НАЦИОНАЛЬНЫЙ ЦЕНТР ОБЩЕСТВЕННОГО ЗДРАВООХРАНЕНИЯ
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ КАЗАХСТАН

The role of the microbiological laboratory in IPC: review of the national reference laboratory data

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The role of IPC and quality of medical services

- Infection prevention and infection control are integral to assessing the quality of medical services and serve as an indicator of the country's healthcare system and medical organizations in particular.
- IPC is one of the main quality indicators of any medical institution.

IPC and quality of medical services

In most cases, a decrease in the quality of medical services is associated with a secondary infection

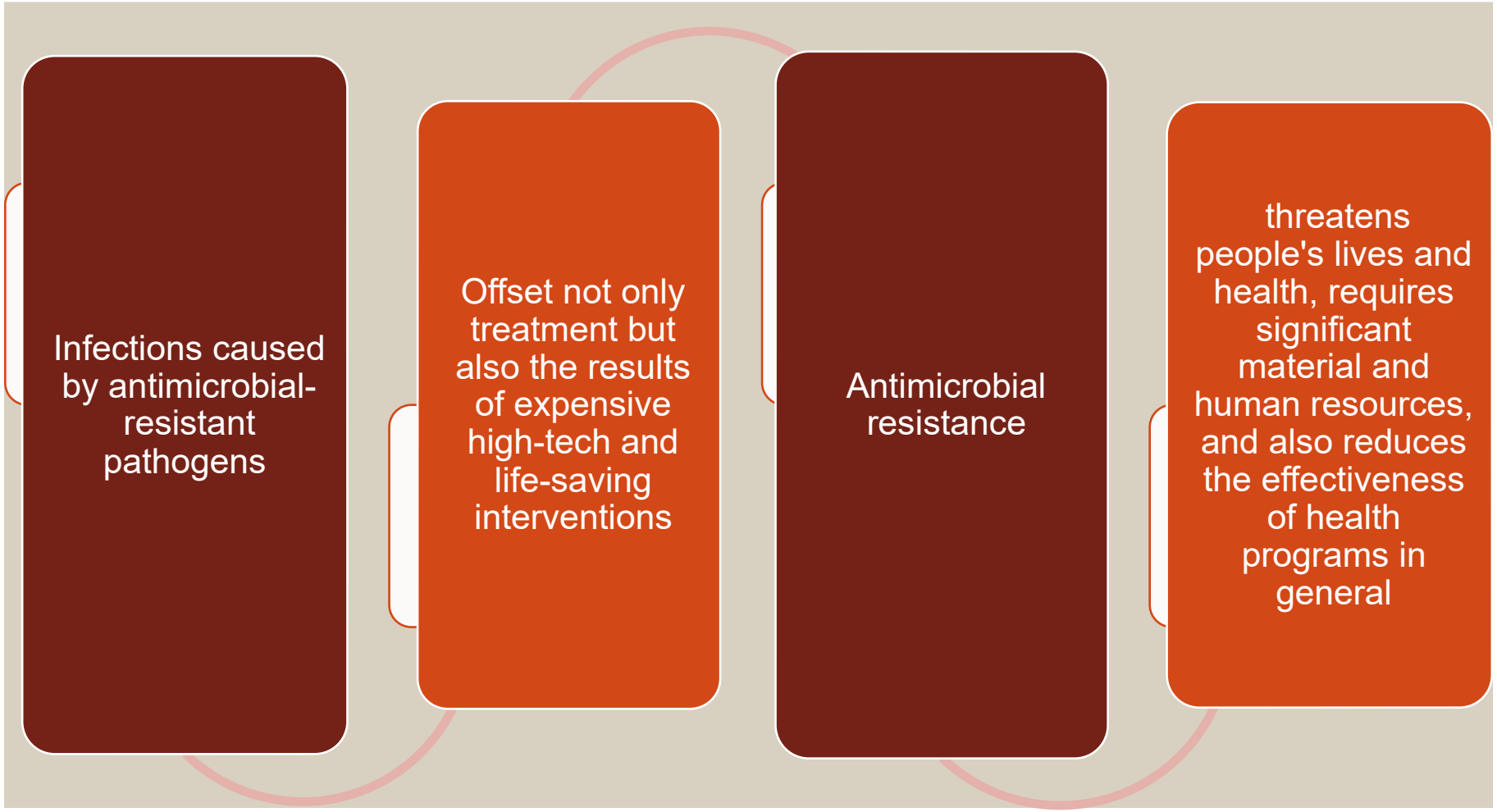
One of the main health problems is infections caused by antimicrobial-resistant microorganisms

