



ANTIBIOTIC PRESCRIBING PRACTICES AMONG HOSPITAL HEALTHCARE WORKERS IN UKRAINE

GUIDE for in-depth interviews with healthcare workers

[Read the text of the informed consent and obtain verbal consent]

Good afternoon! My name is _____. I represent the State Institution «Public Health Center of the Ministry of Health of Ukraine» and we are studying antibiotic prescribing practices among hospital healthcare workers in Ukraine. We are asking You to take part in this interview which will take 1-1.5 hours of Your time and is voluntary.

The overall aim of the study is to systematically identify key factors influencing adherence to the national guidelines of rational use of antibacterial drugs, among secondary health care physicians in Ukraine, and to develop recommendations for improving antibiotic prescribing practices and decision-making in hospital settings across Ukraine.

I now will inform You on how this study will be conducted. You are one of 36 participants in a study being conducted in 6 regions of Ukraine, including Yours. We will ask You to participate in our study, which includes a personal in-depth interview. During the interview, we will ask You questions about Your experience as a healthcare worker with experience in prescribing antibiotics. Your knowledge will be useful for this study. The interview will be audio-recorded to facilitate further analysis of the information, after which the recording will be deleted. No video recording will be made. Your answers will be used in the preparation of the analytical report. All collected data will be added to the general array together with the data of other participants and analyzed at a generalized level without reference to specific individuals or health care facilities. Before the interview, You will have the opportunity to ask clarifying questions to the interviewer and receive answers. After removing identifiers, the information collected may be used for future research or shared with other researchers for future research without additional informed consent.

Benefits and risks. The benefit of participation is that You can share your experience on key barriers and enablers for the rational and appropriate use of antibiotics and have an opportunity to inform recommendations for improving antibiotic prescribing practices and decision-making in Ukraine. There is a risk that You may feel uncomfortable talking about certain topics in the interview, and there is a minimal risk of information leakage. However, we do not want this to happen. You do not have to answer any question or participate in the



interview if You do not have any experiences, opinions on the topics presented, or feel that the questions seem difficult or outside Your area of expertise.

Compensation. This study does not provide compensation for time spent. There are no additional costs incurred by the respondent that may arise during the study.

Results saving and use. The results will be digitized and will contain only Your code (not Your name). Data and materials in electronic form will be stored in specially designed folders on a secure cloud storage. Only the study team will have access to the data. The information obtained during Your interview will be used only for study purposes, but no reports or publications about the study will contain Your name.

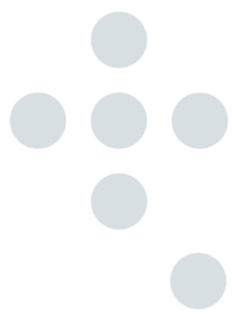
Rights of the subject. Your participation in this study means that You have heard or read the information about the study and agree to participate in it. Interviewers, for their part, will sign an information agreement on non-disclosure of information obtained during the study. Also all research involving human subjects is subject to review by the Ethics Committee, which is responsible for protecting Your rights. Therefore, the protocol of this study was reviewed and approved by the Ethics Committee of the Public Health Center of the Ministry of Health of Ukraine and WHO Ethics Committee. If You have any organizational or methodological questions, please contact the study manager, Diana Kocheharova, by phone +38 (067) 656 5907 or by e-mail [d.kocheharova.@phc.org.ua](mailto:d.kocheharova@phc.org.ua). If You have any questions or concerns about the observance of Your rights as a study participant, You can anonymously call the Ethics Committee of the Public Health Center of the Ministry of Health of Ukraine by phone +38 (044) 482 4607 or by e-mail irb@phc.org.ua, on working days from 09:00 to 18:00.

The right to refuse or terminate participation. Participation in this study is voluntary. You have the right to refuse to participate. If You decide to participate in the study and change Your mind, You may terminate Your participation at any time and Your answers will be deleted. You also have the right not to answer questions that seem inappropriate or difficult to You without any consequences. In turn, the researchers have the right to refuse to participate in the study if:

- The participant does not meet the criteria for inclusion in the study;*
- The participant's behavior is aggressive or he/she violates the rules of the interview (insults the interviewer, does not listen to the questions, uses foul language, etc.);*
- The participant skips most of the questions or, for other reasons, the answers are general and cannot be interpreted as expert.*

Full name of the interviewer who has received consent:

Interviewer's signature: _____ Date: ____/____/____ Time: ____:____



INTRODUCTION

- Please tell me how I can contact You if I need to xxx.
- In which department do You work?
- Please indicate Your main specialty in this health care facility?
- Please indicate Your total work experience in Your specialty?

