

Guidelines into practice: An international pilot study of "Asthma Crystal Byte"

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ABSTRACT

Introduction: Decision support software offers an opportunity to improve the care of patients with asthma by linking individual management decisions to guidelines.

Method: A guidelines based software package linked to a large database and incorporating a morbidity predictive function was developed in the United Kingdom. Clinicians from several European countries volunteered to evaluate the package in their own clinical environment.

Results: The package was run during consultations with patients in the UK, Portugal, Switzerland and Italy. Clinicians agreed on a need for local translations, local drug choices and guidelines to be developed. An emphasis on allergy, immunology and smoking cessation advice in asthma care in some countries highlighted a need to adapt country specific versions.

Conclusions: This International pilot study demonstrated that clinicians can learn from each other and work together around a common theme of implementing guidelines using decision support software.

A natural extension of this work was thus the design, development and evaluation of decision support computer software which, during consultations, provided clinicians and their patients with a full range of audit support based. The "Asthma Crystal Byte" can run on a desktop personal computer, and consists of a windows based series of screens, which record patient symptoms, current treatment and lung function.¹⁶ Use of either an "Asthma Attack" or "Clinic Management" pathway then informs the clinician (and patients) how current management compares to British Asthma Guidelines, and provides on screen non judgmental feedback and management options. Additional facilities include the automatic production of written individual guided self-management plans and a print out of a summary of the consultation. Each patient is then matched by age, sex, treatment step and symptom level to patients within the database of 12,000 patients with asthma. The software then displays the risk of asthma attack or hospital admission for this matched group of patients. Clinicians then have the option of revising treatment or assessment screens and determining what effect this might have on risk prediction of future morbidity.

Interest in "Asthma Crystal Byte" from clinicians in Europe led to the opportunity to test decision support software designed from one healthcare system – the UK National Health Service – in other clinical settings and cultures.

The project thus acted as a pilot for the implementation of asthma guidelines through the use of patient specific feedback and morbidity prediction based on decision support software during the consultation.

METHOD

A description of "Asthma Crystal Byte" was displayed on the UK General Practitioners in Asthma Group (GPIAG) Website, which is hosted by the Asthma Research Unit of the University of Dundee.¹⁵ Clinicians from Portugal, Italy and Switzerland expressed an interest in testing the software in their own practices. A set of computer disks was then sent to these clinicians on the understanding that copyright rested with RN, C McC and IR on behalf of the University of Dundee, and that the software was for use on a trial basis only. The software displayed a disclaimer that it was for study purposes only and that management decisions rested solely with clinicians, not the software design team. This is analogous to the situation where the author of a medical textbook is responsible for the accuracy of the text, not for patients managed by doctors who consult the textbook. Clinicians who accepted delivery of the software did so on the understanding that they would provide feedback to the design team on its use.

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INTRODUCTION

The Global Initiative on Asthma (GINA) has highlighted that asthma is a major health care problem in all parts of the world.¹ In the absence of an "asthma cure" the priority for developed and developing countries is to make best use of existing therapies.² Successful work on guideline development in individual countries led to the realisation that a global "gold standard" of asthma care should be established.

In theory guidelines are an excellent way to show standards of best attainable practice.³ In reality improvement in patient care requires guidelines to be produced, disseminated and implemented.^{4,5,6} Attempts to disseminate and implement guidelines have included display on Websites, distribution of paper copies, education meetings and facilitation projects.^{7,8} Unfortunately such attempts are not often successful because health care professionals struggle to link the theory of ideal practice to the realities of clinical care of individuals.^{9,10}

In the United Kingdom (UK) a series of general practice and nurse audit projects based on the British Asthma Guidelines led to the development of a system of providing patient specific feedback and audit critiques.^{11,12,13,14,15} A database of over 12,000 patients with asthma in the UK provided a means to compare individual patients with matched controls, and in turn produce comparative statistics for practices who collaborated in audit projects.¹⁴

Clinicians communicated their experiences of the use of "Asthma Crystal Byte" by e-mail and then in an informal meeting of international users at the European Respiratory Society, Madrid 1999.

The e-mail reports and discussion from the International users meeting was then collated by the project director (RN).

RESULTS

All users reported that the Windows based system ran satisfactorily on their personal computers or clinical desktop computers. One participant expressed the frustration that different software systems are difficult to integrate. Participants agreed that in the long term an Internet based Hypertext version of "Asthma Crystal Byte" would be preferable to Windows based floppy discs.

