

Attitudes to evidence-based medicine of primary care physicians in Asir region, Saudi Arabia

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موقف أطباء الرعاية الصحية الأولية في منطقة عسير، بالمملكة العربية السعودية، تجاه الطب المُستند بالبيّنات

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الخلاصة: أجري في عام 1999، مسح استبياني بين أطباء الرعاية الصحية الأولية، في منطقة عسير بالمملكة العربية السعودية، للوقوف على مدى معرفتهم بالطب المُستند بالبيّنات واستكشاف مواقفهم تجاهه. وأوضح المسح ترحيب المستجيبين البالغ عددهم 272، بمبادئ الطب المُستند بالبيّنات، إلا أن معدلات إدراكهم لوجود مجلات علمية تنشر ملخصات للأبحاث، واستخدام هذه المجلات، ومراجعة المنشورات وقواعد المعطيات، جاءت منخفضة. وأوضحت الدراسة أن المجلات العلمية التي ترعاها شركات الأدوية هي أكثر المجلات قراءة. وتبين أن 13% فقط من المستجيبين هم القادرون على الوصول إلى قواعد المعطيات البيولوجرافية، كما أن 6% فقط منهم يتاح لهم الوصول إلى شبكة الإنترنت. وهناك تفهم جزئي للمصطلحات التقنية المستخدمة في الطب المُستند بالبيّنات. وتبين أن عدم وجود مكتبة محلية، وعبء العمل المتمثل في زيادة أعداد المرضى، يمثلان العقبتين الرئيسيتين اللتين تقفان في وجه ممارسة الطب المُستند بالبيّنات، وذلك في رأي معظم المستجيبين.

ABSTRACT A questionnaire survey was made of primary health care physicians in Asir region, Saudi Arabia in 1999 to explore their awareness of and attitude towards evidence-based medicine. The 272 respondents welcomed the principles of evidence-based medicine. Awareness and use of extracting journals, review publications and databases was low. Pharmaceutical company sponsored journals were the most commonly read. Bibliographic databases could only be accessed by 13% of respondents and the Internet by only 6%. There was only partial understanding of technical terms used in evidence-based medicine. Absence of a local library and increased patient workload were seen by most respondents as the main obstacles to practising evidence-based medicine.

Attitudes envers la médecine factuelle parmi les médecins de soins primaires dans la région d'Asir en Arabie saoudite

RÉSUMÉ Les médecins de soins primaires de la région d'Asir, en Arabie saoudite, ont été soumis en 1999 à une enquête par questionnaire visant à explorer leur sensibilisation à la médecine factuelle et leur attitude à son égard. Les 272 enquêtés ont réservé un accueil favorable aux principes de la médecine factuelle. Leur connaissance et leur utilisation des comptes rendus de lecture ou de congrès, des revues de synthèse et des bases de données se sont avérées limitées. Les revues commanditées par l'industrie pharmaceutique était leur principale lecture. Seuls 13 % et 6 % des enquêtés avaient respectivement accès à des bases de données bibliographiques et à Internet. Ces médecins n'avaient qu'une compréhension partielle des termes techniques en usage en médecine factuelle. La plupart des enquêtés considéraient l'absence d'une bibliothèque locale et l'augmentation de la charge de patients comme les principaux obstacles à la pratique de la médecine factuelle.

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Introduction

The need for evidence-based medicine (EBM) [1,2], as well as EBM guidelines [3–5] and EBM performance indicators [6] in the management of commonly encountered problems in general practice and primary care [7] has been detailed recently in several papers. Some surveys have concluded, however, that the best available evidence is seldom used when making clinical decisions [8–10]. A review of physicians' performance suggested that learning how to practise EBM—seeking out and applying the findings of EBM summaries and adopting evidence-based practice protocols developed by respected colleagues—can keep us aware of medical advances and help to enhance our clinical performance [11].

