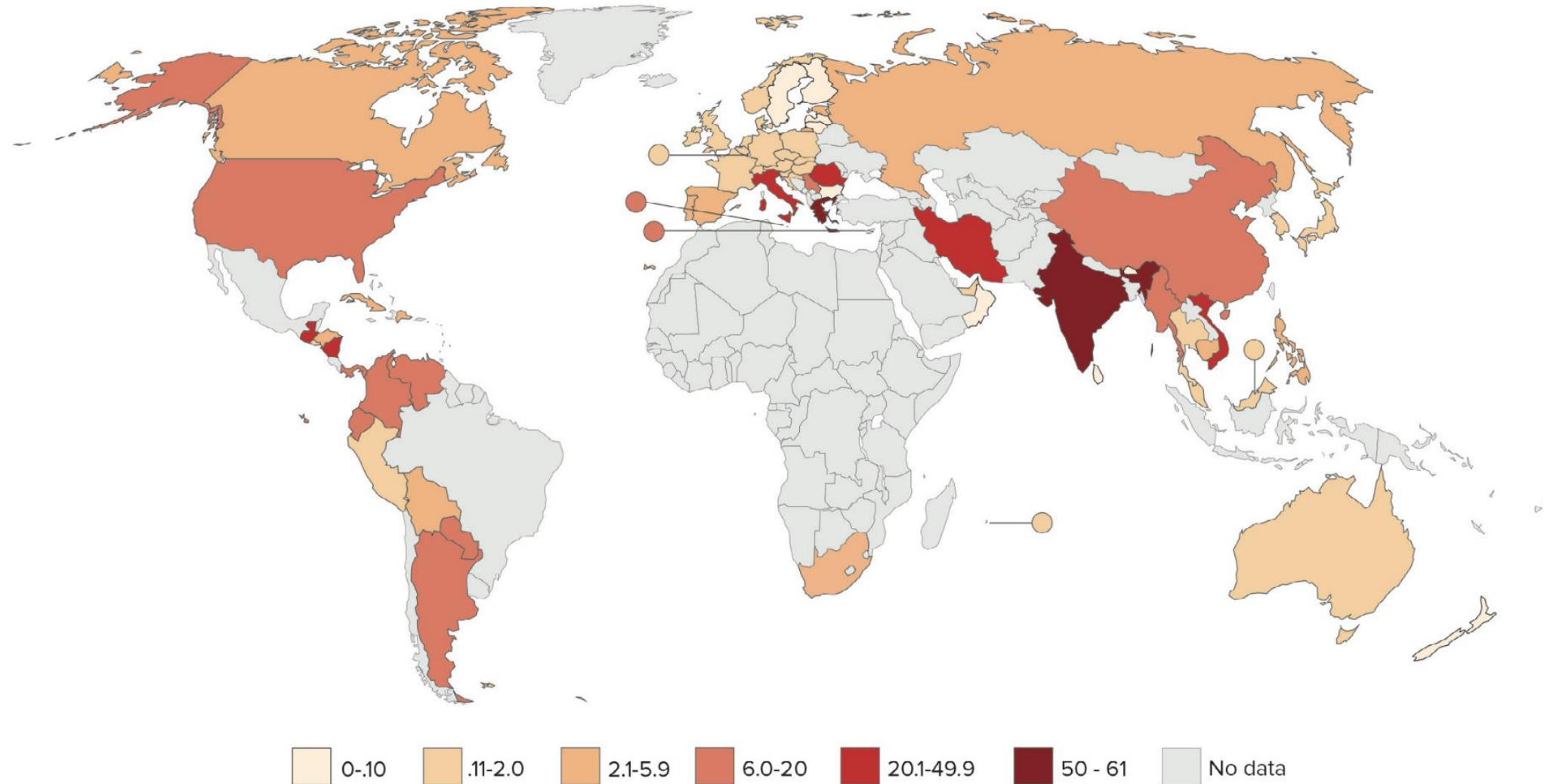


FIGURE 1-3: Percentage of carbapenem-resistant *Klebsiella pneumoniae*, by country (most recent year, 2011–2014)

