

# UKRAINE Antimicrobial Resistance Update

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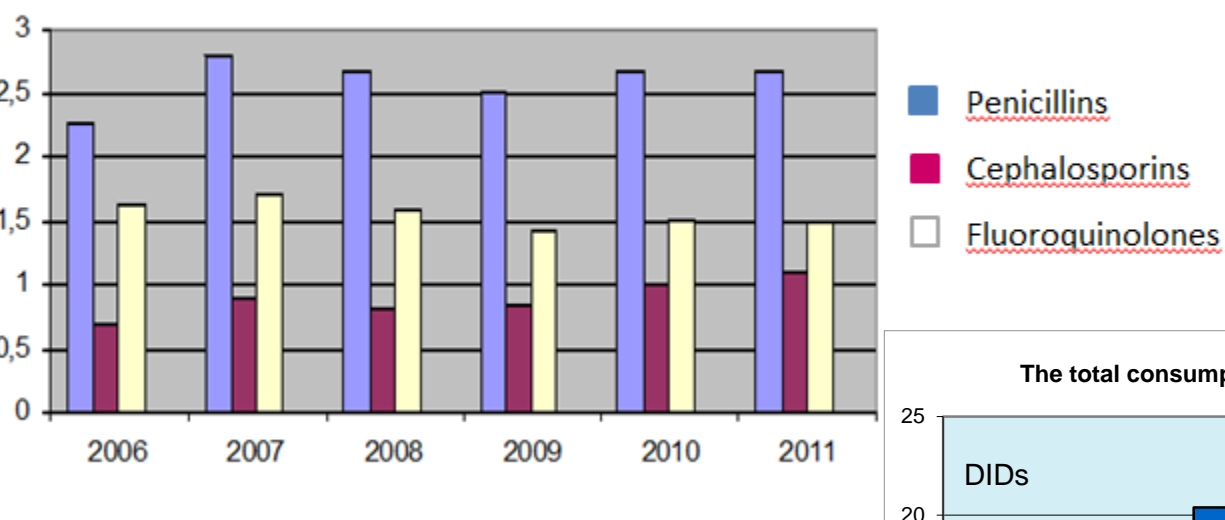


## Major AMR Threats & Challenges in UKRAINE

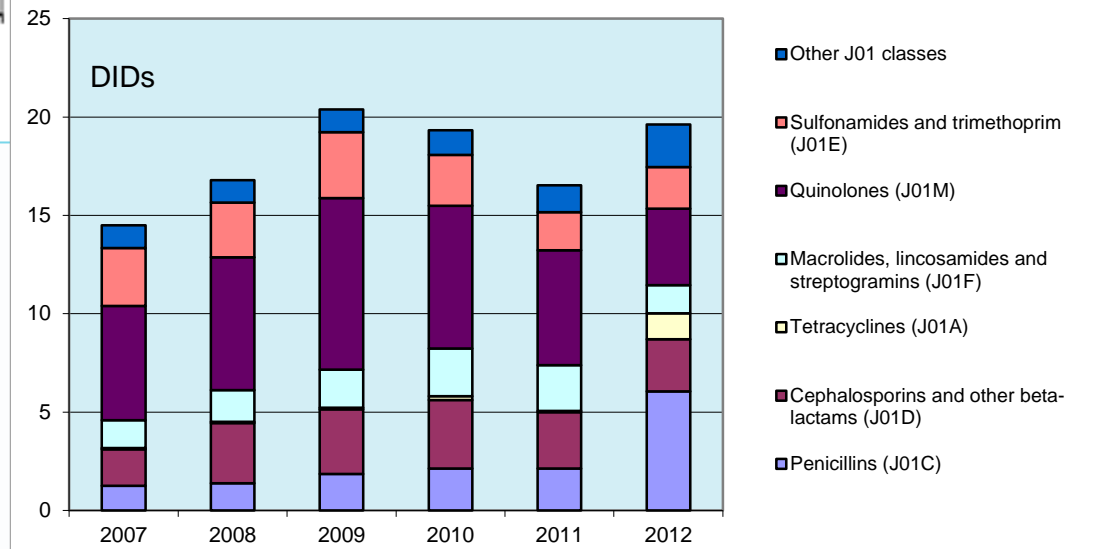
Problems of AMR study and consumption:

1. A critical decrease in the efficiency of work of microbiological service, the closure of laboratories and brain drain.
2. Lack of proven methods of cooperation of clinicians with microbiologists.
3. Commonly used criteria for the prescription of antibiotics in our country - not always approved treatment regimens and principles of evidence-based medicine.
4. Opportunity to purchase antimicrobials by anyone who feels like that in the pharmacy network very often without a prescription (including those in the so-called "reserve").

