

THE ESSENTIALS

Infant respiratory physiotherapy, An alternative against respiratory infections

INTRODUCTION

Acute respiratory infections (rhinopharyngitis, angina, sinusitis, otitis, bronchitis, bronchiolitis, pneumonia, asthma ...) are very common in children under 5 years.

In 2016, nearly 900,000 children under five lost their lives as a result of these diseases, making it the second leading cause of child mortality in the world. The African continent remains the most affected with nearly 500,000 children¹.

The risks of serious complications (osteitis, meningitis), sequelae (deafness), or chronicity, require more and more early care.

Depending on the characteristics of the disease and in addition to family dietary advice, the doctor may prescribe medication and / or **respiratory physiotherapy**.

WHAT IS RESPIRATORY KINESITHERAPY?

Respiratory physiotherapy is the set of manual techniques that help the patient to expectorate the secretions present in the ENT (ear-nose-throat) and bronchial tree spheres.

After the inflammatory phase of an acute respiratory infection, secretions and desquamated epithelial cells can clog the respiratory tract. Stagnation of secretions favors bacterial colonization and then superinfection.

Respiratory physiotherapy can be performed during this "hypersecreting" phase in order to obtain a frank clinical improvement ^{2,4}. Inexpensive and practiced on an outpatient basis, these sessions may allow for example:

- Reduce bronchial congestion ²;
- Facilitate expectoration ²;
- Improve ventilation ²;
- Provide breathing comfort ²;
- identify signs of aggravation;
- Reduce the recovery time.



CONDUCT OF A RESPIRATORY KINESITHERAPY SESSION

In the majority of cases, one session is carried out daily for 2 to 3 days and then one session every other day, and on average 6 sessions in total. A session should not exceed 10 minutes so as not to tire the infant.

A physiotherapy session generally takes place as follows:

1. **Clinical observation:** assess respiratory rate and abnormalities such as sniffles, wheezes, whines, prints, stridors, expiratory and inspiratory sounds, cough (oily, productive, sibilant or dry).

2. **Verification of warning signs:** assess the degree of respiratory distress via the calculation of the **Silverman score** (see Appendix 1):

From a Silverman score ≥ 10 , hospitalization or emergency management should be considered in relation to other clinical parameters.

3. **Rhino Pharyngeal Drainage (DRP)** or nasal cavity lavage:

Instillation and disobstruction of the upper respiratory tract is the first step of a session. Infant breathing is mainly nasal, maintaining the freedom of the upper airways is essential.



The experienced practitioner extends the child on the back by bringing the head to the side and then introduced into the upper nostril the tip of the isotonic spray or saline pipette; he raises the tip so that it is perpendicular to the baby's face. The liquid or spray is instilled by a single long pressure. The phlegm is then expelled by the other lower nostril; we start again in the other nostril so that the liquid comes out clean ³.

The most commonly recommended product for DRP is the physiological saline solution (single dose pod composed of water (H₂O) and salt (NaCl) 9%). ⁶. Any pod that has been started must be discarded as the pods are used. unique.

4. Bronchial drainage (DB) or induced coughing:



This step is essential to evacuate secretions. The physiotherapist will use the flexibility of the infant's chest to force the secretions back to the trachea and mouth. To do this, it will exert pressure on the infant's chest and abdomen to cause Expiratory Flow Expansion (AFE) ². Bronchial evacuation postures and chest maneuvers are closely associated and conducted with tact.

When secretions migrate into the trachea, the practitioner will trigger a cough reflex through stretching or pressure at a specific location in the base of the baby's neck^{2,3}.

These gestures are neither aggressive nor painful for the infant, they make it possible to free the bronchi of a baby in respiratory difficulty and to analyze the mucus in order to adapt the medical treatment ³.

5. Other manipulations according to clinical observations

The most known and common manipulations are the DRP and the DB, but other manipulations can be performed by the experienced physiotherapist to act precisely on other symptoms highlighted during the observation stage.

ADVICE TO HEALTH PROFESSIONALS ^{4,5} :

As acute respiratory infections are mainly viral or bacterial, prevention measures in health centers are very important for all those who frequent these places because they prevent contamination:

- **Wash your hands** (water and soap or hydro-alcoholic solution) between each patient;
- **Disinfect medical equipment** (stethoscope, weigh scale, examination table) between each patient;
- **Wear gloves, a mask and a gown** to handle patients with a risk infection.

Management of infants with respiratory infection should be performed by a specific team separate from the uninfected infants team.

Respiratory physiotherapy may be indicated in cases of bronchial congestion associated with bronchoconstriction.

ADVICE TO THE FAMILY ^{4,5} :

The following hygiene and dietary measures are essential and must be transmitted to families in a simple and adapted way to their environment:

- Wash your hands regularly (water and soap or hydro-alcoholic antiseptics) before and after taking care of the infant (valid even for siblings);
- Promote breastfeeding (up to 6 months exclusive);
- Split the meals of infants who regurgitate or have difficulty feeding;
- Make the child drink often and in small quantities;
- Ventilate the infant's room daily and maintain temperature 4-5 degrees lower than the outside;
- Clean air conditioners and fans regularly;
- Reduce allergens (house dust, animals ...);
- Wash the infants' nose several times a day and before each meal with saline and disposable tissues (see DRP technique above);
- After use, immediately discard tissues in a closed garbage bag;
- When coughing or sneezing, cover the nose and mouth with a disposable tissue (or at the elbow without a tissue);
- To sleep, tilt the child's bed base to lift the chest.

WHAT YOU SHOULD NOT DO:

- Do not smoke in the presence of the infant;
- Do not expose the child to cooking smoke (wood and charcoal);
- Avoid directing the fan directly at the child's ears (risk of ear infections);
- Avoid sharing baby bottles, pacifiers, cutlery and toys in the same family without first disinfecting them;
- Avoid kissing infants on the face, especially if you have a cold;
- Do not touch the mucous membranes (eyes, nose) with contaminated hands;
- Performing a respiratory physiotherapy session within 2 hours of the last meal may cause nausea and vomiting. It must therefore be done rather at a distance from meals.

BIBLIOGRAPHIC REFERENCES

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² KELLOU et coll. (2002). Guide des IRA. Directives techniques. <http://sante.dz/Dossiers/direction-prevention/ira.PDF>

³ <https://ambroisepareformation.com/krbb/>

⁴ Amélie CORNILLE. THESE POUR LE DIPLOME D'ETAT DE DOCTEUR EN PHARMACIE. Rôle du virus respiratoire syncytial dans les bronchiolites du nourrisson. <http://pepite-depot.univ-lille2.fr/nuxeo/site/esupversions/cac06481-28ca-4eb7-900c-6a8cf6d7bb50>

⁵ Haut Conseil de la Santé Publique (2012). Conduite à tenir devant une ou plusieurs infections respiratoires aiguës dans les collectivités de personnes âgées, Ed. Avis et Rapports

⁶ <http://www.santetropicale.com/manelec/fr/sanofi/images/rhinacare/doc.pdf>

Appendix 1: Silverman score (to calculate the score, add the scores obtained for each parameter)

Parameters	Rating = 0	Rating = 1	Rating = 2
Thoraco-abdominal swing with inspiration	Absent	Motionless chest, only abdomen lifts	Paradoxical breathing
Intercostal print with inspiration	Absent	Discreet intercostal	Intercostal sus and under sternal
Xiphoidal funnel	Absent	Moderate	Intense
Flapping of the wings of the nose	Absent	Moderate	Intense
Expiratory bleeding	Absent	Perceived stethoscope and discontinuous	Audible and continuous

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