K.pneumoniae ST258 Hızla Yayılıyor

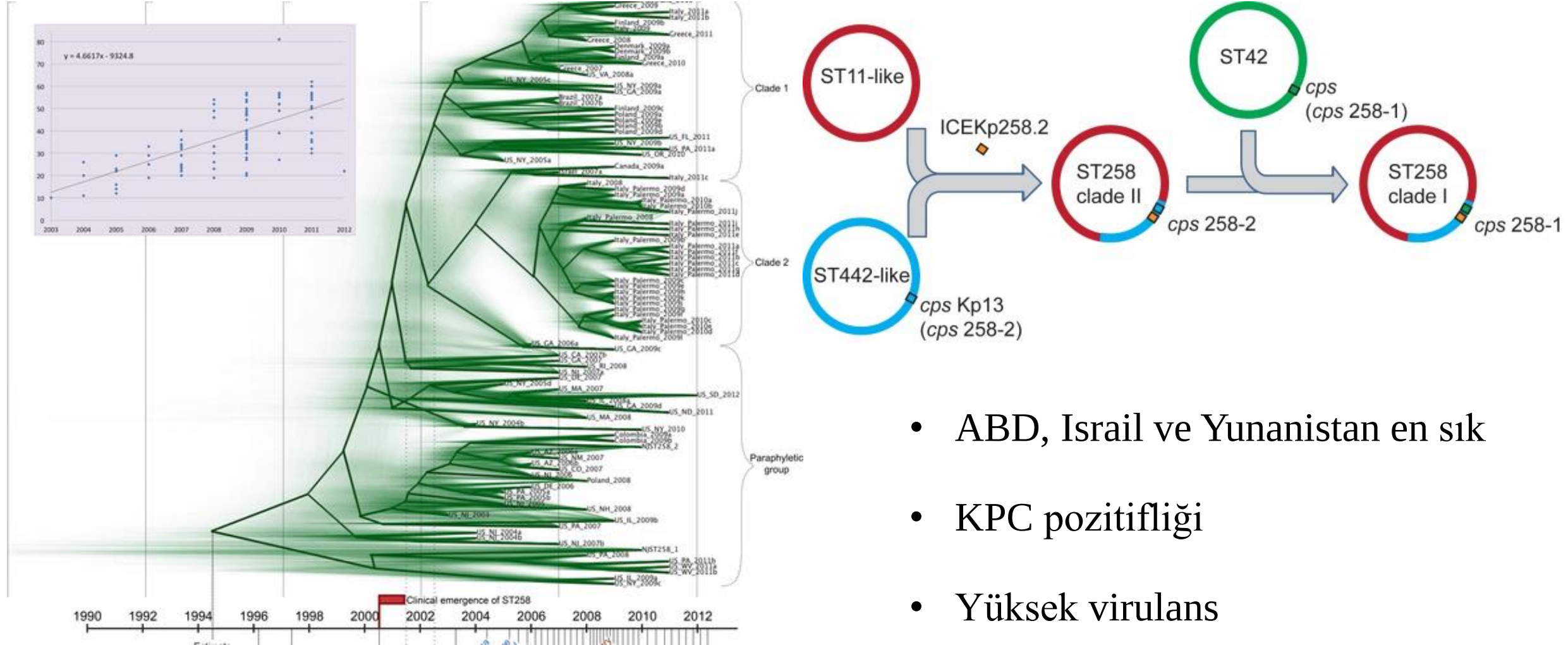
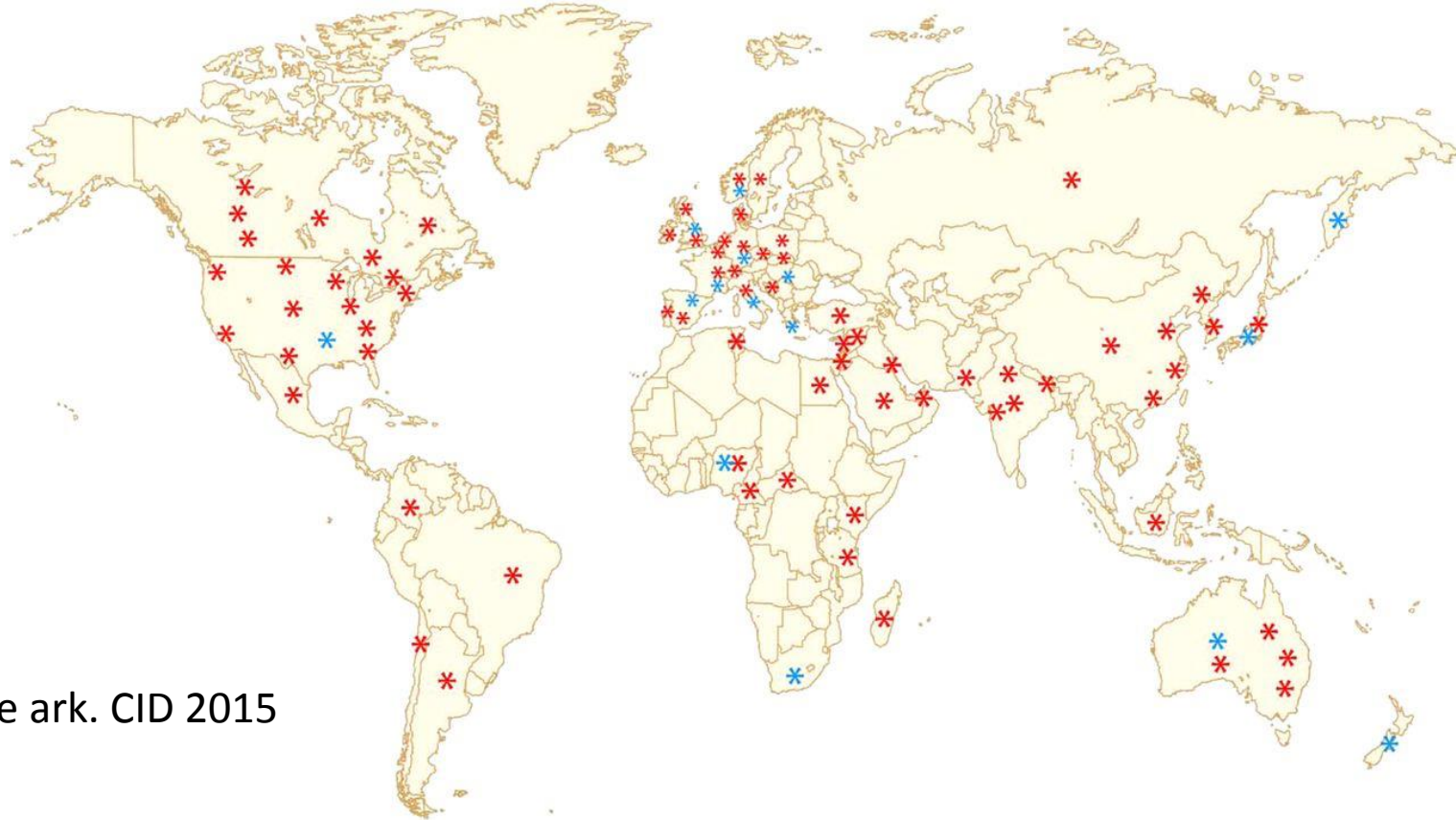


