

# AMR in One Health context

## – Estonian experience

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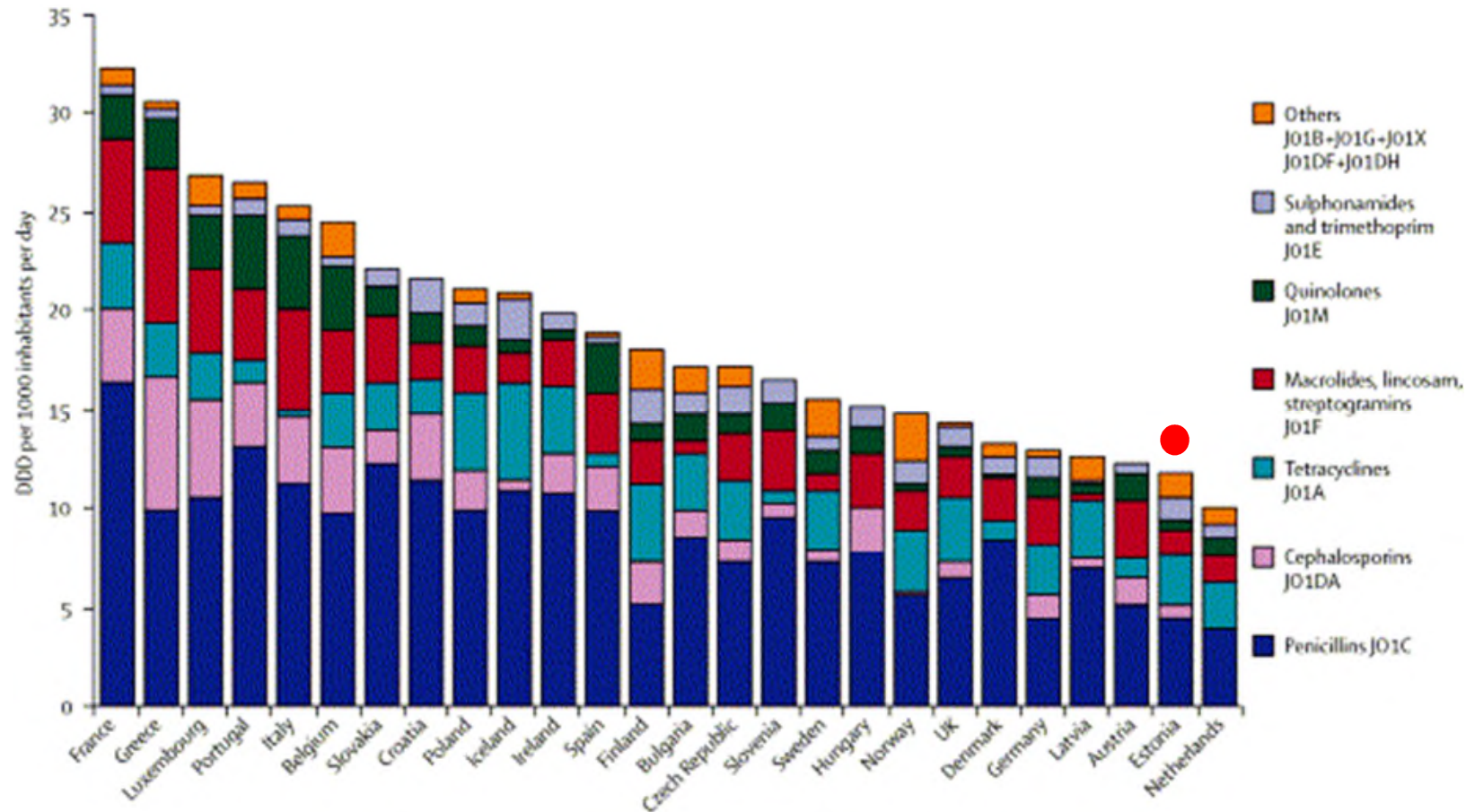