IPC and quality of medical services

In in-patient facilities, there is an increase of nosocomial strains of microorganisms resistant to antimicrobials, disinfectants, and antiseptics

Effectiveness of therapeutic and preventive measures in medical organizations is decreasing and is an important factor contributing to the spread of healthcare-associated infections

IPC and quality of medical services



Reasons for growth of antimicrobial resistance

-Weak laboratory capabilities;
-Infrastructure and data management issues;
-Wide sale of antimicrobial medicines behind the counter;
-Insufficient public awareness in all regions;
-General inadequate approach to IPC

(Antimicrobial resistance: global report on surveillance 2014. Geneva:World Health Organization; 2014 (https://apps.who.int/iris/bitstream/handle/10665/112642/9789241564748_eng.pdf — as of August 18, 2021).

MICROBIOLOGICAL MONITORING AS A COMPONENT OF ENSURING QUALITY MEDICAL CARE IN HOSPITALS

- Bacteriological studies are essential for the implementation of effective epidemiological surveillance of HAI in medical organizations and preventive and anti-epidemic measures.

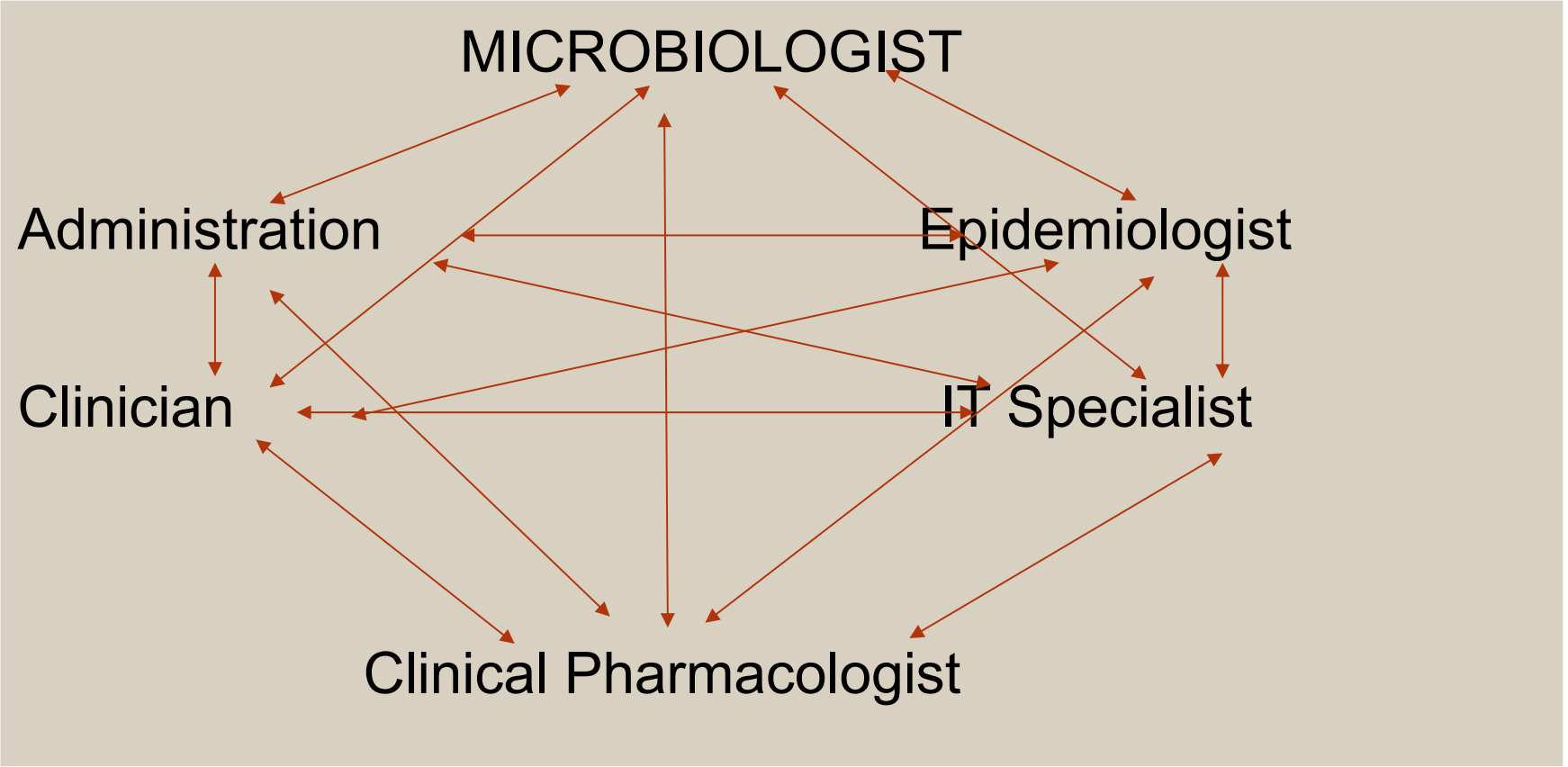
Local monitoring of antibimicrobial resistance resistance (LMAMR)