Fig 3. Projecting the evolutionary history of ST258.

- ABD, Israil ve Yunanistan en sık
- KPC pozitifliği
- Yüksek virulans

***Escherichia coli* ST131, an Intriguing Clonal Group**

Marie-Hélène Nicolas-Chanoine,^{a,b,c} Xavier Bertrand,^{d,e} Jean-Yves Madec,^f



Turkiye

Üriner E.coli %12

Can F ve ark. CID 2015

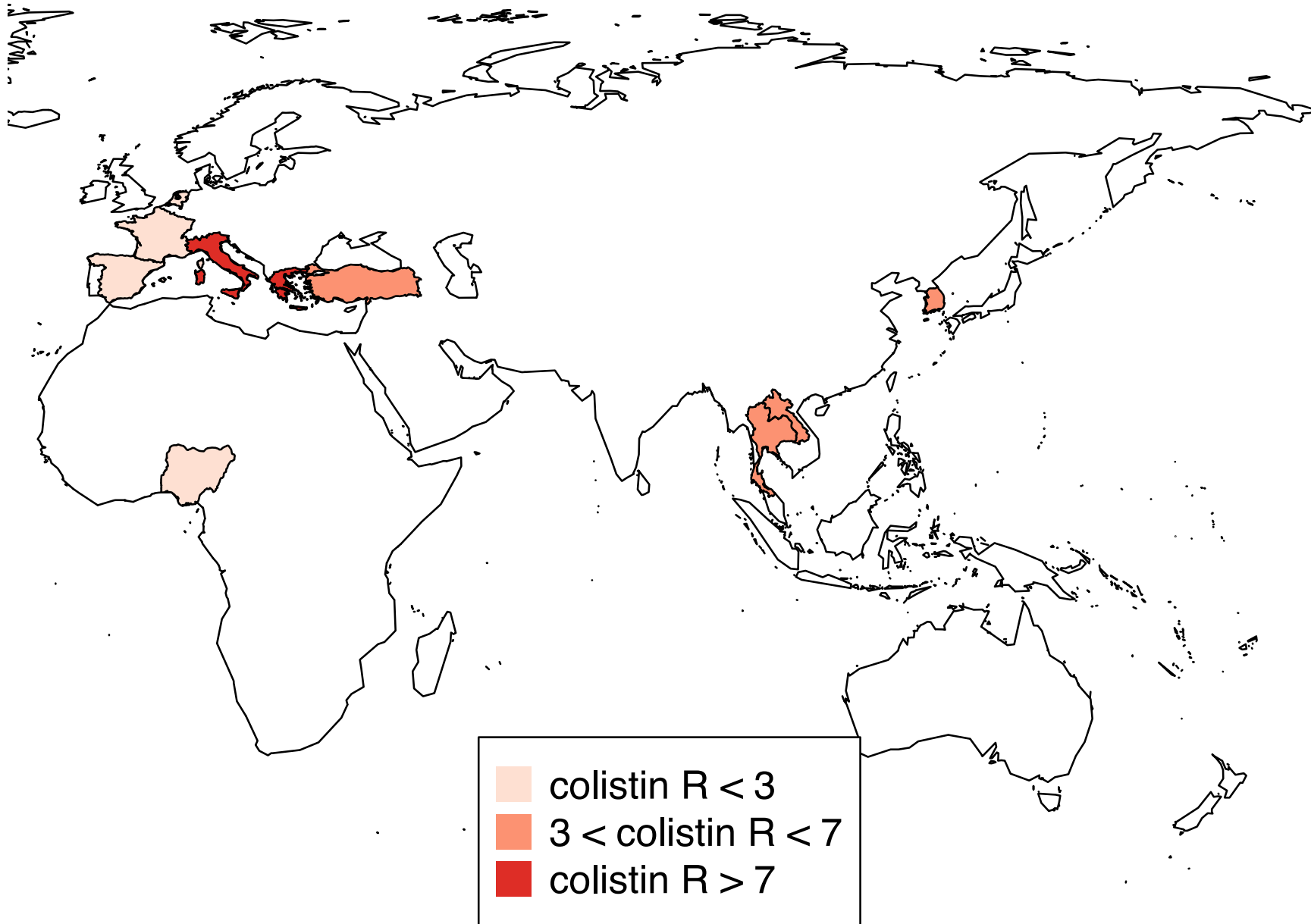
MDR E.coli %24

Can F ve ark. JMM 2016,

Kan E.coli %16

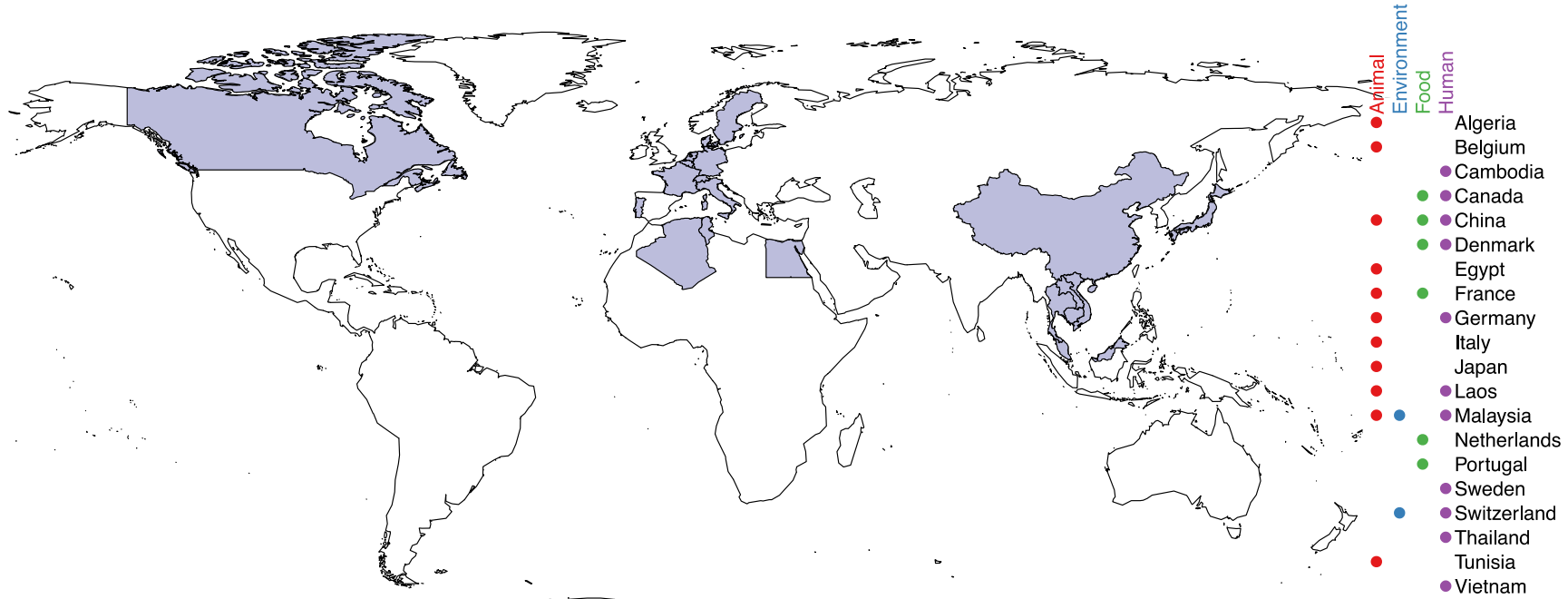
Can F ve ark, JGAR 2016

Emerging Colistin Resistance: What is the Clinical Impact of Increased Awareness?

