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Drug or inhaler... Which is first?

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Current pharmacological treatment for chronic bronchial respiratory diseases (asthma and COPD) is mainly delivered by inhalation. Both the administration of rescue medication for acute exacerbations and maintenance drugs for long-term therapy are carried out with inhalers. The use of lower doses that act directly in the bronchial tree, where they are needed; and the reduction of side effects that systemic administration could promote are clear advantages of this route.[1-2] In addition to the classic treatments with inhaled bronchodilators and corticosteroids for bronchial diseases, other drugs such as monoclonal antibodies are beginning to be tested in this way.[3]

However, the administration of drugs by inhalation devices causes an additional problem, the correct use of a device requires several steps to ensure good technique.[4]

Lack of voluntary adherence to medication is frequent. On top of that, we must consider poor unwilling adherence to respiratory inhaled therapy because of poor technique in the use of the device. It has been shown in several studies that errors in the management of inhalers are associated with worse control of bronchial diseases and a greater number of exacerbations. There are critical errors in the management of the devices, especially those related to poor inhalation techniques dealing with worsening control and poor outcomes both in COPD[5] and asthma.[6] These results are even worse when these errors accumulate in the same patient. In fact, many patients receive several different devices simultaneously during their therapeutic process, increasing the risk of these critical errors to happen.[7]

Inhalation devices have been improving and easier-to-use inhalers including fewer steps to charge the device and alerts that attempt to guide users about possible errors have been introduced in the market. However, current research shows that the prevalence of inhalation errors remains very high.[5]

One of the main barriers to the proper use of inhalers is related to poor patient education when receiving a certain treatment, partly caused by the poor knowledge of health professionals themselves.[4] Health professionals' behavioural change is needed to help patients to receive the best education. Implementation of a shared decision-making process where patient opinion and perspectives are considered to get the right inhaler for the right patient independently of the pharmacological selection could help to get better outcomes in respiratory diseases and reduce the number of critical errors.[8] However, we are still missing the "best" inhaler technique education program, and available systematic reviews evaluating the effectiveness of educational interventions in the management of inhalers show very poor results and no evidence to recommend a specific educational method.[9]

Among other possible solutions to minimize this problem, multiple intelligent inhalation devices (smart inhalers) have been tested and used in the clinical field and not only for research. These devices are useful to guide patients about their inhalation performance and verify that it has been correct and occurred in a timely manner. Studies that demonstrate better control with the use of these devices are increasingly numerous, however, there are many barriers to the use of smart inhalers. The novelty of these devices, the use of digital platforms with the added problems of cybersecurity and privacy, and the high cost of their generalized use are clear stoppers for their widespread implementation. Maybe they could be a bet for the future but are still far from becoming a "real" solution.[10]

International Clinical asthma and COPD guidelines have classically developed treatment algorithms prioritizing the selection of the drug to get disease control and best outcomes with scarce mentions of the selection of the right inhalation device. Specific recommendations for device selection or continuous technique reassessment were hidden in different Guidelines' sections far from the main algorithms and likely to consider that basic patient education in the management of the device could be sufficient to ensure a correct

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maneuver and effective treatment. Latest Guidelines updates[1-2] are focusing on the high prevalence of poor adherence to treatment and the importance of proper use of the inhalation device and have incorporated special sections that specifically address the appropriate selection of the device in each case, considering preferences. and patient needs and the importance of good initial education and repeated reassessment for proper use, to ensure effective treatment.

The updated GOLD Guidelines highlight that there are crucial issues such as choosing the appropriate device, providing education, checking its use regularly, and adapting the device whenever it is necessary to maximize pharmacological treatment benefits for COPD patients. They have also included a clear statement in treatment algorithms where an alternative to changing a pharmacological therapy would be to check/change the inhalation device even maintaining the same drug in cases of unsuccessful clinical control.[1]

A new figure has been included in GINA 2023 update to put inhaler device selection in the right centre when deciding the best pharmacological treatment for a patient with asthma.[2]

As previously highlighted, until recently, health professionals and clinical guidelines for asthma and COPD have not given a main role to the selection of the appropriate inhaler in the management of these conditions. This step forward of International clinical guidelines in the sense of prioritizing the management of inhalers in the treatment of asthma and COPD could generate the necessary behavioral change in healthcare professionals and patients to optimize the effectiveness of inhaled drugs to get the best possible outcomes.

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