

# Recurrent respiratory infections

The term "**recurrent respiratory infection**" (RRI) refers to a higher frequency of variously manifested inflammations of the upper or lower respiratory tract and their associated areas (pharynx, middle ear cavity) of any etiology. The most common etiological agent is viruses (adenoviruses, rhinoviruses, Coxsackie). From bacteria, streptococci, Haemophilus influenzae, Branhamella catarrhalis and others are used. The disease usually proceeds mildly, with a good response to symptomatic therapy and rapid improvement of the health status. The seasonality of occurrence is striking, with a maximum from October to April. They most often affect infants between 6 and 12 months of age, when the level of immune substances transferred through the placenta from the mother to the fetus has already decreased, but its own production is not yet sufficient. And another risk group is children in the period after entering collective enrollment (kindergarten).<sup>[1]</sup>

**Definition** (not an exact match):

- more than 6-8 RRI in autumn-winter;
- one or more RRIs every month from October to March;
- 3 or more episodes of lower respiratory tract infections (LDIs) per year;
- are not affected by fundamental immunological changes (primary or severe secondary immunodeficiency)
- they are not affected by the presence of a primary disease (cystic fibrosis, primary dyskinesia of the ciliary apparatus, anatomical changes in the airways including hypertrophy of the adenoid vegetation, gastroesophageal reflux, respiratory allergy);
- they have a relatively mild course of the nature of respiratory viruses (80 to 90%), rarely with bacterial superinfection; if it does, then it should be a common respiratory pathogen, with a good response to common antibiotics;
- not leading to chronicity (pansinusitis, tonsillitis...);
- they are not a syndrome of periodic fevers (eg: PFAPA syndrome – periodic fever, aphthous stomatitis, pharyngitis, cervical adenitis).<sup>[2]</sup>

**Physiological morbidity** is characterized by a mild course of infections localized mainly in the upper respiratory tract, a good response to symptomatic therapy and a seasonal course.<sup>[1]</sup>

## Infection

- runny nose (rhinitis);
- rhinosinusitis or sinusitis;
- rhinopharyngitis (nasopharyngitis, including involvement of the nasopharynx, tonsils and hypopharynx) - up to 90% of viral etiology;
- otitis - complications up to 5% RRI
- laryngitis, laryngotracheitis;
- tracheitis (or subglottic area of the respiratory tract mucosa);
- bronchitis - in children up to 90% of viral origin
- epiglottitis (quite exceptionally, or it is an involvement of the supraglottic region);
- pneumonia – a complication of RRI.<sup>[2]</sup>

## Investigation algorithm

- blood count and differential
- ENT ("postnasal drip", adenoid vegetation hypertrophy)
- examination of the paranasal sinuses (X-ray)
- X-ray of the heart and lungs
- skin prick tests (SPT) with selected allergens
- total IgE and possibly the concentration of some specific IgE targeted according to the anamnesis
- serum concentrations of immunoglobulins: IgG, IgA and IgM (if applicable, targeted IgG subclasses)
- microbiological examination - swabs, smears
- or production of post-vaccination antibodies (pneumococcus, haemophilus type B, tetanus and diphtheria toxoid)
- or concentration of C3 and C4 components of complement and their functions (CH50, CH100)
- or mannose-binding lectin concentration
- or serological tests (herpetic viruses, respiratory viruses, enteroviruses, etc.)
- or chlorides in sweat, especially in children born before 2009, i.e. before universal newborn screening for cystic fibrosis was instituted.<sup>[2]</sup>

## Indications for immunological examination

- 8 or more infections of the respiratory system during 12 months;
- 2 or more pneumonias within 12 months;
- 2 or more severe infections (eg meningitis, sepsis);
- extensive yeast infection of the skin and mucous membranes in a child older than 1 year;
- recurrent deep skin abscesses and soft tissue infections;

- an unusually severe course of infections;
- infection in an unusual location;
- failure to thrive, chronic diarrhea;
- the occurrence of a congenital immune disorder in the family.<sup>[3][1]</sup>

## Problems associated with RRI

- frequent visits to the general practitioner;
- the most common reason for entitlement to nursing allowance ("paragraph " per child);
- the most common commercial target for both prevention and treatment of the disease itself;
- a frequent reason for unnecessary overtreatment and overuse of antibiotics;
- a relatively common reason for misdiagnosis;
- a relatively frequent reason for undertreatment, usually for overlooking comorbidity, complications and, in the worst case, overlooking the primary disease.<sup>[2]</sup>

## Links

### related articles

### External links

- Petrů: Imunoterapie dětí s recidivujícími respiračními infekcemi (<https://www.pediatricpropraxi.cz/pdfs/ped/2012/05/05.pdf>)

### Reference

1. DOLEŽALOVÁ, K. Rýma, kašel, rýma, kašel aneb první rok ve školce. *Pediatric pro praxi*[online]. 2015, roč. 16, vol. 6, s. 411-4141, dostupné také z <<https://www.pediatricpropraxi.cz/pdfs/ped/2015/06/13.pdf>>.
2. FUCHS, Martin. Recidivující respirační infekce v dětském věku. *Medical Tribune*[online]. 2012, roč. -, vol. -, s. -, dostupné také z <<https://www.tribune.cz/clanek/26997-recidivujici-respiracni-infekce-v-detskem-veku>>.
3. Jeseňák M, Rennerová Z. Imunita dětí v předškolním věku InDesign, s.r.o., Nové Zámky, 2010.