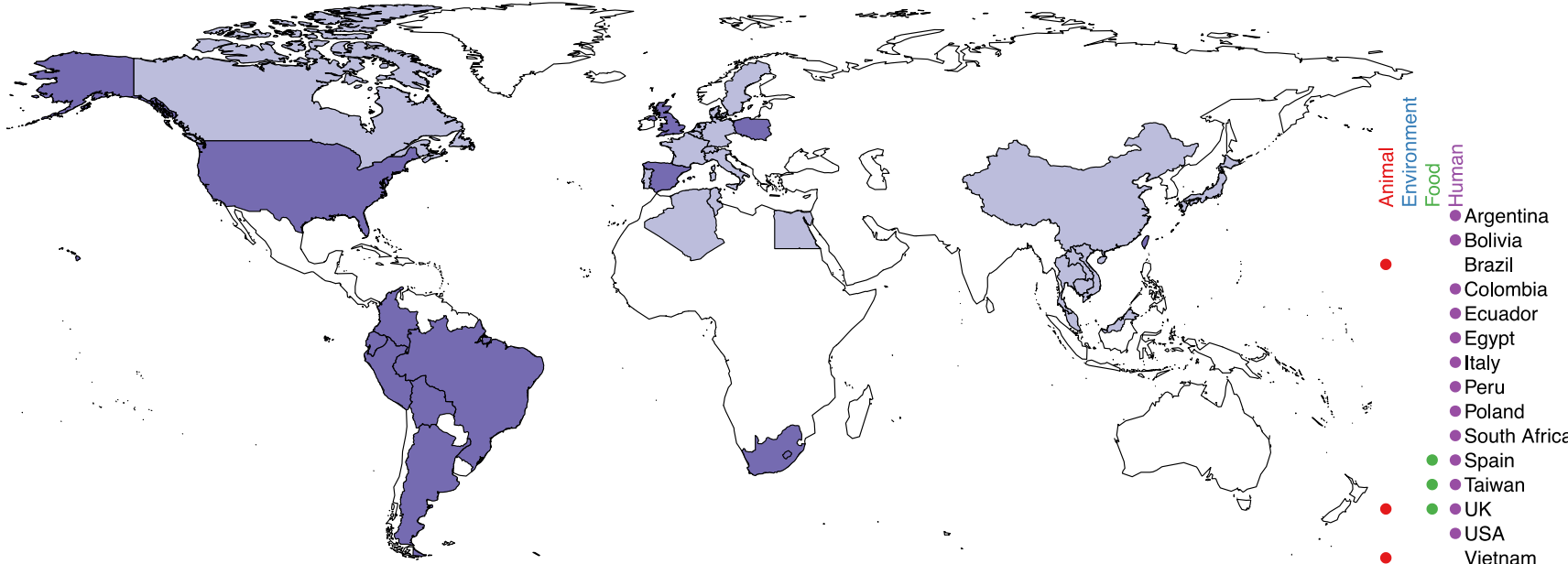


Ergonul O ve ark

Dünyada *mcr-1*

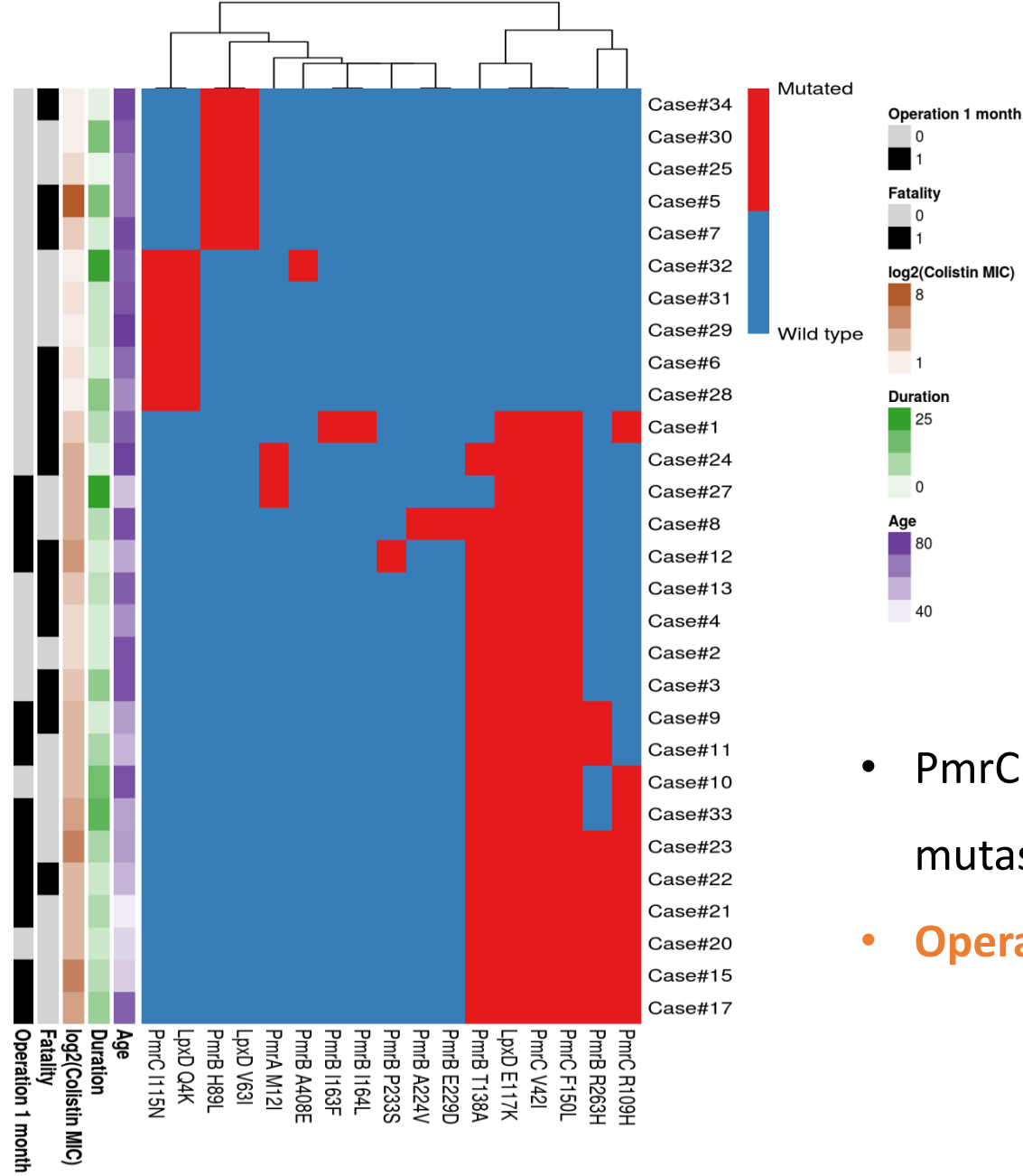


Aralık 2015-Mart 2016



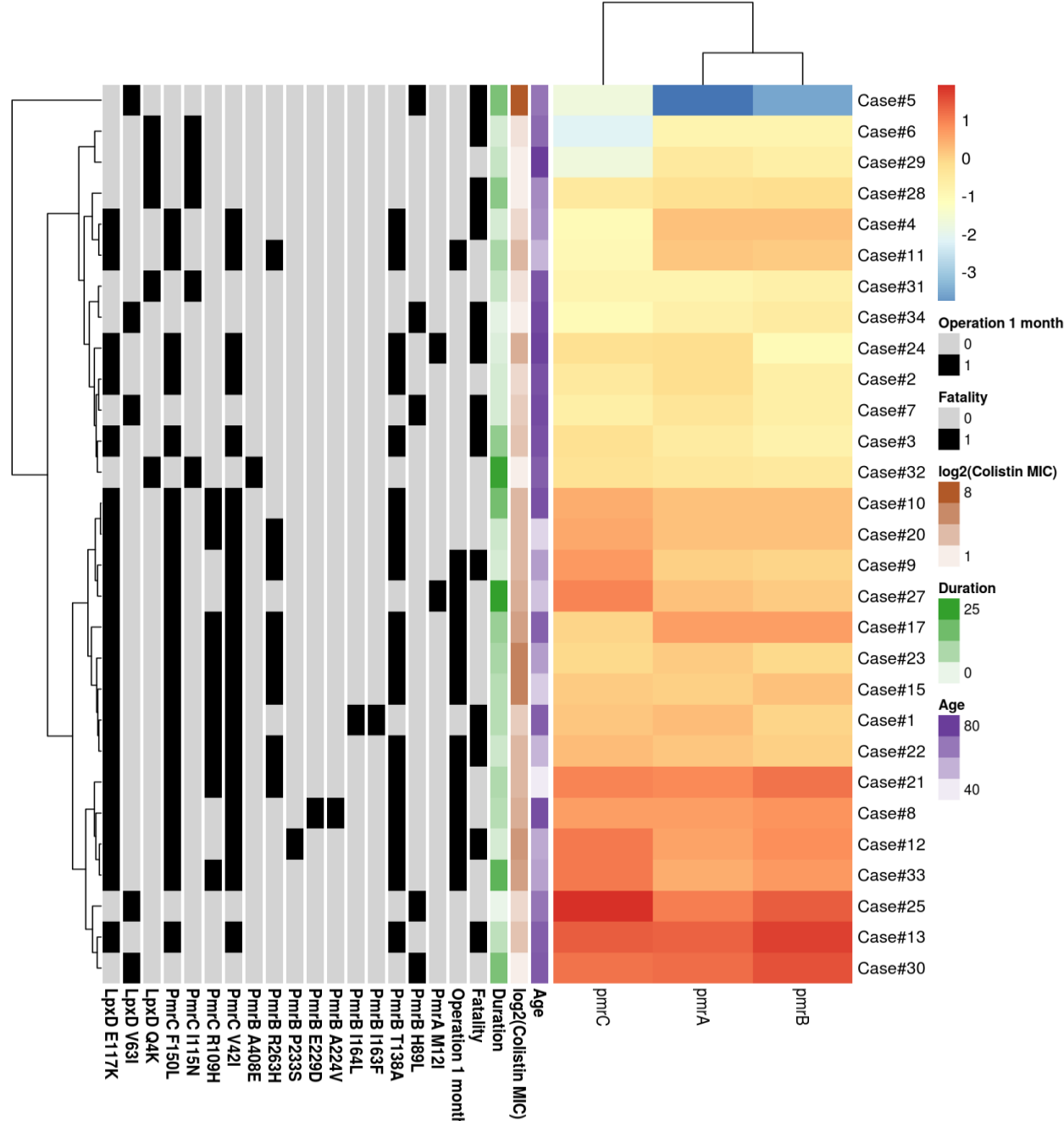