Outpatient antibiotic consumption in Ukraine DIDs (2006 – 2011)

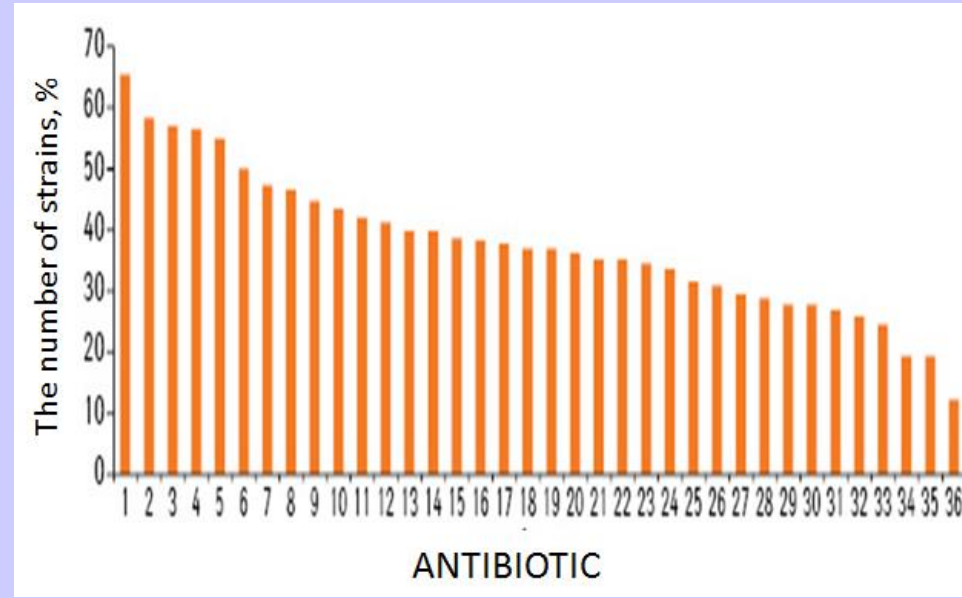


The total consumption of antibiotics in Ukraine (2007 – 2012)



