



## Review article

## Implementation gaps for asthma prevention and control



Luciana K. Tanno <sup>a, b, \*</sup>, Tari Haahtela <sup>c</sup>, Moises A. Calderon <sup>d</sup>, Alvaro Cruz <sup>e</sup>,  
Pascal Demoly <sup>b</sup> on behalf of the Joint Allergy Academies

<sup>a</sup> Hospital Sírío Libanês, São Paulo, Brazil

<sup>b</sup> Division of Allergy, Department of Pulmonology, University Hospital of Montpellier, Montpellier, and Pierre Louis Institute of Epidemiology and Public Health, Sorbonne Universités, Paris, France

<sup>c</sup> Skin and Allergy Hospital, Helsinki University Central Hospital, FI-00029 Helsinki, Finland

<sup>d</sup> Section of Allergy and Clinical Immunology, Imperial College London, National Heart and Lung Institute, Royal Brompton Hospital, London, United Kingdom

<sup>e</sup> ProAR-Núcleo de Excelência em Asma da Universidade Federal da Bahia, Salvador, Bahia, Brazil

## ARTICLE INFO

## Article history:

Received 12 April 2017

Received in revised form

29 June 2017

Accepted 7 July 2017

Available online 11 July 2017

## Keywords:

Allergy

Asthma

Prevention

Treatment

World health organization (WHO)

## ABSTRACT

Asthma and allergic diseases can start in childhood and persist throughout life, but could also be manifested later, at any time for still misunderstood reasons. They are major chronic multifactorial respiratory diseases, for which prevention, early diagnosis and treatment is recognized as a priority for the Europe's public health policy and the United Nations. Given that allergy triggers (including infections, rapid urbanization leading to loss in biodiversity, pollution and climate changes) are not expected to change in a foreseeable future, it is imperative that steps are taken to develop, strengthen and optimize preventive and treatment strategies. Currently there are good treatments for asthma, several risk factors are known (e.g., allergies, rhinitis, tobacco smoke) and tools to control the disease have been developed. However, we are still uncertain how to prevent patients from developing asthma and allergic diseases. In this paper, we list the positive and negative experiences in this field as well as analyze the missing links in the process. This critical analysis will be the basis of setting-up an effective program for prevention and making, a process labeled as "implementation gaps".

© 2017 Elsevier Ltd. All rights reserved.

## Contents

1. What do we still have to learn regarding asthma control and prevention? .....	13
2. Can we really control asthma? .....	14
3. Which lessons to learn from the prevention studies? .....	15
4. Which are the barriers to asthma prevention? .....	17
Funding .....	18
Author contributions' .....	18
Conflict of interests .....	18
Acknowledgement .....	18
Abbreviations .....	18
References .....	18

### 1. What do we still have to learn regarding asthma control and prevention?

Asthma, associated with respiratory allergies, is recognized by the World Health Organization (WHO) [1] and the United Nations

\* Corresponding author. Division of Allergy, Department of Pulmonology, Hôpital Arnaud de Villeneuve, University Hospital of Montpellier, 371, av. du Doyen Gaston Giraud, 34295 Montpellier cedex 5, France.

E-mail address: [luciana.tanno@gmail.com](mailto:luciana.tanno@gmail.com) (L.K. Tanno).

[2] as the most common chronic inflammatory disease characterized by paroxysmic symptomatic periods [3,4]. It affects 5–7% of adults and 10–12% of children. In contrast to some countries in which frequency of asthma has been stabilized, morbidity statistics are still raising in others. In France, for example, asthma prevalence increased from 8.2% in 1998 to 10.2% in 2006 [5]. Though asthma mortality rates are higher in lower and lower-middle income countries, it has been accepted as a major public health problem in all countries.

Several facts related to the evolution of our environment, would be responsible for the increase or the non-decrease of asthma including increased potentiating factors such as (i) indoor pollution and chemicals (cleaning, wood combustion, fume, fine particles), and biological (mites, mold, animals); (ii) climate changes and external pollution, in particular, the fine particles emitted by diesel engines and ozone; the smoking habit leads to respiratory and non respiratory diseases (cancers, atherosclerosis, chronic obstructive pulmonary disease, for example), but is also related with the development of asthma and allergies in newborns from smoking pregnant women; (iii) rapid urbanization and its negative consequence leading to changes in biodiversity [6] and loss of protective factors, which is the basis of the popular “hygiene hypothesis”. This hypothesis is based on the population observation over the past 30 years in which there was an inverse relationship between the prevalence of infectious diseases and the frequency of allergic and autoimmune diseases. The immunological explanation comes from farmer-based studies. Thus, exposure in the youngest age to endotoxins through the inhaled air (from the wall of bacteria living in the digestive tract of farm animals) could protect against the development of allergenic sensitization and respiratory allergies.