Mart 2016-Temmuz 2016

Acinetobacter baumannii Kolistin Direnci



- PmrC V42I, PmrC F150L, ve LpxD E117K mutasyonları
- Operasyon son 1 ay

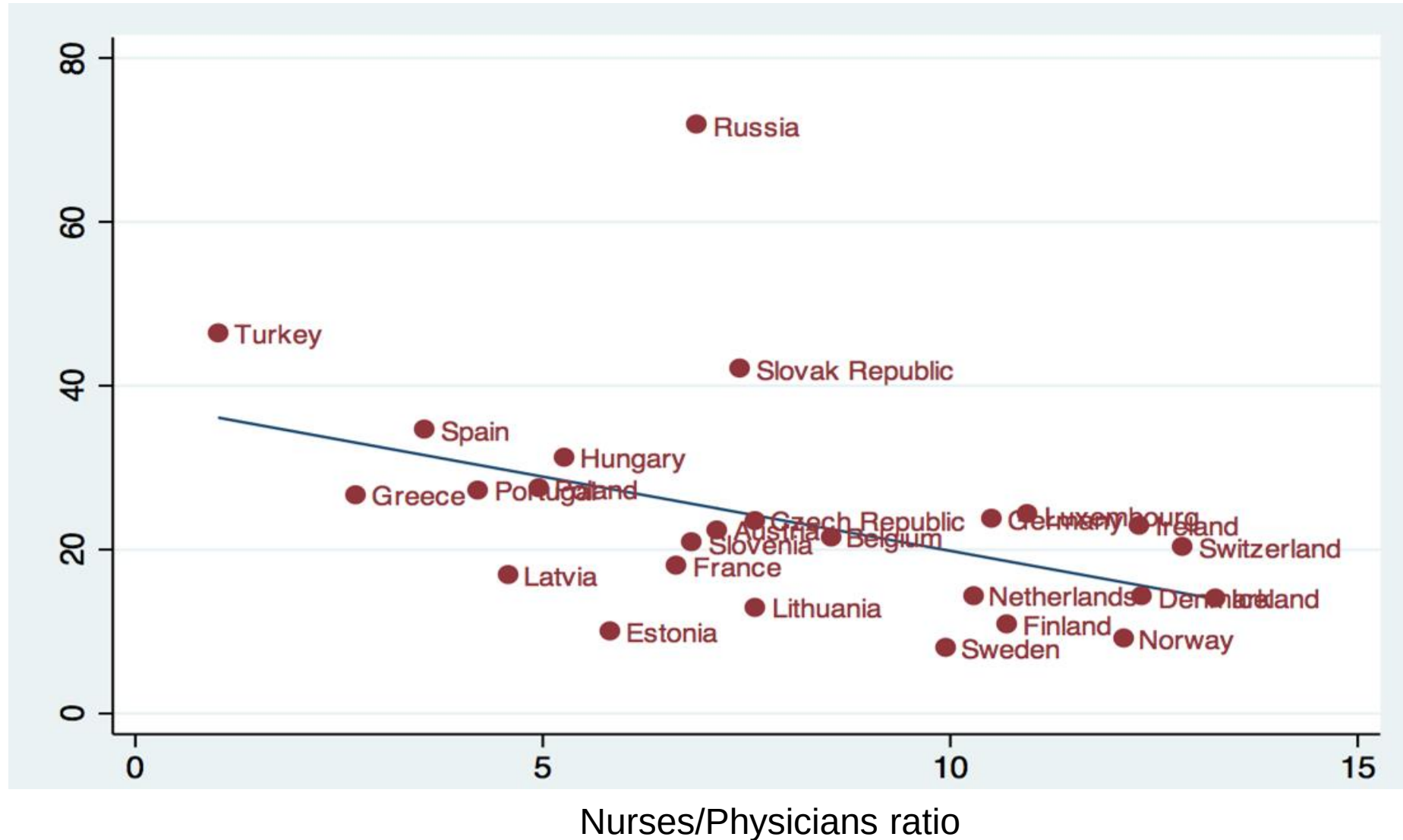
pmrCAB ekspresyonu



- *pmrA* ve *pmrB* gen ekspresyon paternleri benzer
- Kolistin tedavi süresi ile *pmrB* ekspresyon artışı ($p=0.046$)
- Mutasyonlar ekspresyon artırıyor
- Son 1 ay operasyon

