ARIA 2016 Executive Summary
Integrated care pathways for predictive medicine across the life cycle

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Abstract
The Allergic Rhinitis and its Impact on Asthma (ARIA) initiative commenced during a World Health Organization (WHO) workshop in 1999. The initial goals were (i) to propose a new allergic rhinitis classification, (ii) to promote the concept of multi-morbidity in asthma and rhinitis and (iii) to develop guidelines with all stakeholders for global use in all countries and populations. ARIA - disseminated and implemented in over 70 countries globally - is now focusing on the implementation of emerging technologies for individualized and predictive medicine. MASK (MACVIA Contre les MA Ladies Chroniques pour un VIeillissement Actif)-ARIA Sentinel NetworkK) uses mobile technology to develop care pathways in order to enable the management of rhinitis and asthma by a multi-disciplinary group or by patients themselves. An App (Android and iOS) is available in 20 countries and 15 languages. It uses a visual analogue scale to assess symptom

ملخص تنفيذي لوثيقة ARIA 2016
الرعاية الطبية المتكاملة للمسار المتوقع عبر السنوات

قائمة المؤلفين:

باحث الجمل - إلهام حسنى - زينب عوض السيد - ماجدة الصعبي - شيرين محتى رضا - شيرين سعد السيد - إبوا أجايشي - كلاوس بيدروك - أنا بيدروك - والتر كاثنونكا - توماس كاسالي - أنغرار كريز - وينسي فوكينز - بيتر هيلنجز - بوليسو سامولينسكى - جون بوسكي

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الملخص
بدأت مبادرة التهاب الأنف التحسسي وأثره على الربيو (ARIA) خلال حلقة عمل نظمتها منظمة الصحة العالمية WHO في عام 1999. وتمت الأهداف الأولية في عدة نقاط أولها كان اقتراحه لعمل تصنيف جديد لالتهاب الأنف التحسسي، ثانياً كان لإرساء مفهوم الإعتلال المتعدد في مرضى الربيو وحساسية الأنف وثالثها لوضع قواعد إدارة من قبل جميع المعينين بالأمر للاستخدام في جميع البلدان والمجتمعات. هذه المبادرة والتي تتشرف وتتفوق في أكثر من 20 دولة على الصعيد العالمي تركز الآن على استخدام التكنولوجيات الناشئة من أجل الممارسة الطبية الموجهة وللتقيي بمسار التهاب الأنف والربو من قبل مجموعة متنوعة من التخصصات أو من قبل المرضى أنفسهم. يوجد حاليا تطبيق (أندرويد و iOS) في عشرين بلد باللغة عربية. وهو يستخدم برنامج مرن لمراقبة الأعراض وتقييم المقدمة على العمل والإنتاج.
control and work productivity as well as a clinical decision support system. It is associated with an inter-operable tablet for physicians and other health care professionals. The scaling up strategy uses the recommendations of the European Innovation Partnership on Active and Healthy Ageing. The aim of the novel ARIA approach is to provide an active and healthy life to rhinitis sufferers, whatever their age, sex or socio-economic status, in order to reduce health and social inequalities incurred by the disease.

**Key words:** ARIA, rhinitis, ICT, EIP on AHA, mobile technology, AIRWAYS ICPs

**Introduction**

Patients, clinicians and other HCPs are confronted with various treatment choices for the management of AR. This contributes to considerable variation in clinical practice and patients are often unsatisfied by their treatment. The Allergic Rhinitis and its Impact on Asthma (ARIA) initiative commenced during a World Health Organization (WHO) workshop in 1999 (published in 2001). Its aim was to provide a guide for the diagnosis and management of allergic rhinitis and asthma multimorbidity (1, 2). In 2008, ARIA was updated using the same recommendation system (1, 3). In its 2010 Revision, ARIA was the first chronic respiratory disease guideline to adopt the GRADE (Grading of Recommendation, Assessment, Development and Evaluation) approach, an advanced evidence evaluation methodology (4, 5).

ARIA, disseminated and implemented in over 70 countries around the world (6), is now focusing on the implementation of emerging technologies for individualized and predictive medicine.