# One Health



# Antibiotic situation in Estonia

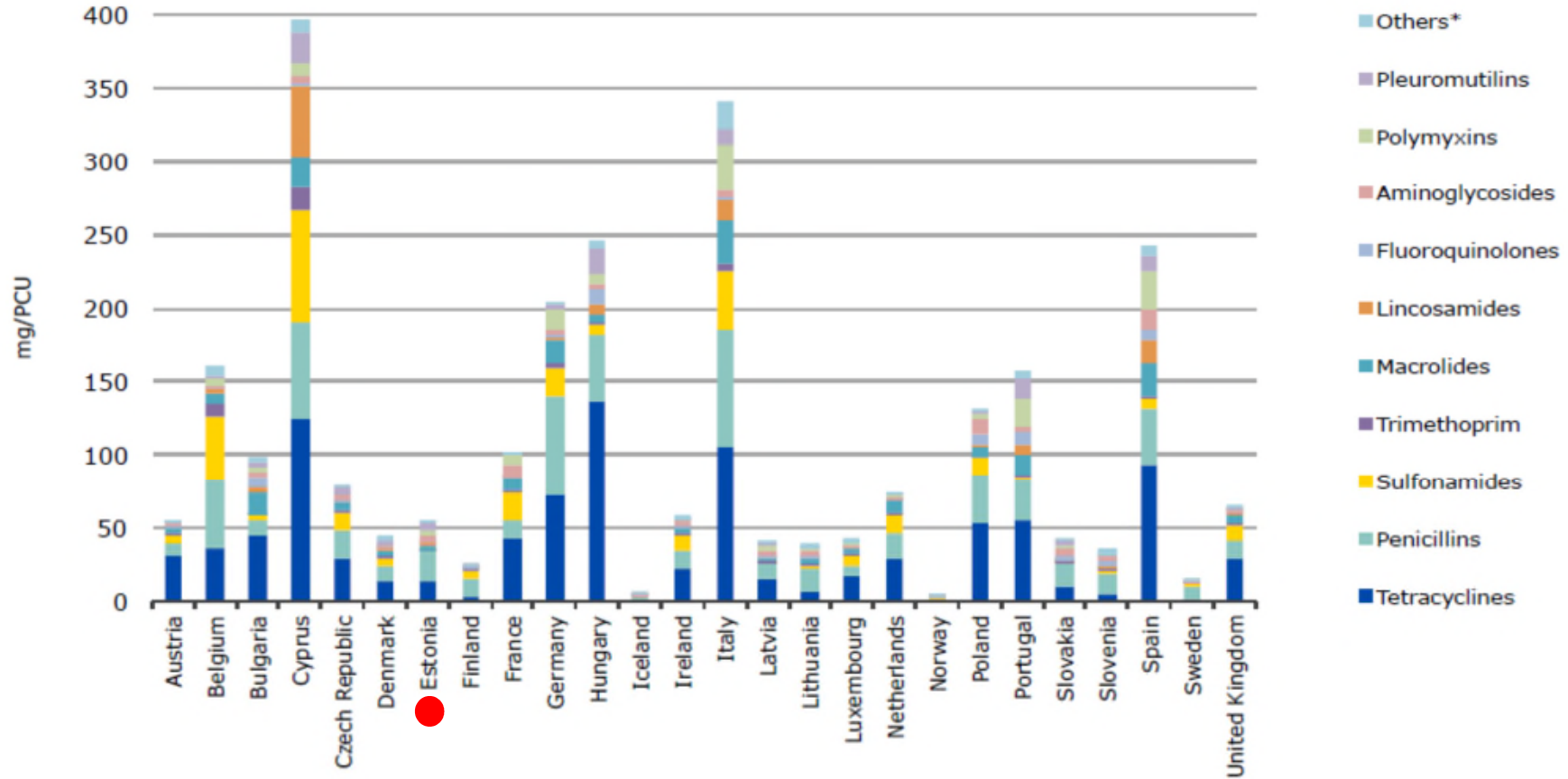
## ANTIBIOTIC USAGE IN HUMAN MEDICINE



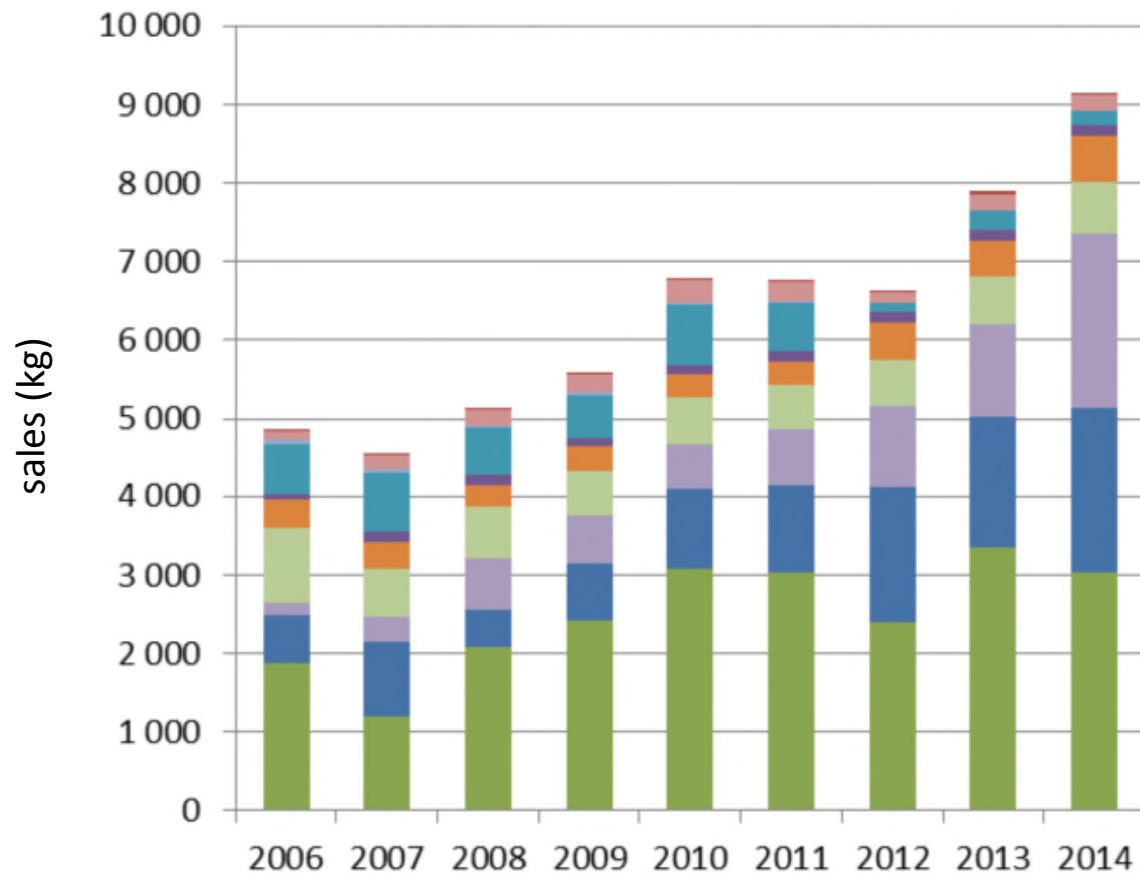
Lancet 2005; 365: 579-587

## ANTIBIOTIC USAGE IN ANIMAL HUSBANDRY

data from 2012



# ANTIBIOTIC USE IN **ANIMAL HUSBANDRY** IN ESTONIA



Estonia has one of the highest consumptions in EU of 3rd and 4th generation cephalosporines.

Consumption of fluoroquinolones is high.

# ABRESIST 2012 - 2014

## TRANSFER ROUTES OF ANTIBIOTIC RESISTANCE

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TerVE





## BACTERIA INCLUDED:

*Pseudomonas aeruginosa* (carbapenem resistant)  
(200)

*Escherichia coli* (ESBL producing) (600)

*Klebsiella pneumonia* (ESBL producing) (200)

*Staphylococcus aureus* (methicillin resistant)  
(200)

*Enterococcus* (vancomycin resistant)  
(15)

**MEDICAL SYSTEM:  
PATIENTS & HEALTHY**

**FARM ANIMALS  
PIGS**

**FARM WORKERS**

**DOGS & OWNERS**

**FIELDS, GROUND WATER**

**COMPREHENSIVE  
BACKGROUND DATA**

**WHOLE GENOME SEQUENCING**

# Use of antibiotics and resistance

# EXTENDED SPECTRUM BETA-LACTAMASE (ESBL) PRODUCING *ESCHERICHIA COLI*

CARRIERS IN THE HUMAN POPULATION 4 TO 8 %

HOSPITAL ISOLATES 10 – 13 %

WORKERS IN SWINE FARMS 27%



We are not alone...