During our conversation, we will talk about the process of prescribing antimicrobials for hospitalized patients to whom You provide medical care, as well as the factors and considerations that guide You in prescribing treatment.

BLOCK A. PRESCRIBING PRACTICES

1. Could You think back on the the last time you prescribed antibiotics for treatment of a patient (not prophylaxis), and tell me about that specific treatment, how did you go about choosing antimicrobial treatment?

- *What factors did You consider (clinical examination, ordering tests, availability of specific antibiotics)?*
- *What diagnostic tools did You use?*
- *What influenced Your decision about whether or not to do bacteriological testing?*
- *What materials/information did You use (if any)?*
- *Who did You ask/consult if unsure?*
- *Any other factors that affected Your decision?*
- *How have practices in Your healthcare facility changed since the beginning of the full-scale war?*

2. When in Your practice do You request a bacteriological test to determine the infectious pathogen and its sensitivity to antimicrobial agents?

- *Why did you decide to conduct a bacteriological test?*
 - *Can you walk me through the steps which you had to take last time you needed to perform bacterial infection or susceptibility testing? Where are the samples sent for testing?*
 - *How are specimen collected and if there are any issues with availability of kits?*
 - *How long do you wait to get results of susceptibility testing?*
 - *What do you think about the time it takes to get results?*
 - *Which resources (analyses, opening hours, expertise) would you like to receive from the microbiology lab that are not available to you now?*
 - *How has the organization of bacteriological testing changed since the beginning of the full-scale war in your facility?*
 - *What could be improved in the way that it is organized, for example, in terms of speed?*





3. Could you describe a situation where you replaced the initially prescribed antibiotic with another?
- Why did you replace?
 - When?

4. *In which cases and why do You prescribe several antibiotics to a patient at once? How often do You have to prescribe several antibiotics at the same time? What antibiotics do You prescribe at the same time? How long can combination antibiotic therapy last? Is a bacteriological test provided before such a prescription?*

(FOR INTERVIEWER: In healthcare facilities providing specialized (inpatient) medical care, in all cases of empirical antibiotic therapy, it is necessary to obtain a sample of biological material for bacteriological testing to identify the causative agent of an infectious disease before administering an antibiotic to a patient).

5. How do You assess the level of effectiveness of Your antibiotic prescribing in the treatment of patients? In what timeframe do you evaluate efficiency and what indicators do you use to determine it? What are the factors influencing it?

(FOR INTERVIEWER: Before starting antibiotic therapy, the attending physician provides the following information in an understandable language and in a manner accessible to the patient (his/her relatives/legal guardians)

1) reason for prescribing the antibacterial drug;

2) INN (main active substance);

3) dosage form of the antibacterial drug, route of administration and individual dosage features of the antibacterial drug (if any);

4) planned duration of antibiotic therapy;

5) peculiarities of interaction of the antibacterial drug with food or other medicinal products;

6) signs of development of adverse reactions due to taking the prescribed antibacterial drug and ways to eliminate them).

6. How do patients or their relatives influence the process of prescribing and choosing antibiotics? From your own experience or from the experience of your colleagues.

(FOR INTERVIEWER: The prescription of antibiotic therapy at the request of patients, their relatives or legal guardians, provided that there are no signs of a bacterial etiology, is prohibited. The attending physician is obliged to provide information about the disease, the need to avoid antibiotic therapy, and clinical signs of disease complications or symptoms of secondary bacterial infection that will require antibiotic therapy in an understandable language and in a manner accessible to the patient (his/her relatives/legal guardians).

7. What kind of training or education – if any – have you received on antibiotic prescribing or antibiotic resistance? If yes, when was it? What kind of training was provided? Who conducted the training? Was the training enough for You or did You want more?

8. In Your opinion, what knowledge and skills regarding antibiotic prescribing could be useful for You personally? Please explain.

9. In Your opinion, what format of training or consultations would be useful for You (videos, offline or online trainings, etc.)?