MASK (MACVIA (Contre les MAladies Chroniques pour un Vieillissement Actif)-ARIA Sentinel Network) uses mobile technology to develop care pathways in order to enable the management of rhinitis and asthma by a multi-disciplinary team. A novel feature is the development of a tablet operating system that allows physicians and other health care professionals to make decisions based on the latest evidence. The scaling up strategy uses the recommendations of the European Innovation Partnership on Active and Healthy Ageing. The aim of the novel ARIA approach is to provide an active and healthy life to rhinitis sufferers, whatever their age, sex or socio-economic status, in order to reduce health and social inequalities incurred by the disease.

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1. AIRWAYS ICPs: the ARIA 2016 political agenda

In 2012, the European Commission launched the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA; DG Santé and DG CONNECT). The aim was to enhance EU competitiveness and tackle societal challenges of ageing through research and innovation (9). The B3 Action Plan is devoted to the scaling up and replication of successful innovative integrated care models for chronic diseases amongst older patients using Chronic Respiratory Diseases as the pilot project.

AIRWAYS ICPs (Integrated care pathways for airway diseases) is the implementation tool of the project. The major AIRWAYS-ICPs activity is the development of multi-sectoral care pathways (ICPs) for rhinitis, asthma and their multi-morbidities, implementing emerging technologies for predictive medicine across the patient life cycle (7, 8, 10) in countries and regions. The aim is to reduce chronic respiratory disease burden, mortality and multi-morbidity, while maintaining patients’ quality-of-life (QOL) (7, 11)). The Action Plan of AIRWAYS ICPs has been implemented and scaled up globally (12). Moreover, AIRWAYS ICPS is a WHO Global Alliance against Chronic Respiratory Diseases (GARD) demonstration project (Figure 1). ARIA 2016 is a major component of AIRWAYS ICPs (13).
2. From guidelines to integrated care pathways: MACVIA-ARIA Sentinel networK (MASK)

Need for multisectoral care pathways for rhinitis and asthma using ICT

A large number of AR patients appear to be self-managing their condition. They consult infrequently with regards to their allergy prescription (14). However, AR negatively impacts social life, school and work productivity (3). Many AR patients use over the counter (OTC) drugs (15-17) and only a fraction request medical consultation. The vast majority of patients who visit GPs or specialists have moderate/severe rhinitis (18-20). A large number of OTC or prescribed drugs are available for the patient who can also choose alternative medicine or allergen specific immunotherapy (21). Thus, ICPs should consider a multi-disciplinary approach including self-management as proposed by AIRWAYS ICPs (Figure 2).

ICPs are structured multi-disciplinary care plans detailing key steps of patient care. They promote the translation of guidelines into local protocols and their subsequent application to clinical practice.

ICPs differ from clinical practice guidelines as they are utilized by a multi-disciplinary team, and focus on the quality and co-ordination of care. ICPs need to have a mechanism for recording variations/deviations from planned care.

For the ARIA recommendations, the variations/deviations from planned care have been assessed. Disease severity is associated with several health outcomes, including quality of life (18-20). The classification of rhinitis (intermittent/severe-persistent) is an important...
indicator of asthma multi-morbidity (in some but not all studies) (22), duration of AR treatment and efficacy of treatment in AR (23). However, most patients receive combinations of oral antihistamines and intra-nasal corticosteroids (INS) that are insufficiently evaluated in guidelines that use an appropriate methodology (24).

Simple approach to assess control in allergic rhinitis

In AR, the switch from symptom severity to disease control to guide treatment decisions has been led by ARIA and includes (i) a visual analogue scale (VAS) as a common validated language of AR control, (ii) categorization of AR control using VAS score cut-offs, (iii) incorporation of this VAS into simple interactive apps for both patients (ARIA Allergy Diary) and HCPs (ARIA Allergy Diary Companion) (8, 25, 26), (iv) the integration of all this knowledge into ICPs (25) and (v) the development of a clinical decision support system (CDSS).

AR symptoms vary daily and necessitate the step up / step down of individualized therapeutic regimens over time. Patients, caregivers or HCPs should use a common and simple AR symptom scoring system rapidly responsive to change. MACVIA-ARIA has produced a simple VAS-based algorithm, called the ARIA CDSS, which uses a VAS score to guide treatment decisions in a step-up/step-down approach (27).