## ANTIBIOTIC RESISTANCE OF CLINICAL STRAINS ENTEROCOCCUS FAECALIS IN SURGICAL HOSPITALS OF UKRAINE IN 2010

A.G. Salmanov, V. F. Marievsky, N. K. Khorzei, 2011

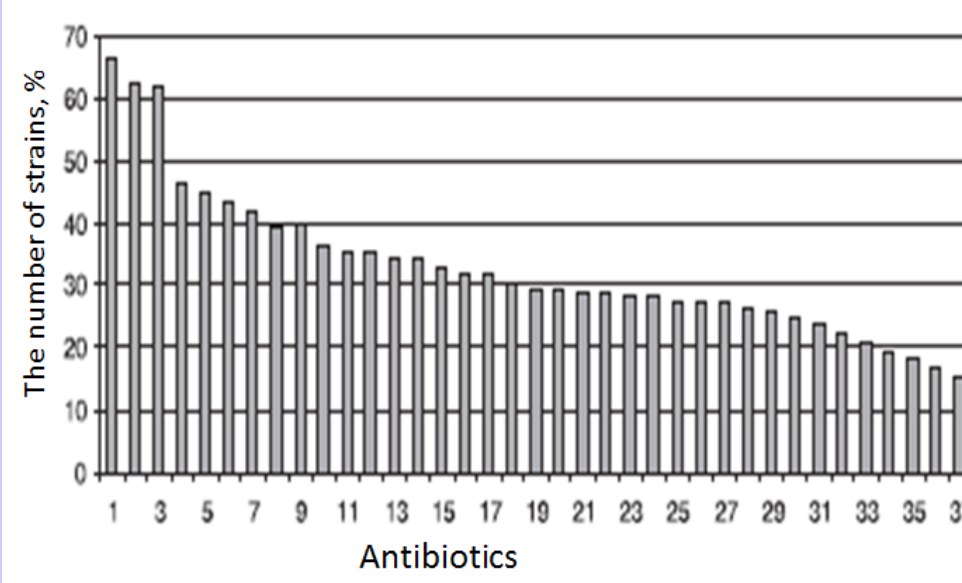


- 1 – cephalaxin; 2 – cefuroxime; 3 – penicillin;
- 4 – cefoperazone; 5 – norfloxacin; 6 – ofloxacin;
- 7 – ciprofloxacin; 8 – cefotaxime; 9 – ceftazidime;
- 10 – gentamicin; 11 – clarithromycin; 12 – ceftazolin;
- 13 – cefepime; 14 – amikacin; 15 – azithromycin;
- 16 – erythromycin; 17 – levofloxacin; 18 – pefloxacin;
- 19 – doxycycline; 20 – clindamycin;
- 21 – amoxicillin/clavulanate; 22 – lincomycin;
- 23 – ceftriaxone; 24 – ampicillin/sulbactam;
- 25 – chloramphenicol; 26 – gatifloxacin;
- 27 – ampicillin; 28 – oxacillin; 29 – amoxicillin;
- 30 – netilmicin; 31 – tetracycline; 32 – rifampicin;
- 33 – imipenem; 34 – linezolid; 35 – vancomycin;
- 36 – meropenem

3009 clinical strains E. Faecalis have been studied

## RESISTANCE OF CLINICAL STRAINS ENTEROBACTER SPP TO ANTIBIOTICS IN UKRAINE

V. V. Lazoryshynets, V. F. Marievsky, A.G. Salmanov, M. K. Khorzei, I. S. Zozulya, 2011



- 1 – clindamycin; 2 – clarithromycin; 3 – amoxicillin;
- 4 – cefuroxime; 5 – erythromycin; 6 – ampicillin;
- 7 – cephalaxin; 8 – cefepime; 9 – ceftazolin;
- 10 – norfloxacin; 11 – ampicillin/sulbactam;
- 12 – penicillin; 13 – azithromycin; 14 – cefoperazone;
- 15 – amoxicillin/clavulanate; 16 – doxycycline;
- 17 – gentamicin; 18 – rifampicin; 19 – ceftazidime;
- 20 – chloramphenicol; 21 – cefotaxime; 22 – ofloxacin;
- 23 – pefloxacin; 24 – levofloxacin; 25 – linezolid;
- 26 – ciprofloxacin; 27 – lomefloxacin; 28 – ceftriaxone;
- 29 – amikacin; 30 – oxacillin; 31 – lincomycin;
- 32 – vancomycin; 33 – meropenem; 34 – gatifloxacin;
- 35 – imipenem; 36 – netilmicin; 37 – tetracycline.

5571 clinical strains Enterobacter spp. have been studied.

## Antimicrobial Reference Laboratory



### Presence of an AMR laboratory

In 2012, a Research Center for Monitoring the Antibiotic Resistance of Microorganisms of Nonspecific Infectious Respiratory Diseases and the 1<sup>st</sup> department of the Research Center were established.

Main objectives of the Research Center:

- > study and analysis of antibiotic resistance of pathogens of hospital and non-hospital nonspecific respiratory infections in Ukraine;
- > conducting and coordinating research on antibiotic resistance of pathogens of nonspecific infectious respiratory diseases;
- > collection and analysis of information on antibiotic resistance of pathogens of hospital and non-hospital nonspecific respiratory infections;
- > planning and coordination with the Ministry of Health of Ukraine and the National Academy of Medical Sciences of Ukraine measures to prevent the emergence of antibiotic-resistant microorganisms;
- > participation and cooperation with international organizations;
- > participation in civil society organisations and cooperation with them.

Main objectives of the department of the Center:

- > collection and analysis of information on antibiotic resistance of pathogens of hospital and non-hospital nonspecific respiratory infections in eastern and southern regions of Ukraine.