By adopting the practice of EBM, it is believed that primary care will be improved significantly. Evidence-based practice also supports decision-making shared with users, which is already favoured within the medical community as the ideal of decision-making [12,13]. EBM practice will help to keep family medicine in a principal role [14], and ensure that the practice of medicine within the context of general practice will be even more rewarding [2].

A pioneer study was made in 1998 by McColl et al. to study the reaction towards EBM of 452 randomly chosen general practitioners in the United Kingdom [15]. We have conducted a replica survey among primary health care physicians (PHCPs) in different areas of Saudi Arabia. The first study in the Riyadh region, the central and largest region in Saudi Arabia, gave interesting results [16]. Welcoming EBM, respondents agreed that it improved patient care. The respondents were mainly unaware of, or if aware, did not use, extracting journals, review publications and databases. Technical terms used in EBM were not

totally understood by the respondents and increased patient workload and lack of available time were seen as the main obstacles to practising EBM.

The objectives of the present study were to investigate awareness of and attitude towards EBM of primary care physicians in Asir region to establish the educational requirements necessary for the inclusion of EBM into the management of patient care.

Methods

Asir region is a relatively fertile area of coastal mountains in the extreme southwest of Saudi Arabia. It is the second largest region in the country and has always been relatively densely populated [17]. It is served by 206 primary health care centres [18], most of which lie in the rural areas.

A cross-sectional questionnaire survey was carried out among all PHCPs practising in the primary health care centres in Asir region. We used the same questionnaire as McColl et al. [15], adapted for use in the Riyadh region survey [16] to allow for national and international comparisons. The details of how the questionnaire was structured, piloted and modified have already been reported [16]. The questionnaires were sent to all PHCPs who work in the primary care centres in Asir region (314 physicians) through the Ministry of Health General Director of Primary Health Care Centres and regional Assistant Director in October 1999. Reminders were sent to non-respondents in December 1999.

Analysis was carried out addressing the following main outcome measures: attitudes of respondents to EBM, their accessibility and interpretation of evidence, their perception of barriers to EBM practice and ways to change from opinion-based to EBM.

Epi-info, version 6.0 was used for the statistical analysis. The 3 primary care settings (urban, suburban and rural) were compared using analysis of variance or the chi-squared test. $P < 0.05$ was considered statistically significant.

Results

The response rate was 86.7% (272 out of 314). The mean age of PHCPs in the study was 39.2 years. The majority were male of non-Saudi Arabian nationality, who graduated 17.2 years ago and have been practising for 4.8 years in primary care. The PHCPs were mostly working in practices with 2 partners, most of them seeing about 48 patients per day. More of the participants were practising in rural areas (60.7%) than in urban (21.3%) or mixed settings (18.0%).

Table 1 compares the characteristics of the PHCPs in each setting. The mean time to reach the nearest medical library ranged from 48.6 minutes for those in the urban centres to 89.5 minutes for participants in rural centres.

Attitudes towards EBM

Figure 1 shows the participants' attitudes towards EBM. The current promotion of EBM was favoured by the great majority (91%). They thought that their colleagues were welcoming as well (89%). Most of them agreed that practising EBM improves patient care (93%) and said that research findings were useful in their daily management of patients (92%). Few agreed with the view that EBM was of limited value in primary care (18%) but admitted that the adoption of EBM places another demand

Table 1 Characteristics of responding primary health care physicians in Asir region (total $n = 282$)

Variable	Region					
	Urban ($n = 58$)		Suburban ($n = 49$)		Rural ($n = 165$)	
<i>Personal characteristics</i>						
Male [No., (%)]	35	(60.3)	39	(79.6)	148	(89.7)
Saudi Arabian nationality [No., (%)]	1	(1.7)	0	(0)	0	(0)
Postgraduate qualification [No., (%)]	15	(25.9)	10	(20.4)	43	(26.1)
Administrative responsibilities [No., (%)]	16	(27.6)	18	(36.7)	52	(31.5)
Mean age (years)	36.9		40.2		39.7	
Mean years since graduation (No.)	18.0		19.0		16.1	
Mean years working in primary care (No.)	5.5		4.2		4.8	
<i>Practice characteristics</i>						
Mean full-time partners (No.)	3.5		2.6		1.7	
Mean consultations per day (No.)	59.4		49.6		43.6	
Mean time to reach nearest medical library (min)	48.6		78.1		89.5	