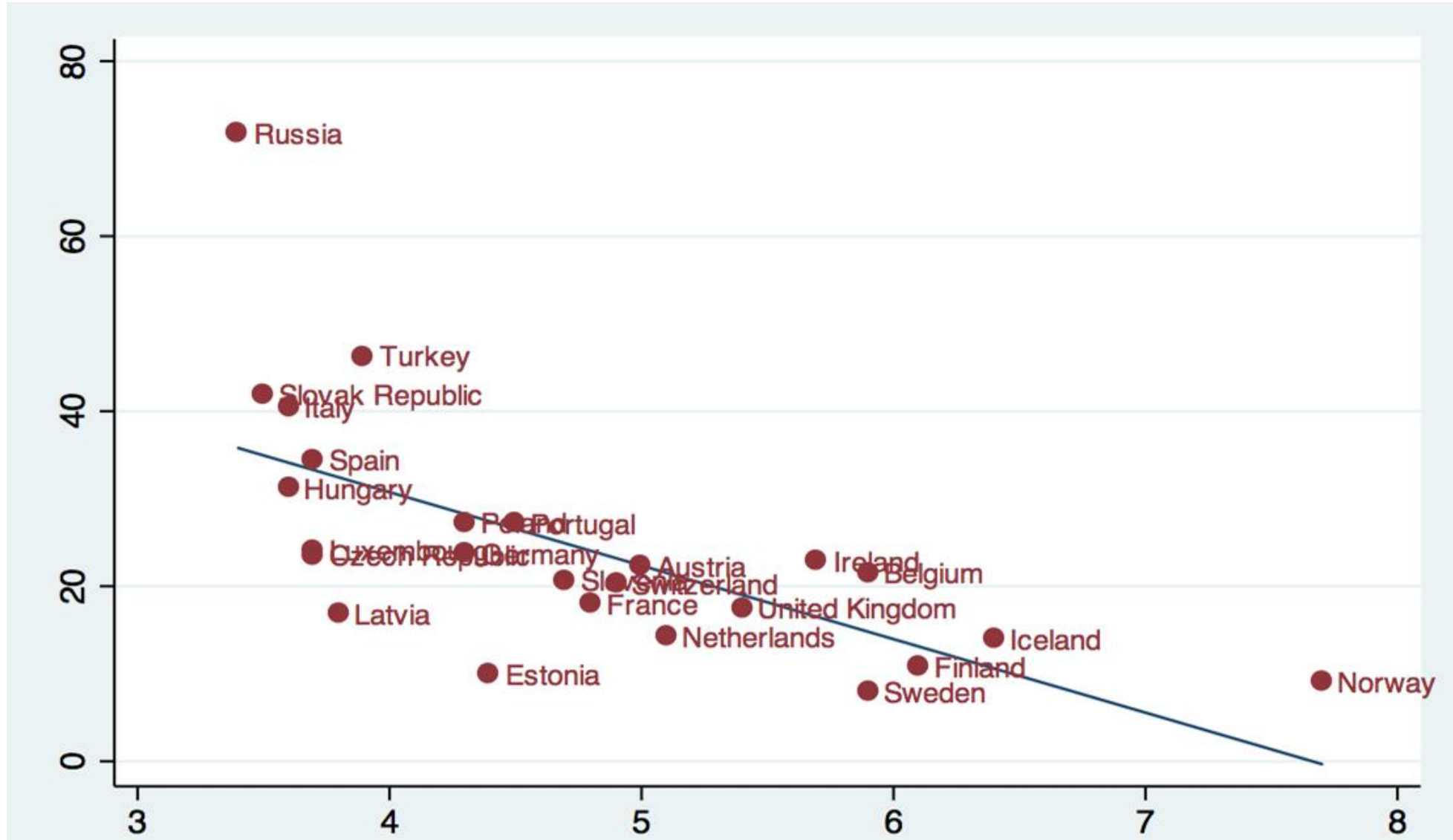
Health and Healthcare Determinants of Antibiotic Resistance in OECD Countries

Salih Karahan, [Poyraz Düzgün](#), Ekin Deniz Aksu, Doruk Can Karaaslan, Bahadır Ak, Füsün Can, Önder Ergönül



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Antibiyotik Direncinin Yayılımı Nasıl Önlenebilir

- Hayvancılıkta antibiyotik direncinin önlenmesi
- Antimikrobiyal Yönetim uygulamalarının toplumda yaygınlaştırılması
- Antimikrobiyal Yönetim uygulamalarının hastanelerde yaygınlaştırılması
- Antimikrobiyal hızlı tanı testlerinin geliştirilmesi
- Yeni antibiyotiklerin geliştirilmesi