## Surveillance of AMR & Consumption

### Presence of a national surveillance system for AMR

There is unified system of monitoring AMR:

Order of the Ministry of Health of Ukraine dated 04.04.2012 No 236 "On the organization of control and prevention of postoperative inflammatory infections caused by microorganisms resistant to the action of antimicrobials"

Joint Order of the Ministry of Health of Ukraine and the National Academy of Medical Sciences of Ukraine dated 7.07.2012 No 500/42 – a Research Center for Monitoring the Antibiotic Resistance of Microorganisms of Nonspecific Infectious Respiratory Diseases has been set up  
Inspiration-2012 - Congress, 22-23.09.2012 – Kyiv  
All-Ukrainian Research and Practice Conference "Antibiotic Resistance and Ways to Overcome It" – May 30, 2012 - Sumy.



### Presence of a national monitoring systems for AM use

The initiative group of researchers, created jointly by the Ministry of Health of Ukraine and the Head of Department of Pharmacoeconomics, prof. Larysa Vasilivna Iakovlieva, monitors the consumption of antimicrobial agents (AMA) in the pharmaceutical market of Ukraine.

Results of the study are shown in Fig. 1, 2 Section 1.

Further work is planned to estimate the consumption of antibiotics.



### Participation in Central Asian & Eastern European Surveillance (CAESAR) system

In 2010 Ukraine joined the research SOAR for the study of antibiotic resistance S. pneumoniae and H. influenza. It brings together leading pulmonologists and otolaryngologists from different cities of Ukraine: Kyiv, Dnipropetrovsk, Vinnytsia, Lviv, Ivano-Frankivsk, in close cooperation with microbiological laboratories and microbiology departments of medical schools (Laboratory of the Diagnostic Center of Dnipropetrovsk Medical Academy, Laboratory of the Main Military Medical Clinical Center "GVKG", Kyiv; Microbiological Laboratory of the State Institution "F.G. Yanovsky National Institute of Phthisiology and Pulmonology of the National Academy of Medical Sciences of Ukraine" and others.

## Intersectoral Action & The National Action Plan

### Y/N Intersectoral Coordination

#### Mechanism:

There are future plans towards setting up an ICM.

### Y/N National Strategic Action Plan:

Improvement of the National Program of modern approaches to clinical AMR prevention for doctors training, which is given in the textbook: The Foundations of Infection Control.

## Infection Prevention and Control

There are instructions on how to prevent HIV infection in all hospitals of the Ministry of Health of Ukraine. State surveillance system developed guidelines for infection prevention.

## AMR in Veterinary & Agriculture



surveillance of antibiotic usage in Animals

surveillance of AMR in Animals

There are results of studies conducted by the State Research Institute of Laboratory Diagnostics and Veterinary and Sanitary Expertise on behalf of the State Veterinary and Phytosanitary Service of Ukraine (Fig. 1, 2) [Mezhenska N. A., 2013].

