

Rational ATB therapy

Antibiotics are substances that inhibit the growth (multiplication) of microorganisms - **bacteriostatic** antibiotics, or kill them - **bactericidal** antibiotics.

The basic requirement for ATB therapy is: **optimal antimicrobial effect and minimal negative effect on the host**, i.e. high selectivity of effect.

Adverse and toxic effects

- **toxic effects** – after high doses, with higher sensitivity to ATB (most of them can be prevented or the symptoms mitigated);
- **allergies** – the need to search in the anamnesis ;
- **biological effects** – by changing the natural bacterial microflora of the skin or mucous membranes (often during administration of broad-spectrum antibiotics, e.g. ampicillin, tetracycline).

Factors affecting treatment

1) Correct choice of antimicrobial agents

- **chronic infections** – correct diagnosis, identification of the causative agent → targeted ATB therapy;
- **acute infection** – empirical treatment (without proof of origin);
- **life-threatening infections** - induce sufficient effect, as quickly as possible;
- The expanding range of ATBs and the insufficient overview of their contribution to therapy tempts doctors to prescribe drugs with an unnecessarily broad spectrum and strong effect → *development of multiple resistance*.

2) Duration of treatment – early termination of ATB therapy is one of the main reasons contributing to the emergence of resistance.

3) The size of the dose – determined by the nature of the infection and the characteristics of ATB, the acute condition and the age of the patient.

4) Submission route.

5) Appropriate combination of drugs.

6) Monitoring ATB therapy.

ATB policy

Bacterial resistance to antimicrobial agents is one of the most serious problems in antibiotic therapy. The broad spectrum introduction of antibiotics into clinical practice creates a selection pressure that conditions the survival and spread of resistant strains. The development of resistance is aided by reckless actions of people, including doctors (adding antibiotics to animal feed, prescribing antibiotic preparations for banal diseases or their free sale). We encounter the frequent occurrence of multidrug resistance mainly in hospitals. The development of resistance can be partially limited by following rational therapy (administrative measures, keeping antibiotics in reserve, examination of sensitivity to antimicrobial substances).

The most common mistakes in ATB treatment

- administration of antibiotics in non-infectious conditions
- administration of antibiotics for common respiratory diseases (mostly banal viruses)
- administration of antibiotics before material collection
- premature change of antibiotics
- unnecessary prolonged therapy (patient doubt)
- smaller dose of antibiotic (emergence of resistant clones)
- the use of broad-spectrum antibiotics where a narrower spectrum would suffice
- use of an injectable form where an oral one would suffice (expensive, unpleasant for the patient)
- using a combination of antibiotics where only one would have been sufficient
- insufficient number of microbiological examinations (economy reasons)

Principles of the correct use of antibiotics

The European *Center for Disease Prevention and Control* and the US *Food and Drug Administration* have published several guidelines for the correct use of antibiotics in the fight against antibiotic resistance.

- Do not miss doses and take your medicine as prescribed.

- Antibiotics are most effective only if you take them regularly as prescribed by a healthcare professional. Take antibiotics for the full time prescribed by a healthcare professional.
- It is important to use the whole package of the medicinal product, even if you already feel better. If treatment is stopped too soon, the medicine may not kill all the bacteria. I.e. you can get sick again, and the remaining bacteria can become resistant to the antibiotics you've been taking. Do not try to "save" antibiotics.
- The drug is intended for a specific infection , a specific person and a specific period of use. Do not use leftover medicinal product.
- If you take the wrong medicine, you can delay appropriate treatment and your infection can get worse . Do not take antibiotics prescribed for other people.
- They may not be suitable for your condition, may delay proper treatment and may worsen your condition. Only a healthcare professional can determine the correct treatment for an infection. Talk to a healthcare professional.
- Ask questions especially if you are not sure when to use an antibiotic or how to take it. Don't just use a doctor for this, ask in the best place for health care available - ask in your pharmacy!

Links

Related Articles

- Antibiotics
- Resistance to antibiotics

Resources

- VOTAVA, Miroslav, et al. *General medical microbiology*. 2nd edition. Brno: Neptun, 2005. ISBN 80-86850-00-5.
- JULÁK, Jaroslav. *Practical exercises and seminars in medical microbiology*. 2nd edition. Prague: Karolinum, 2009. ISBN 9788024611419.

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