# COLISTIN RESISTANCE

*mcr-1*

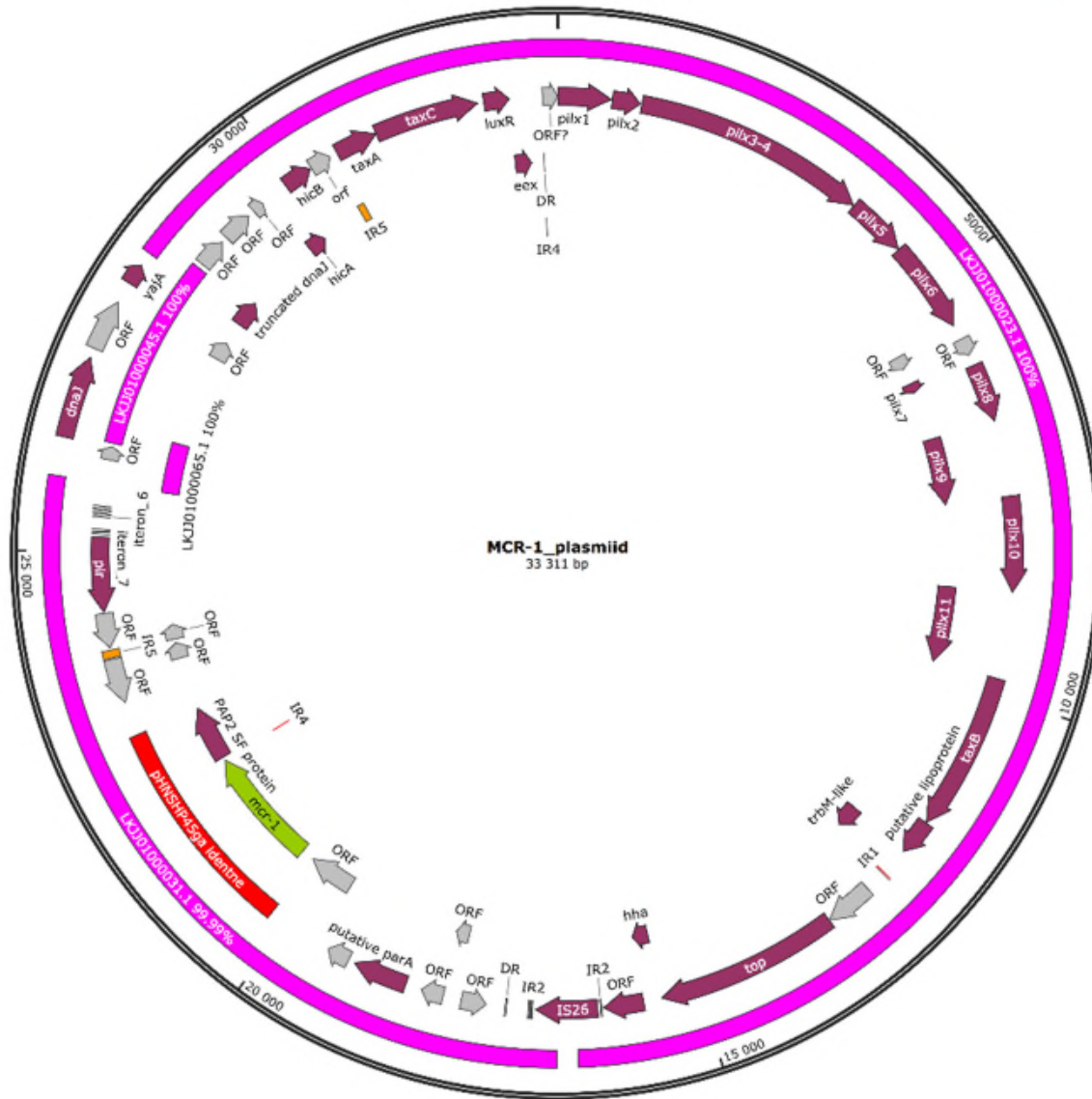
Farms and meat samples  
20%

Human samples  
Below 1%

Liu et al  
November 2015  
Lancet Infectious Diseases



COLISTIN IS A LAST RESORT ANTIBIOTIC  
IN CASE RESISTANCE HAS DEVELOPED TO ALL OTHER  
ANTIBIOTICS



IN ESTONIA

Medical problem in Estonia:  
high level of carbapenem resistance  
in *Pseudomonas aeruginosa*



