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# Management of asthma during the Coronavirus disease 2019 outbreak

## ARTICLE INFO

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Viral infections are the most frequent triggers of asthma exacerbations, and by the way asthmatics and in particular severe asthmatics are at risks of severe viral respiratory infections [1]. It may look paradoxical that anti-inflammatory treatments and more specifically corticosteroids can prevent virally-triggered asthma exacerbations. T2 airway inflammation may explain this increased viral susceptibility that can be restored by corticosteroids and biologics, and eventually azithromycin in severe asthma. Other known factors of susceptibility are the deficient type III interferon response and genetic polymorphisms of some viral receptors, the rhinovirus CDHR3 being the most famous [2–4].

Whether the SARS-CoV-2 can induce exacerbations and in particular severe exacerbations of asthma is unclear at this stage, even though there are no report available in this direction. Paradoxically, preferential respiratory tropism is clearly established for Coronaviruses as previously reported for SARS (Severe Acute Respiratory Syndrome) or MERS (Middle East Respiratory Syndrome). Moreover, coronaviruses (other than the Sars-Cov-2) are identified in 8.4% of asthma exacerbations in children and up to 20.8% in adults, ranking it second after the rhinovirus [5].

Surprisingly during this unprecedented current Coronavirus disease 2019 (Covid19) outbreak, asthmatics seem not to be over-represented in the different studies and registries, but most are preliminary data. In some countries, it moreover seems that asthmatics are underrepresented [6–8], a finding aligned with the feeling reported by the community of the severe asthma network (“CRISALIS”) through their participation to manage Covid19 in the ward and in Intensive Care Unit. Since underreporting looks unlikely then, asthma itself through T2 inflammation and asthma treatments (corticosteroids are likely able to reduce coronavirus replication, as shown for other viruses) [9–11]. Omalizumab has

also been shown to reduce virally-induced asthma exacerbation [12,13].

### 1. Position 1. Maintenance treatment

No change should affect asthma management with the pursued aimed if gaining and maintaining best asthma control according to validated questionnaires such as ACT or ACQ. ICS, LABA, LAMA, LTRA and other controllers shouldn't be modified during the outbreak. To the best of the current knowledge, ICS do not increase the risk of severe Covid19.

Approved and licensed biologics (omalizumab, mepolizumab, benralizumab) or given in an early access program should be maintained at the same dose and rhythm. These biologics are not immunosuppressive. They should be home-administered by self-injections or with the help of a nurse in order to avoid unnecessary attendance to healthcare facilities.

Continuous treatment with OCS should also be maintained at the lowest possible dose to achieve the best level of asthma control. It is of utmost importance not to stop it abruptly in order to avoid any risk of adrenal insufficiency—this condition being a risk for potentially severe adverse events.

### 2. Position 2. Initiation of biologics

If asthma remains uncontrolled whereas all efforts are maintained and the best standard treatments observed, the initiation of a biologic shouldn't be delayed. It is recalled that biologics are not intending to treat exacerbation and that these treatments are usually started at a reasonable distance from such an episode.

### 3. Position 3. Treatment of exacerbations

OCS are the treatment of choice of an asthma exacerbation. Delaying OCS treatment for an exacerbation may have some fatal consequences. If fever is present, and if Covid19 is suspected, OCS should nonetheless be given at the usual dose of 0.5 to 1 mg/kg/d. It seems potentially hazardous and inappropriate to wait the RT-PCR diagnostic testing. A mean duration of five days is kept even in the case of Covid infection. OCS do not belong to the NSAIDs class.

Nebulisation are increasing the risk of viral dissemination deserving standardized droplet cautions (protection glasses, FFP2 mask, non-re-usable coat) for health care givers and relatives. Accordingly, aerosol chambers should be used in first intention whenever possible for administrating SABA and/or SAMA.

*Abbreviations:* ACT, asthma control test; ACQ, asthma control questionnaire; ICS, inhaled corticosteroids; LABA, long acting beta-2 agonists; LAMA, long acting muscarinic antagonists; LTRA, leukotriene receptor antagonists; OCS, oral corticosteroids; NSAIDs, non-steroidal anti-inflammatory drugs; FFP, filtering face-piece; SABA, short acting beta-2 agonists; SAMA, short acting muscarinic antagonists.

#### 4. Position 4. Prevention

Social distancing and barriers should be strictly followed. Occupational issues should be considered on a case by case basis with the employer and the occupational doctor.

At a glance, all asthma medications should be maintained and kept at the doses required to achieve best asthma control, irrespective of underlying asthma severity, throughout the Covid19 outbreak. These positions have been shared and communicated both by the French Language Respiratory Society (SPLF) and the Haute Autorité de Santé (HAS) [14,15].

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