

# 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 the effect*.

## Adverse and toxic effects

- '*toxic effects*' - after high doses, with higher sensitivity to ATB (usually they can be prevented or alleviated);
- '*allergy*' - need to search for anamnesis;
- '*biological effects*' - by altering the natural bacterial microflora skin or mucous membranes (often when administering broad-spectrum antibiotics eg Template:HVLP, Template:HVLP).

## Factors influencing treatment

'1) *The right choice of antimicrobials*'

- '*chronic infections*' - correct diagnosis, identification of the causative agent → targeted ATB therapy;
- '*acute infection*' - empirical treatment (without proof of origin);
- '*life-threatening infections*' - induce a sufficient effect as quickly as possible;
- The expanding range of ATBs and the lack of an overview of their benefits for therapy tempt physicians to prescribe drugs with an unnecessarily broad spectrum and potent effect → *development of multiple resistance*

'2) *Duration of treatment*' - prematurely terminated ATB therapy is one of the main reasons that contribute to the development of resistance.

'3) *Dose size*' - given by the nature of the infection and the characteristics of the ATB, the acute condition and the age of the patient.

'4) *Route of administration*' .

'5) *A suitable combination of drugs*' .

'6) *Monitoring ATB therapy*' .

## ATB policy

Bacterial resistance to antimicrobials is one of the most serious problems of antibiotic therapy. The broad spectrum of the 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 behavior by people, including doctors (adding antibiotics to animal feed, prescribing antibiotics in trivial diseases or selling them freely). We often encounter multidrug resistance mainly in hospitals. The development of resistance can be partially reduced by following rational therapy (administrative measures, keeping antibiotics in reserve, antimicrobial susceptibility testing).

## The most common mistakes in ATB treatment

- administration of antibiotics in non-infectious conditions
- administration of antibiotics for common respiratory diseases (mostly banal virosis)
- administration of antibiotics before the collection of material
- premature antibiotic change
- unnecessary prolonged therapy (patient's mistake)
- lower dose of antibiotic (formation of resistance clones)
- the use of broad-spectrum antibiotics, where a narrower spectrum would suffice
- use of the injection form, where oral would be sufficient (expensive, unpleasant for the patient)
- using a combination of antibiotics, where only one would suffice
- insufficient number of microbial examinations (economical reasons)

## Principles of proper use of antibiotics

The European Center for Disease Prevention and Control and the US Food and Drug Administration have published several guidelines for the proper 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 *according to your healthcare professional*. *Take antibiotics at all times as determined by your healthcare professional*.
- It is important to *use the entire package* of medicine, even if you already feel better. If treatment stops too soon, the medicine may not kill all the bacteria. I.e. you may get sick again and the remaining bacteria may become resistant to the antibiotics you have been taking. Don't try to "save" antibiotics.
- The drug is intended *for a specific infection* ', a specific person and a specific time of use. *'Do not take' 'medicine leftovers*.
- If you take the wrong medicine, you can slow down the appropriate treatment and your *infection may worsen*. *Do not take antibiotics prescribed for others*.
- They may not be suitable for your condition, they may delay proper treatment and may worsen your condition. *'Only a healthcare professional'* can determine the correct treatment for the infection. Talk to a healthcare professional.
- Ask especially " *if you are not sure* when an antibiotic is appropriate or how you should take it. Don't just use a doctor to do this, but ask at the best available healthcare location - ask at your pharmacy!

## Links

### Related Articles

- Antibiotics
- Antibiotic resistance

### Resources

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