Continuous systematic collection, analysis and provision of data on antimicrobial resistance within medical organizations

The purpose is to provide information for use in practice, including therapeutic and preventive measures.

The main goal is to constantly monitor trends in the occurrence and spread of antibiotic resistance cases.

Local monitoring participants



Key principles of LMAMR

- Continuity
- Standardization
- Succession

Microbiological laboratory objectives

Collecting data on the most frequent CPBs

Frequency of individual microorganism circulation in the departments

The level of antibiotic resistance at the MO level

Reservoirs, factors and ways of transmission of HAIs, etc.

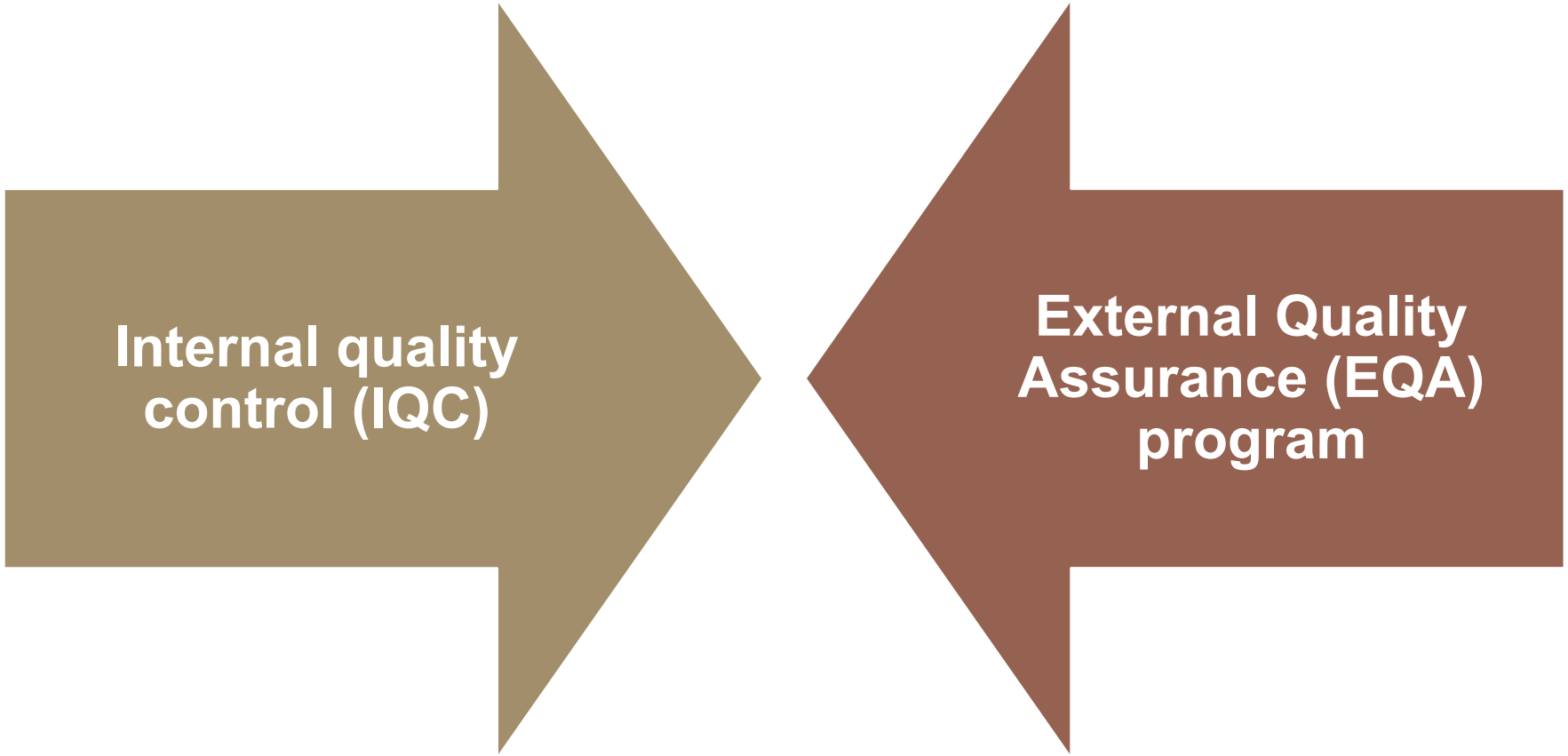
Data collection on nosocomial infections in medical organizations (MO)

Effectiveness of disinfection, sterilization measures and anti-epidemic regime

Data collection – through quality control!

The main goals of laboratory analysis include standardization of methods, correct interpretation of research results, and implementation of a quality management system.

2 areas of quality control



Who will coordinate the laboratories?

Since 2018, Kazakhstan's national reference laboratory has been appointed and authorized to control antimicrobial resistance

Roadmap for antimicrobial resistance containment in the Republic of Kazakhstan 2019-2022