# *Pseudomonas aeruginosa*

**COUPLE OF HOSPITAL OUTBREAKS**

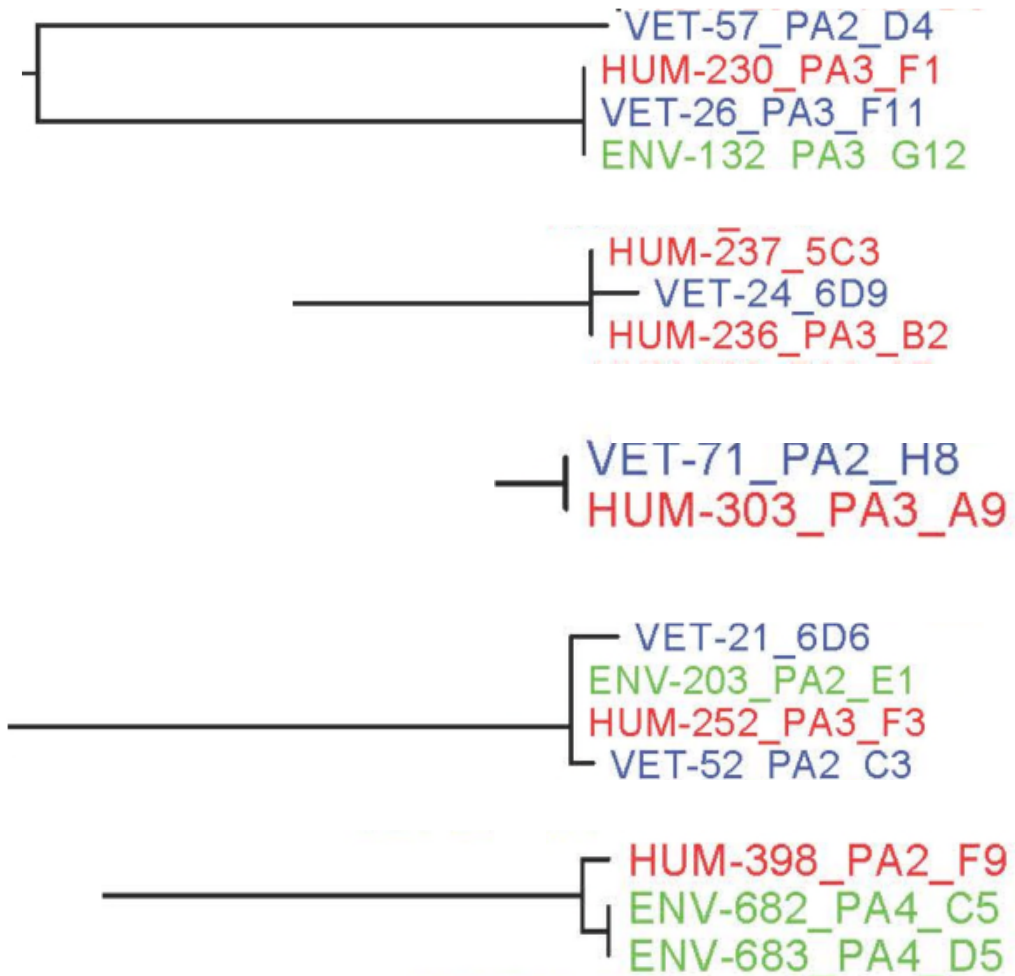
HUM-233\_5B8  
HUM-397\_PA2\_E9  
HUM-239\_PA3\_D2  
HUM-310\_PA3\_G9  
HUM-309\_PA3\_F9  
HUM-307\_6B1  
HUM-385\_PA2\_A8  
HUM-349\_PA2\_E3  
HUM-317-D2\_PA2\_E5  
HUM-351\_PA2\_G3  
HUM-352\_PA2\_H3  
HUM-284\_PA3\_B7  
HUM-317-D1\_PA3\_C10  
HUM-248\_PA3\_C3  
HUM-266\_PA3\_C5  
HUM-228\_PA3\_D1  
HUM-249\_PA3\_D3  
HUM-287\_PA3\_D7  
HUM-297\_PA3\_D8  
HUM-290\_PA3\_G7  
HUM-292\_PA3\_H7  
HUM-271\_PA3\_G5



**HUMAN**

**ANIMAL HUSBANDRY**

**ENVIRONMENT**



Current situation for One Health in Estonia:

Experience and capacity for collaboration  
between different sectors

Leading role of university scientists

Fragmentary and fluctuating funding