(FOR INTERVIEWER: According to the INSTRUCTIONS for the Implementation of the Administration of Antimicrobial Drugs in Healthcare Facilities Providing Inpatient Care, approved by the Order of the Ministry of Health of Ukraine No. 1614 of August 03, 2021, training is provided at the stages of implementation of the SOP for the rational use of antibiotics).



10. How do You or Your colleagues update their knowledge about new types of antibiotics and treatment of infections, and new guidelines?
11. What scientific or professional resources do You have access to and what resources do You wish you had access to, to improve Your competence and knowledge related to antibiotic prescribing and antibiotic resistance?
12. How has the way You personally prescribe antibiotics changed over time? Why?

BLOCK B. NATIONAL GUIDELINES FOR PRESCRIBING ANTIBIOTICS

13. To what extent do you find that the Order of the Ministry of Health No. 1513 "Rational Use of Antibacterial and Antifungal Drugs for Treatment and Prevention" impacts your practice? How useful is this medical standard for You in your everyday work? What about the facility in which you work?

(FOR INTERVIEWER: The Standard was developed pursuant to the Order of the Ministry of Health of Ukraine of August 03, 2021 No. 1614 "On the organization of infection prevention and infection control in health care facilities ...", in order to ensure the provision of quality, effective and safe medical care to patients who need treatment with antimicrobial agents. This Standard establishes general requirements for the prescription, adjustment and discontinuation of antibacterial/antifungal therapy in healthcare facilities....., in order to prevent and reduce the prevalence of infectious diseases caused by resistant microorganisms).

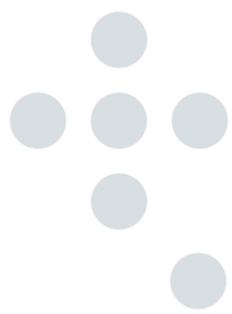
14. We know that sometimes it is not always possible to follow guidelines for important reasons. Can You describe in which situations You have to deviate from guidelines for the rational use of antibiotics? What are the reasons for this?

What do You think may prevent healthcare professionals from fully complying with the relevant recommendations, in particular, the Medical Care Standard No. 1513? What are the barriers we can talk about here?

15. Tell me about the last time management inspected compliance with recommendations (national or hospital orders, SOPs) on use of antibiotics? How often does it happen in general?
16. How do You see the role of hospital leadership in encouraging rational prescribing and use of national guidelines such as the Order XX
17. In our opinion, what would improve the quality of the medical standards described in the Order 1513 when future revisions are being made?
18. Does Your healthcare facility have any acts, protocols, instructions, Standard Operation Procedures or orders that You or Your colleagues use in Your practice when making decisions about antibiotic prescribing? Which of these resources do You access when making prescribing decisions?

Which source do You personally consider to be the most reliable regarding the prescription of antibiotics and antibiotic therapy?

(FOR INTERVIEWER: The standard approved by Order 1513 is mandatory. Antibacterial drugs included in the access group (A) are dispensed by a pharmacist of the pharmacy department of the healthcare facility in accordance with the SOP for the administration of antibacterial drugs. The measures are approved by the Order of the Ministry of Health of Ukraine dated August 03, 2021 No. 1614 "On the organization of infection prevention and infection control in health care facilities and institutions / institutions for the provision of social services / social protection of the population", registered with the Ministry of Justice of Ukraine on October 11, 2021 under No. 1318/36940 - provide for compliance with various practices of rational use of antibiotics).



BLOCK C. SOCIAL OPPORTUNITIES AND INTERPROFESSIONAL COOPERATION

19. How do You collaborate with other medical specialists (clinical pharmacists, bacteriologists, microbiologists, infectious disease specialists, etc.) in determining antibiotic therapy for patients? With which doctors do You collaborate? In which situations? In your opinion, how do other colleagues influence Your decision to use antibiotics? If so, in what ways? To what extent seniority plays a role? Can You provide examples?

20. In Your opinion, to what extent do representatives of pharmaceutical companies influence the choice and frequency of antibiotic use by Your colleagues? On Your own choice?

21. What information would You like to receive about antibiotic therapy from other medical specialists in Your healthcare facility (e.g., sample collection, interpretation of bacteriological test results, treatment of resistant strains, interaction with other drugs, dosage, prescription for patients with renal or hepatic impairment, elderly or pediatric patients, etc.)?