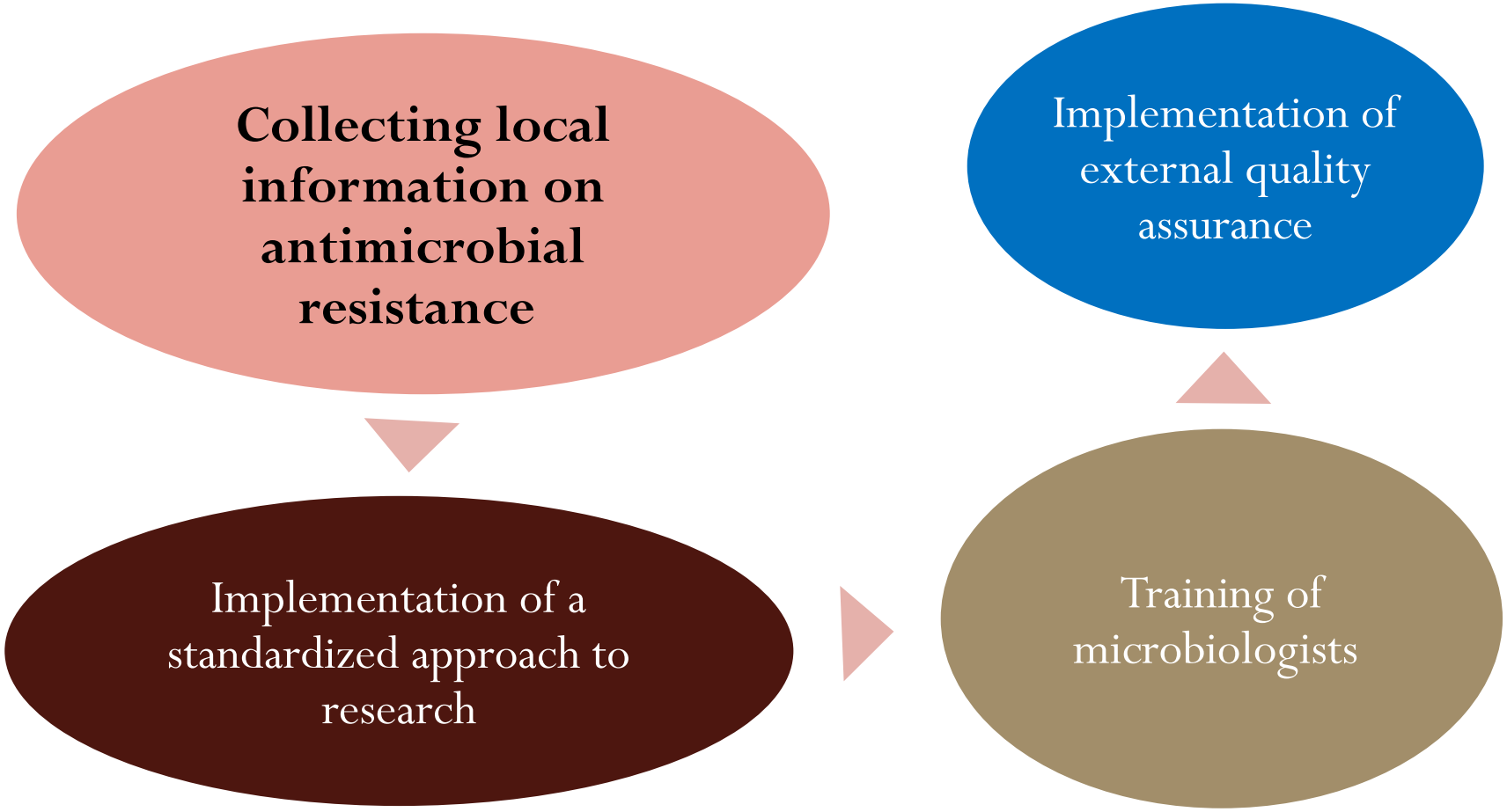
Reference laboratory (RL) objective on antimicrobial resistance