Many international initiatives have been launched to prevent and decrease morbidity and mortality of these conditions, which are considered a global public health problem [3,7]. However, the WHO's international classification and coding systems such as the International Classification of Diseases (ICD) have grouped them under topographic distribution, regardless of the underlying mechanisms and triggers. This has led to the framework of ICD to be deficient in capturing the concepts currently in use for allergic and hypersensitivity conditions, in particular for allergic and hypersensitivity conditions of the respiratory tract. As a result, the lack of accurate morbidity and mortality epidemiological data impacts directly on the healthcare prevention planning and resource allocation, quality patient management and public health policies.

The public health's core mission is prevention of injury or disease and there are several potential strategic interventions. Most population interventions have historically focused on primary and secondary prevention measures, but all health professionals worldwide are most familiar with asthma tertiary prevention actions since they are addressed to existing disorders and focused on their accurate diagnosis and control in order to avoid new exacerbations [1].

Though the epidemiological and genetic studies have been looking for many different risk factors for asthma [8], they have failing to reach objective makers to substantiate preventive measures. These studies have supported some broad hypotheses and proposed some effective tips. In families where there is a history of asthma and allergies, we should indeed try to prevent asthma in young children by simple measures, such as avoiding smoke during pregnancy or in the presence of infants and young children, preferring breastfeeding for the first 3 months and provide early diversification from the age of four months.

Although not fully demonstrated, some measures have been recommended to prevent allergy. Removing allergens from the indoor environment (dust mites, pets, mold) showed to be ineffective as primary prevention, but it is effective in secondary

prevention, when the eviction is completed and prolonged.

Delayed diagnosis of allergies and asthma, primarily linked to the lack of knowledge of asthma-like symptoms or misinterpretation of laboratory tests related to allergies, precludes the development of early prevention. Rhinitis, which includes hay fever (allergic rhinitis to grass pollen) and allergic rhinitis due to mites are risk factors for the development of asthma later in life and of uncontrolled established asthma [7]. Based on it, some national screening and prevention campaigns have been set up. The best example is from Finland [9]. After 10 years of intensive work of training health professionals, providing information for the population, implementing of treatment guidelines, the cost of asthma for the Finnish health has fallen considerably and the amounts originally invested appear to have been fully repaid. However, the incidence of asthma has not decreased during that period, which means that the causes of the disease have not been affected and/or the methodology applied to reach precise asthma epidemiological data was not optimal. The same country, while others have since copied, bounced and implemented a national program of allergy prevention, thinking to tackle one of the causes of asthma [10]. The question that therefore arises is indeed the subject of this article: can we really prevent asthma? What are the obstacles? Can we overcome them? Should other countries engage in such a process?

## 2. Can we really control asthma?

The goal of treatment of asthma is to control the disease with minimal drug and to reach an appropriate quality of life for patients. In France, it has been observed that uncontrolled asthma affects nearly one child in two (44.2%) [11] and three in five adults (62%) [5].

Asthma control has two main goals: (I) clinical control and (II) limitation or reduction of future risk of adverse outcomes. Actions to reach both objectives have to be taken concurrently for a successful control. In the case of children, the disease control should lead to the absence of symptoms in the performance of a normal life without limitation (at school, in recreation, sport), standardization of lung function, allowing a good development height and weight, and of course to prevent mortality caused by the disease, which unfortunately still exists (with 10 deaths from asthma in 0–14 of a total of just under 1000 asthma deaths in France in 2010) [12]. Similarly, older people with asthma are under-diagnosed and under-treated, increasing mortality statistics [13].

Preventive measures should be able to change the natural history of the disorder, preventing asthma development and/or evolution providing its control. Asthma attacks start in early ages and are only the visible part of the iceberg. Childhood asthma is a chronic disease that comes in many forms (known clinical phenotypes) some strongly linked to allergies and others not [14–16]. Recently several studies have explored the treatment of intermittent and persistent forms of the disease. Generally, inhaled short-acting beta2-agonists acting in minutes are pointed as the treatment of choice in crises by numerous recommendations [17–20]. In addition, the daily use of inhaled corticosteroids (ICS), which constitutes the reference indication in overall control of the long-term asthma, has shown effective in reducing asthma exacerbations and rescue medications use [21]. The occasional use of several treatments in intermittent forms especially during infectious episodes was investigated in seven recent studies. In the case of ICS, there was no [22–24] or low [25,26] positive effects in terms of reducing the number of exacerbations; the beneficial effect was modest for leukotriene receptor antagonists (LTRA) [27,28]. The lack of written asthma action plan and education of parents and teenagers is also a paramount difficulty of achieving asthma control, notably due to the “no symptom, no asthma” belief and the lack of knowledge

Download English Version:

<https://daneshyari.com/en/article/5724804>

Download Persian Version:

<https://daneshyari.com/article/5724804>

[Daneshyari.com](https://daneshyari.com)