22. Who do you ask (consult) if there is a need to do so regarding the following: sample collection, interpretation of bacteriological test results, treatment of resistant strains, interaction with other drugs, dosage, prescription for patients with renal or hepatic impairment, elderly or pediatric patients, etc.? What did you do when you needed to prescribe drugs from the observation or reserve group?

(FOR INTERVIEWER: Antibacterial drugs included in the observation group (B) ... require prospective pharmaceutical counseling by a pharmacist of the clinical QI of the health care facility.

Antibacterial drugs included in the reserve group (C) are dispensed ... after passing the procedure for pre-authorization of antibiotics of the reserve group ... The prescription of antibacterial drugs included in the reserve group (C) requires prospective pharmaceutical counseling by a pharmacist of the clinical IC of the health care facility).

BLOCK D. PHYSICAL CAPACITIES AND ACCESS TO RESOURCES

23. Can You describe any difficulties or barriers that may arise when prescribing antibiotics?

24. Please tell us, which antibiotics do You have difficulties with access and availability, and which antibiotics are readily available (give examples of drugs that are in short supply and groups of drugs that are always available in the facility)? To what extent does the variability of antibiotics meet the demand depending on the patients?

Do You have the opportunity (availability) to prescribe a suitable antibiotic according to the results of a bacteriological examination?

How does the cost of the antibiotic influence your choice of treatment?

How often do You have to use not the antibiotic that is more suitable according to the results of bacterial research and national standards, but the one that is actually available?





To what degree does the bacteriology laboratory have the ability to determine susceptibility to all antibiotics available in your facility?

(FOR INTERVIEWER: According to national standards should be chosen whenever possible: narrow-spectrum antibiotic > broad-spectrum antibiotic; oral antibiotic > intravenous; from access group > watch group > reserve group (AWaRe classification of WHO). The lack of opportunity to choose within such criteria is a sign of lack of choice of different antibiotics!)

25. How has the organization of bacteriological testing, access to and receipt of necessary antibiotics, and antibiotic prescribing practices in Your healthcare facility changed since the beginning of the full-scale invasion? In your opinion, are these changes directly related to the military actions?

The choice of different antibiotics?

How has it changed over the last 5 years?

How has the situation changed since the beginning of COVID-19?

Which of these changes do You consider most important? What would You like to improve/expand in the future?

(FOR INTERVIEWER: If a respondent says the situation has improved with the full scale war, then ask in what ways and why they think so.

In healthcare facilities providing specialized (inpatient) medical care, the head of the facility shall organize round-the-clock access to the collection of biological material samples, temporary storage before sending them to the microbiological laboratory and obtaining the results of microbiological tests. To make a decision on the appropriateness of starting empirical antibiotic therapy, it is necessary to use methods of rapid identification of the causative agent of an infectious disease and detection of bacterial markers of inflammation (procalcitonin).

26. Is there anything about the way your hospital is organized that could facilitate the prescribing of antimicrobials? With organization, I mean schedules, time, staff, medical records, charts and so on. Are there any resources you wish you had that would make rational prescribing of antibiotics easier for you?

27. In what way does Your workload influence the way You prescribe antibiotics?

BLOCK E. MOTIVATION AND ATTITUDES TOWARD ANTIBIOTIC PRESCRIBING

28. In Your opinion, to what extent is the issue of antimicrobial resistance a large-scale problem?

- *How do You see it affecting Your healthcare facility? What about the health of the Ukrainian population?*
- *What factors, in Your opinion, can contribute to the development of antimicrobial resistance? Can You explain why?*
- *How would You assess the current situation with rational/irrational use of antibiotics in Your healthcare facility? Can You explain why?*

29. What do you think about Your hospital's efforts to address the problem of AMR? What efforts do the hospital leadership take to raise awareness or communicate the data about AMR situation in Your hospital/region?



30. What can You say about the quality of antimicrobials in Ukraine? Given a choice between a foreign and a domestic manufacturer, which antibiotic would You prefer? Why?
31. How often do you hear and what do you think about the idea that domestic antibiotic drugs are ineffective/empty/diluted?
32. What motivates You to study current medical standards and new evidence-based practices in antibiotic prescribing?
33. Finally, before we end the interview, we would like to ask You how your hospital could contribute to more rational use of antibiotics in healthcare facilities (e.g., support for the availability of materials, political action, etc.)?

In Your opinion, are there any other issues that have not been covered during our conversation that You consider important to discuss?

[Thanks for participation]