Antimicrobial resistance monitoring

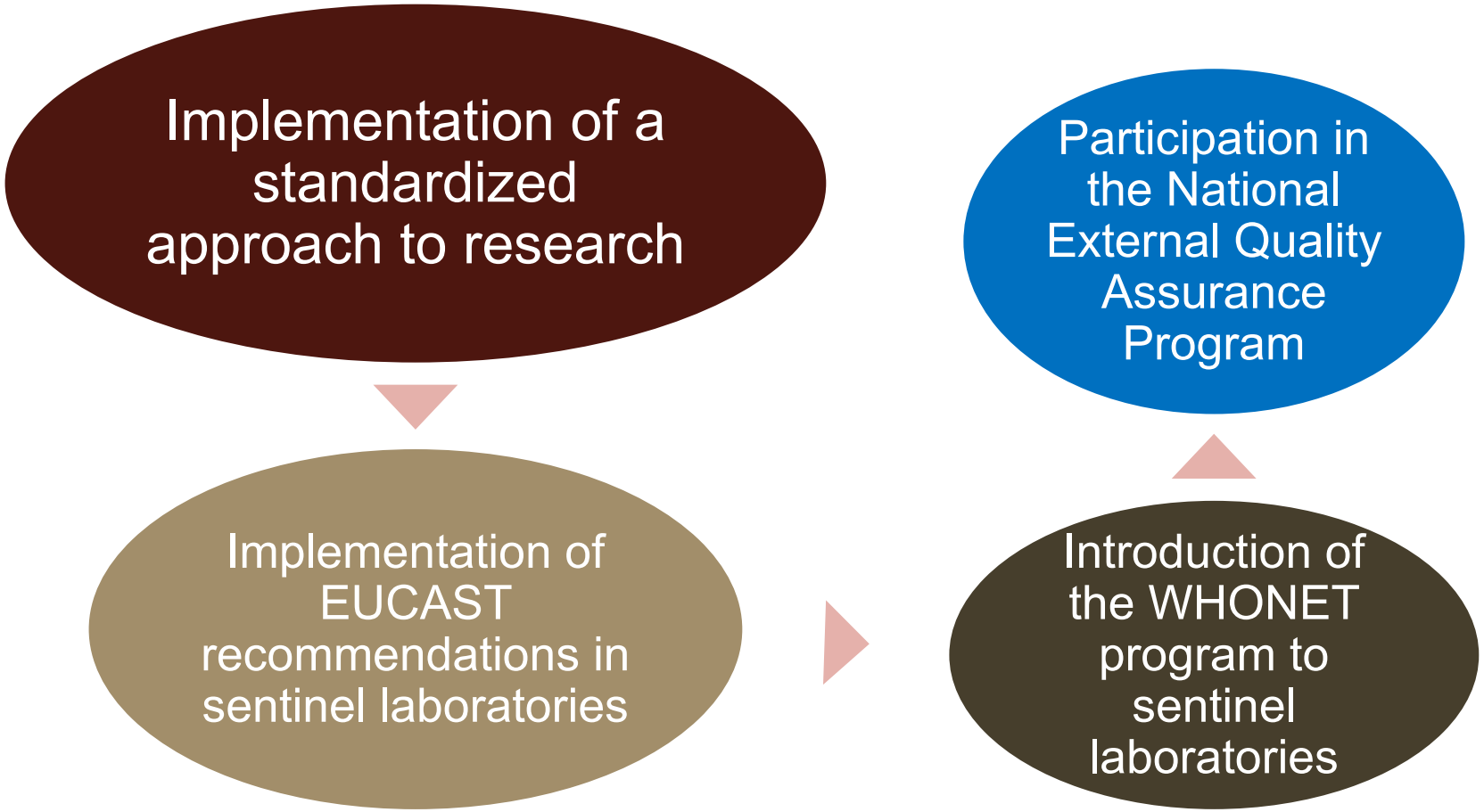
Introduction of national microbiological monitoring

Participation in international programs for collecting information on antimicrobial resistance