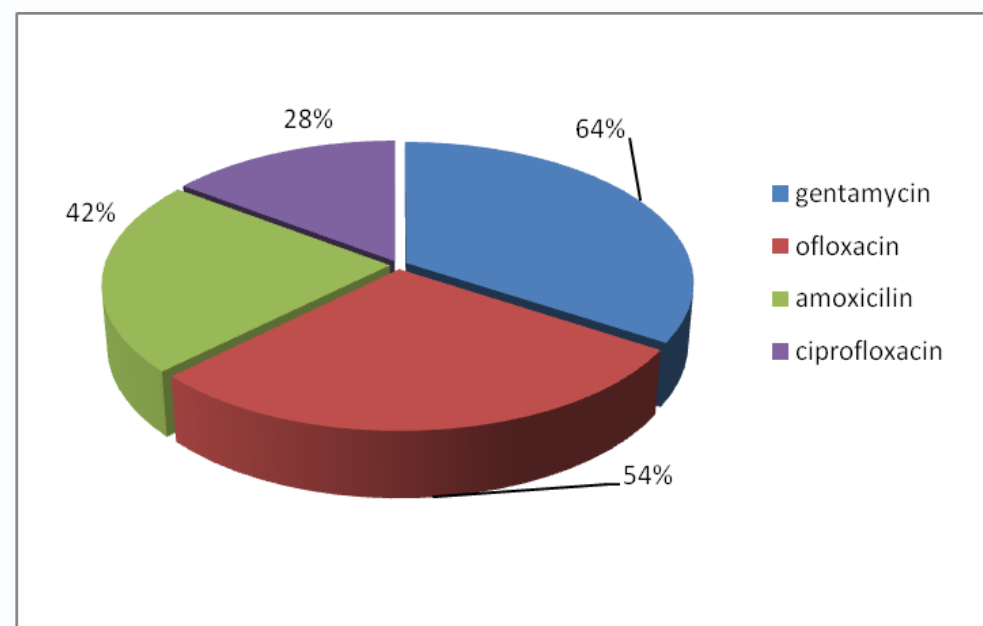


Fig. 1. Resistance of isolated cultures of Staphylococcus aureus from sick animals to antibiotics.

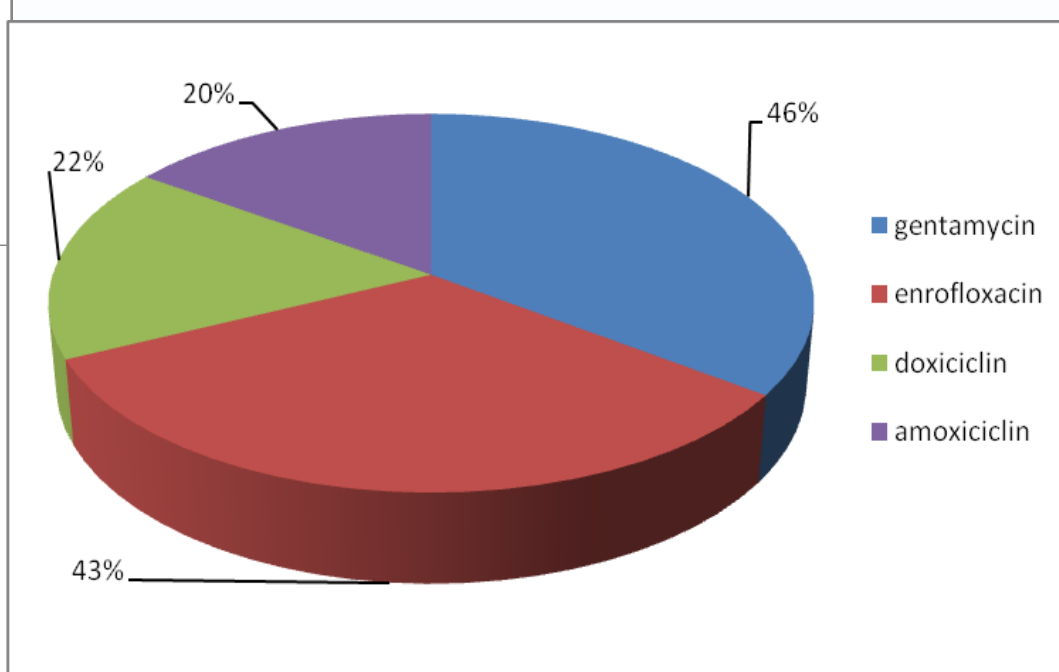


Fig. 2. Resistance of isolated cultures of E. coli from sick animals to antibiotics

## Success Stories

Mention a recent successful campaigns or initiatives.



ОСНОВЫ ИНФЕКЦИОННОГО КОНТРОЛЯ



The Foundations of Infection Control (textbook)  
The Risk Management in Surgery (textbook)

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1. Letter of information for hospitals of the Ministry of Health of Ukraine: "Optimization of antibiotic therapy in surgical departments on the basis of clinical and economic analysis"
2. Guidelines:
  - > "Study of drug consumption by ATC classification and defined daily doses (ATC/DDD methodology)"
  - > "Outpatient consumption of antibacterial agents in Ukraine and Europe"
3. 10 articles about antibacterial agents consumption (L. Iakovlieva, O. Matveeva, N. Matyashova et al.)

## Many Thanks to

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WHO European Strategic Action Plan

1

MULTI-SECTORAL COORDINATION

SURVEILLANCE OF RESISTANCE

2

SURVEILLANCE OF CONSUMPTION

3

INFECTION CONTROL IN HC SETTING

4

CONTROL IN VETERINARY & AGRICULTURE

5

INNOVATION & RESEARCH ON NEW DRUGS

6

AWARENESS, SAFETY & PARTNERSHIP

7

7 Strategic Objectives