The MASK (MACVIA-ARIA Sentinel networK) tools: the ARIA Allergy Diary and ARIA Allergy Diary Companion apps

The ARIA Allergy Diary is freely available for patients in 15 EU countries, Australia, Brazil, Canada, Mexico and Switzerland and in 15 languages (translated and back-translated, متقطع/شديد مستمر مؤشرا هاما على حدوث الربي كعدد مرضي في بعض وليس كل الدراسات (22) على مدة علاج حساسية الأنف وفاعليته (23). وبالرغم من ذلك فأن معظم المرضى ينتمون بين مضادات الحساسية بالفم ومركبات الكورتيزون عن طريق الأنف وهذا لا يتم تقييمه بشكل كافي في الخطط الاسترشادية التي تستخدم منهجية سليمة (24).

استخدام اسلوب سهل لتقسيم التحكم في حساسية الأنف

إن أريا كانت الرائدة في تبني التحول من استخدام شدة المرض إلى درجة التحكم في المرض في إتخاذ قرار العلاج في حساسية الأنف، ويتضمن:

أ) اعتبار مقياس الشبيه المنظور مصدقة على تغيرات التحكم في حساسية الأنف، (ب) تصنيف درجة التحكم في حساسية الأنف باستخدام المستوى الحدي لمقياس الشبيه المنظور، (ج) إدراج مقياس الشبيه المنظور في نظم تفاعلي خاصة في استخدام مقدرات آريا للحساسية (منطقة آريا للحساسية الريفية) (4, 20, 21)، (د) إدراج هذه المعلومات في مسارات الرعاية المتكاملة (و) إنشاء منظومة لدعم القرارات الإكلينيكية (CDSS).

ان اعراض حساسية الأنف تتفاوت يوميا ونتيجة آريا التحسسية متاحة مجاناً للمرضى في 15 دولة من الاتحاد الأوروبي واستراليا وبرازيل وكندا والمكسيك وسويسرا مترجمة إلى 15 لغة (ترجمة
• Questionnaires

Upon registration, ARIA Allergy Diary users fill in simple questionnaires on asthma, rhinitis and the impact of the disease (globally, on work and school, on daily activities and on sleep) (Table 1). The pilot study including around 5,000 users (9% over 60 years of age) indicates that these questions are easily answered and can help to stratify patients with rhinitis (28).

Moreover, two specific questionnaires are applied every week to assess disease impact on patients’ QoL (EQ-5D) (29) and productivity at work (WPAI-AS) (30).

• Treatments received

A list of all treatments available for asthma, conjunctivitis and rhinitis is included in the ARIA Allergy Diary and users select the treatment(s) they are taking. Multiple treatments may be selected, and users can update the information when (or if) their treatment changes (Figure 3). The list has been customized for all 20 countries in which the ARIA Allergy Diary is available. Information on allergen specific immunotherapy is also requested on the day of first use.

• Daily visual analogue scales

Geolocalized users assess their daily symptom control via the touch screen functionality on their smartphone to click on 5 consecutive VASs (global symptoms due to allergic diseases, rhinitis, conjunctivitis, asthma and work productivity) (Fig 4).

• Clinical decision support system

The MASK CDSS is incorporated into an app for HCPs (ARIA Allergy Diary Companion). It is an culturally adapted and legally compliant). The companion App for HCPs is also freely available (26).

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algorithm based on VAS to help clinicians select medications for patients with AR and to stratify their disease severity (27). It uses a simple step-up/step-down individualized approach to AR pharmacotherapy.

3. New concepts in allergic multimorbidity embedded in ARIA:

Stratification of severe allergic and/or asthma patients

Despite the major advances in understanding AR, treatments are not effective in all patients (31). The aspiration is to provide more effective therapeutic interventions tailored to the individual using patient stratification with MASK.

Long-term birth cohort studies are essential for understanding the life course of allergic diseases (including asthma and rhinitis) and the complex interplay between genes and environment (32). BAMSE (Barn Allergi Milj. Stockholm Epidemiologi Projektet) (33) and MeDALL (Mechanisms of the Development of ALLergy; EU FP7-CP-IP; Project No: 261357; 2010-2015) (34) identified a rare but severe allergy phenotype: polysensitized-multimorbid phenotype confirmed in patient cohorts in children and adults (35-38). These studies confirm that subjects who are polysensitized and multimorbid have a very high frequency of allergic symptoms, persistent symptoms over time, more severe asthma or rhinitis symptoms than other phenotypes and higher total and specific IgE levels.