Nation-wide microbiological monitoring



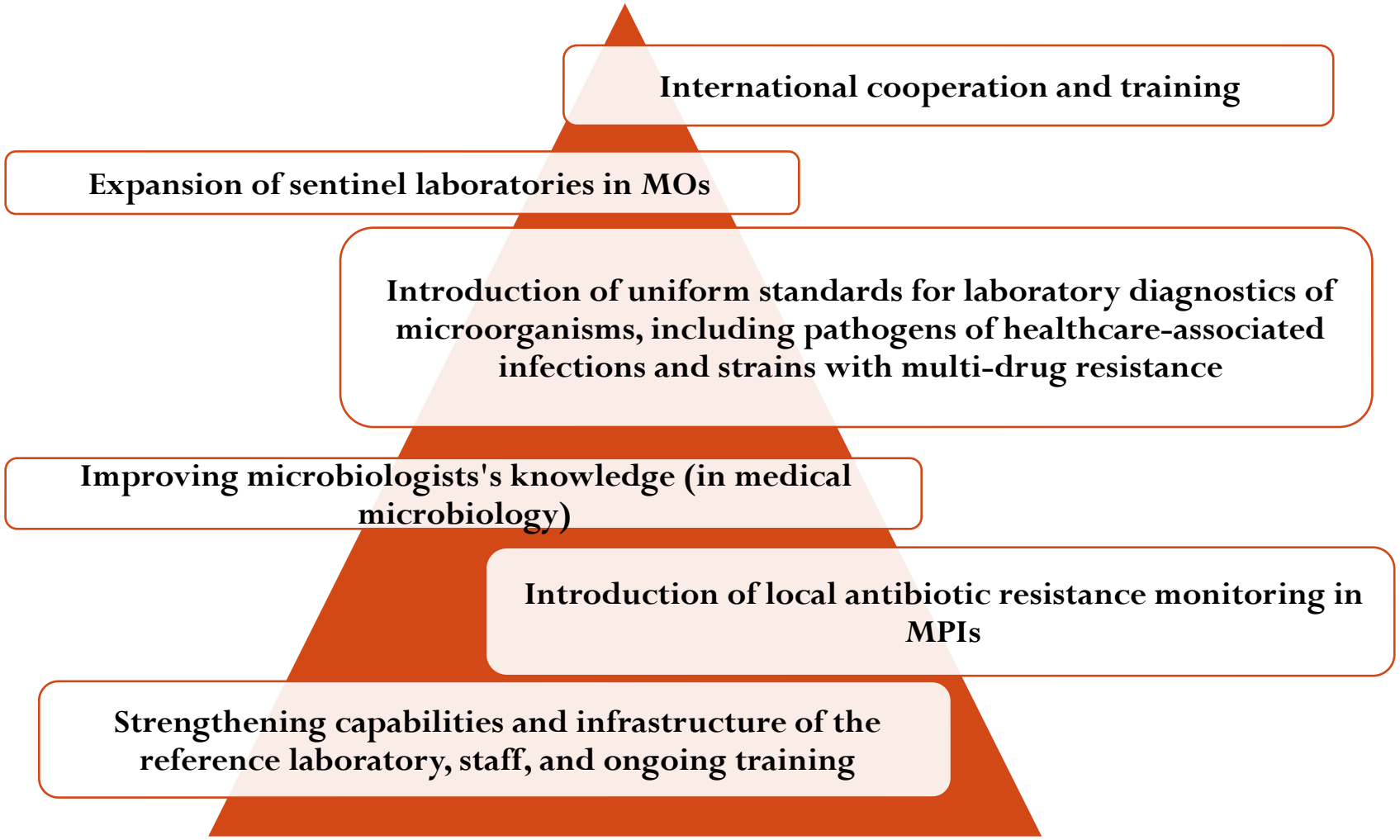
Nation-wide microbiological monitoring



Introduction of national microbiological monitoring

- Expansion of sentinel laboratories
- Implementation of the External Quality Assurance Program
- Analysis of the local data received on antimicrobial resistance and its extrapolation to the national level
- Participation in international programs for collecting information on antimicrobial resistance

Reference Laboratory objectives



Activities of the Reference Laboratory

5 laboratories are involved in sentinel surveillance:

NSMC JSC

MUK NCJSC

City Clinical Hospital №7

Almaty infectious diseases hospital

Shymkent Infectious diseases hospital

4 laboratories are ready to participate in sentinel surveillance in 2022

Petropavlovsk Regional Hospital

Microlabservice LLP, Aktobe

Shymkent Research Center of Pediatrics and Pediatric Surgery

esting of cultures from sentinel laboratories and antibiotic sensitivity testing is carried out within the framework of Kazakhstan's MoH state program

264 cultures of microorganisms were deposited. The comparability ratio in culture identification is 93%. Retesting is performed using MALDI-TOF mass spectrometry.