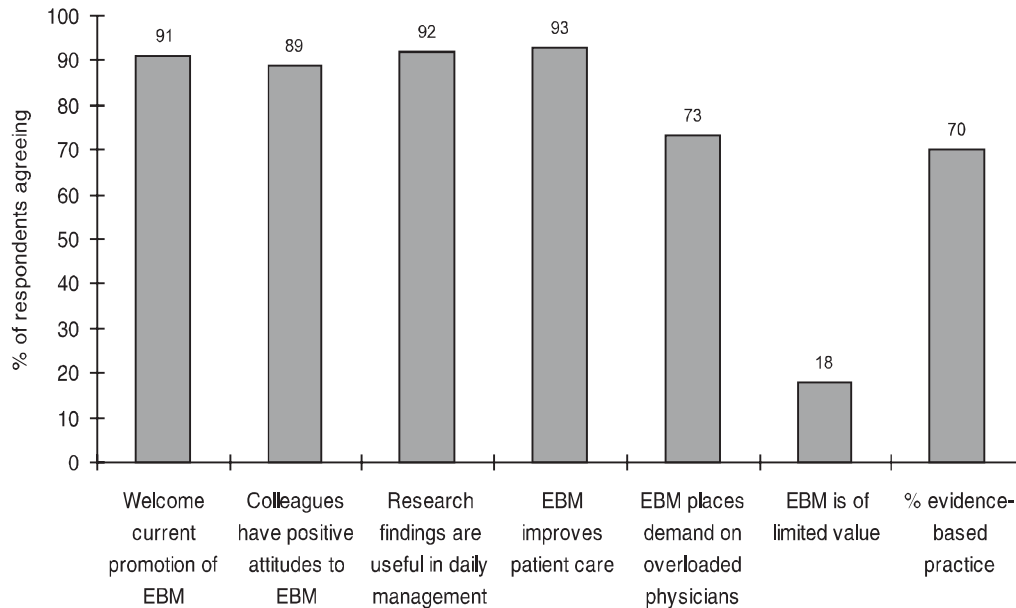


Figure 1 Attitudes of PHCPs in Asir region towards evidence-based medicine (EBM)

on already overloaded PHCPs (73%). The median value for the estimated percentage of the respondents' clinical practice that was evidence based was 70%.

Ways of moving from opinion-based to evidence-based medicine

About 62% of the respondents alleged that they are currently practising EBM by learning the skills of EBM (62%) and/or by seeking and applying evidence-based summaries (52%), yet only 18.4% thought of the latter as the most appropriate method to practise EBM. The largest proportion of the PHCPs (36.8%) thought that the best way to move from opinion-based to EBM was by using evidence-based practice guidelines or protocols developed by colleagues for use by others, while 34.5% thought it should be by learning the skills of EBM. One tenth of the participants did not respond to this section.

Awareness and perceived usefulness of information sources

Table 2 shows that the doctors had a low level of awareness of extracting journals, review publications and databases relevant to EBM. Around 33% and 26% of the PHCPs were aware of *Evidence-based medicine* and the *American College of Physicians journal club* respectively. Less than one quarter were aware of the *Effective health care* bulletins and 12.9% were aware of the Cochrane database of systematic reviews. Less than 10% of those (who were aware) made use of these resources in clinical decision-making.

Among the respondents, 54.7% preferred to have the EBM resources in both English and Arabic languages. The rest preferred to read the EBM resources in English only (41.7%) or Arabic only (3.6%).