All users agreed that "Asthma Crystal Byte" met their need for software, which linked the management of their individual patients to guidelines. The morbidity prediction function was perceived as being innovative and a stimulus for doctor and patient to work together to try to improve management. Due to language differences the print out of self-management plans or consultation summaries in English were not used.

The Portuguese participant, who worked in a University Hospital environment, reported that the British Asthma Guidelines took no account of individual patients allergies and made no mention of immunotherapy. Identifying and avoiding asthma triggers, such as allergens, is a well recognised aspect of asthma management addressed by GINA guidelines.¹ The Portuguese participant also underlined the need for evaluating related diseases, such as rhinosinusitis,^{18,19} and for a section to address allergen immunotherapy.²⁰

The Italian participant, a general practitioner with an interest in asthma and allergy, reported similar concerns. The lack of a facility to record smoking status and in turn print out anti smoking literature was a short coming which is pertinent to all countries, but particularly in Southern Europe where smoking prevalence is unacceptably high.

In Switzerland, a hospital pulmonologist highlighted the reluctance, which many doctors have, to refer to a computer screen throughout consultations. A recently published analysis about computer and internet use in Swiss doctors offices showed, that more than 93% have a computer, but in less than one third is the computer located in the consulting room.²¹ She opted to use the package as an audit tool to review case records. The lack of a comprehensive range of patient educational materials available as print outs was another deficiency which was commented upon. The British Asthma Guidelines are dominated by placing patients on treatment steps based around dosage of inhaled steroids. The UK "Crystal Byte" was awkward for a Swiss clinician to adapt to a consulting style, which took a broader view of patient management.

All participants shared the view that the core set of guidelines incorporated into decision support software should be GINA international guidelines. It was an informative process for each clinician to hear their colleagues from Europe report their own preferences and priorities for the management of the same disease.

DISCUSSION

Computer assisted decision support software may represent the best opportunity to implement guidelines for the management of asthma in routine clinical care.^{8,16} This modest international pilot study has shown some of the opportunities for collaborative work, but also the barriers to implementation. The positive aspects of the study were that clinicians from several countries in Europe worked together on a guideline implementation project. Each participant enjoyed sharing their experiences and views with colleagues from different backgrounds, cultures and healthcare systems but united in their vocation to improve the care of patients with asthma. Each participant was able to cope with a new software system, written in a foreign language (English), and adapt it to become relevant to their own patients. The core problems of asthma management – appropriate clinical assessment, modern drug therapy, doctor and patient sharing management decisions – transcend cultures and healthcare systems. Clinicians who manage patients with asthma from different countries have more in common than issues which divide them.

The study demonstrated several barriers to the use of common management systems. Language barriers are relatively easy to overcome with translation facilities, but GINA guidelines are not yet available in all world languages. There is a need for all countries with access to modern anti asthma therapy to use GINA guidelines as their adopted standard. It is difficult to justify country specific guidelines for a condition which does not respect national borders. The different emphasis which clinicians from different countries place on aspects of asthma management – such as allergy assessment – causes problems with international collaboration. The low profile which allergy and its assessment has in UK clinical practices and thus guidelines was in stark contrast to experience in other countries.

This small scale pilot study has many weaknesses. The development team of Crystal Byte have an academic, but not financial incentive, to see their system used. The European participants are obviously biased towards English speakers, familiar with computer technology and with a research interest. The experiences of participants are not necessarily generalisable to practitioners with less enthusiasm and more scepticism towards computers, guidelines, audit and sharing clinical experience. We have no data on whether patients themselves in different European countries benefited from their clinicians use of "Asthma Crystal Byte".

There are several research opportunities presented by the pilot work presented here. Does assessment of allergic status alter the outcome of care in asthma? Is

the dominance of inhaled steroids dosage in British Asthma Guidelines justified or should a more holistic approach be adopted? Do anti smoking educational advice and print outs lead to smoking cessation?

In conclusion, this small scale study with an ambitious aim has a very simple message: some enthusiastic clinicians in Europe are willing to use decision support software to translate the theory of asthma guidelines into the realities of patient care. ■

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Conflict of interest

Ron Neville, Colin McCowan and Ian Ricketts hold Copyright on behalf of the University of Dundee for Asthma Crystal Byte, but are not in receipt of any payment for its use or distribution.

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