Coincidences in confirming the presence/absence of resistance properties is 87.5%

Research external quality assurance is carried out nnually by sending encrypted cultures. Readiness is sessed in order to implement sentinel surveillance for AMR

On a quarterly basis, sentinel laboratories participate in the UK NEQAS

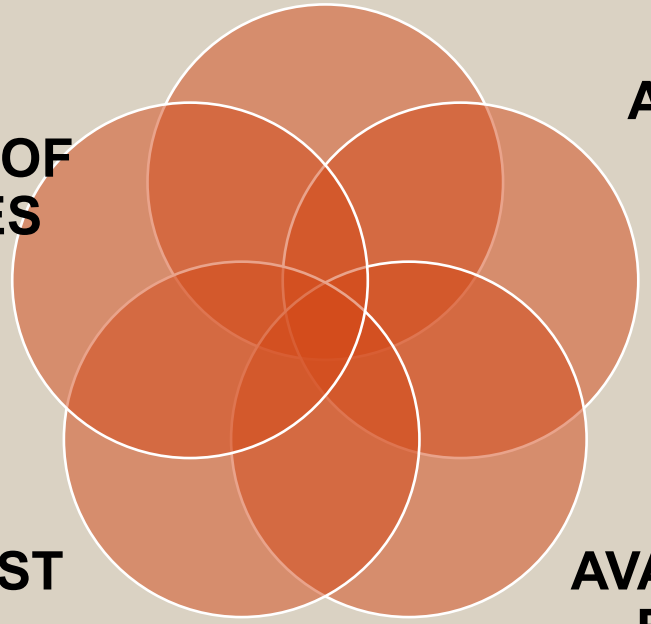
In 2022, three laboratories from Kazakhstan participated in the WHO External Quality Assurance Program on Surveillance of Antimicrobial Resistance (CESAR).

CAESAR (Central Asian and Eastern European Surveillance of Antimicrobial Resistance)

- is a system for surveillance of antimicrobial resistance in Central Asia and Eastern Europe
- The purpose of the CAESAR is to gradually organize a network of national surveillance systems for antibiotic resistance

Internal quality control

SELECTION OF REAGENTS AND CONSUMABLES (mediums for antibiotic sensitivity testing, antibiotic discs, disposable consumables, etc.)



CORRECT INTERPRETATION OF INHIBITION ZONES

AVAILABILITY OF CONTROL STRAINS

CORRECT TEST SETTING

AVAILABILITY OF EQUIPMENT

Current role of a microbiologist (bacteriologist)

Assistance to epidemiologists

•Includes work of the research committee and preventive and anti-epidemic measures in MOs
•Deciphering the etiology of hospital infections
• Monitoring compliance with the disinfection regime
•Registration of "in-hospital" strains, monitoring of new resistance mechanisms

Assistance to clinical pharmacologists

• Includes development of protocols for empirical therapy of infectious diseases
• Purposeful compilation of the AMP hospital form
•Deciding on the rational therapy of infection caused by antimicrobial resistant bacteria

Conclusion

- Accurate laboratory diagnostics of the properties of microbial resistance to antimicrobial drugs is the main prognostic criterion for success in the treatment of drug-resistant patients, fight against HAI, and collection of data on the prevalence of resistant strains at the local level.
- The laboratory component should be one of the mandatory activities of the IPC program. It implies standardization of research, training of personnel, strengthening capabilities of bacteriological laboratories, data collection, and analysis.
- Participation of laboratories in the National Program of External Quality Assurance should be mandatory.
- Creating a network for specialists from all hospital departments ensures the clinical significance of microbiological research.

Thank you for your time!