Taken altogether, these results indicate that asthmatic patients cannot be managed appropriately without considering rhinitis multimorbidity. They reinforce the importance of nasal problems (rhinitis and/or rhinosinusitis) in many uncontrolled asthmatic patients (39, 40).
Allergic multimorbidity in old age adults

The expected epidemic wave of asthma and rhinitis in older adults is an insufficiently recognized problem. Older adults with asthma and rhinitis have specific symptoms and treatment needs. These patients also suffer from multimorbidity and high rates of polypharmacy are reported. ICPs for rhinitis and asthma should cover the entire life cycle.

4- The scaling up strategy in the country

There is an urgent need for scaling up strategies in order to (i) avoid fragmentation, (ii) improve health care delivery, (iii) speed up the implementation of good practices using existing cost-effective success stories and (iv) meet the EIP on AHA objectives (9). This strategy has already been applied to the chronic respiratory diseases action plan of the EIP on AHA (12).

We seek to properly apply these strategies in Egypt to achieve better control of airway allergies that are currently increasing in rates and severity. Our ultimate objective is to improve the quality of life of patients of various age groups.

Conclusion

ARIA has evolved from a rigorously developed guideline to a mobile technology-based implementation strategy in order to provide an active and healthy life to rhinitis sufferers, whatever their age, sex or socio-economic status and with the aim to reduce health and social inequalities incurred globally by this very common disease.

Funding: European Innovation Partnership on Active and Healthy Ageing Reference Site MACVIA-France, EU Structural and Development Fund Languedoc-Roussillon, ARIA
**Abbreviations**

AIRWAYS ICPs: Integrated care pathways for airway diseases  
AR: Allergic rhinitis  
ARIA: Allergic Rhinitis and Its Impact on Asthma  
CDSS: Clinical Decision Support System  
DG: Directorate General  
EIP on AHA: European Innovation Partnership on Active and Healthy Ageing  
EU: European Union  
FP: Framework Programme (EU)  
GARD: WHO Global Alliance against Chronic Respiratory Diseases  
GRADE: Grading of Recommendation, Assessment, Development and Evaluation  
HCP: Health Care Professional  
ICP: Integrated care pathway  
MACVIA-LR: contre les MAladies Chroniques pour un VIeillissement Actif (Fighting chronic diseases for active and healthy ageing)  
MASK: MACVIA-ARIA Sentinel NetworK  
MeDALL: Mechanisms of the Development of Allergy (EU FP7)  
NCD: Non-communicable disease  
RCT: Randomized controlled trial  
RQLQ: Rhinoconjunctivitis Quality of Life Questionnaire  
SCUAD: Severe Chronic Upper Airway Disease  
VAS: Visual analogue scale  
WHO: World Health Organization
الجدول (1) : استبيان أساسي

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إذا كانت الإجابة بنعم جاوب على الأسئلة التالية

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|      | حبوب لقاح شجر البتولا |
|      | حبوب لقاح الأخرى |
|      | حبوب للجرة |
|      | حبوب لقاح شجرة السرو |
|      | حبوب أخرى |
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|      | مسبب آخر للحساسية |

| س 8 | كيف تلتقي العلاج؟ |
|      | حقنة |
|      | قرص تحت اللسان |
|      | قطرات تحت اللسان |
|      | رش تحت اللسان |
|      | آخر |
شکل 1: مسارات الرعاية المتكاملة للجهاز التنفسي ما بين الاتحاد الأوروبي ومنظمة الصحة العالمية (مقتبس من مرجع بوسكيت وآخرون)

شکل 2: مسار الرعاية متعدد القطاعات لالتهاب الأنف التحسسي (مقتبس من مرجع بوسكيت وآخرون)
الشكل 3: تطبيق الأدوية على الشاشة

الشكل 4: شاشات على المقاييس التناظرية البصرية اليومية

إلى أي مدى تضايقك أعراض الأنف اليوم؟
إلى أي مدى تضايقك أعراض العين اليوم؟
إلى أي مدى تضايقك أعراض الربو اليوم؟
References