Table 2 Awareness of primary health care physicians in Asir region of some evidence-based medicine resources and their usefulness in clinical decision-making (n = 272)

Resource	Ever-use of resource for clinical decision-making			
	Unaware of	Aware of but not used	Have read	Have used
	%	%	%	%
American College of Physicians journal club	74.3	20.2	3.7	1.8
Evidence-based medicine	66.5	25.4	4.8	3.3
Effective health care bulletins	77.6	15.8	5.1	1.5
Cochrane database of systematic reviews	87.1	11.4	0.4	1.1
Best evidence CD ^a	86.0	12.1	1.5	0.4
Ovid evidence-based medicine reviews	87.1	9.9	1.5	1.5
Other EBM websites	86.0	12.5	0.7	0.7

^aCD used to include 2 journals (Evidence based medicine and ACP journal club) plus books (e.g. Diagnostic strategies for common medical problems) and other resources.

Use of and access to information sources

Non-peer-reviewed international journals (Middle East editions) were the most regularly read journals: *The practitioner* and

Medicine digest, followed by *Modern medicine* and *PG doctor* (Table 3). The locally published peer-reviewed journals were not read as frequently by the participants.

Table 3 Primary health care physicians' reading habits of local journals and Middle East editions of international journals in Asir region (n = 272)

Journal	Frequency of reading journal			
	Never %	Occasionally %	On demand %	Regularly %
<i>Saudi journals</i>				
<i>Saudi medical journal</i>	17.3	62.5	8.8	11.4
<i>Annals of Saudi medicine</i>	55.1	30.2	5.9	8.5
<i>Saudi journal of family and community medicine</i>	62.9	27.6	6.3	3.3
<i>International journals (Middle East editions)</i>				
<i>The practitioner</i>	26.8	43.0	9.9	20.2
<i>Medicine digest</i>	22.4	47.4	11.4	18.8
<i>PG doctor</i>	33.1	43.8	7.4	15.8
<i>Modern medicine</i>	43.4	30.9	11.4	14.3

Only 13% of the PHCPs had access to *Medline* or other bibliographic databases. One tenth of the responding physicians had done a *Medline* search (or asked someone to do it for them) during the last year. They also lacked access to the Internet; only 6.3% had some kind of access. Of the respondents, 18.8% reported having training in literature searching, 2.6% attended courses on critical appraisal and only 2.2% had attended a course related to EBM. Almost all physicians (95.0%) were willing to participate in events addressing issues on evidence-based practice.

Understanding of technical terms used in EBM

In this section, respondents self-rated their understanding of technical terms commonly

used in EBM (e.g. risk factor, sensitivity, specificity and relative risk and absolute risk). A majority of the participants could understand and explain several of the terms (Table 4). Odds ratio, likelihood ratio, meta-analysis, publication bias and heterogeneity were the terms that were least understood.

Baseline knowledge of PHCPs

In this section, participants were given a quiz to answer which was a mixture of multiple choice question and matching questions. Approximately 90% of PHCPs attempted to answer questions on the measures of central tendency and most of them answered correctly. Around 40% answered the question on absolute risk correctly. Questions on the validity and predictive values were attempted by 63% of the respondents only.

Table 4 Understanding of technical medical terms used in evidence-based medicine among primary health care physicians in Asir region (n = 272)

Technical term	Understanding of technical terms			
	Not helpful to understand %	Don't understand %	Some understanding %	Understand & could explain to others %
Risk factor	3.3	8.5	20.2	68.0
Relative risk	2.2	11.0	26.5	60.3
Absolute risk	2.6	12.1	25.7	59.6
Sensitivity	5.1	15.1	27.6	52.2
Specificity	5.5	21.3	27.6	51.1
Clinical effectiveness	6.3	19.9	30.9	43.0
Systematic review	6.3	24.3	27.6	41.9
Number needed to treat	9.6	43.4	26.8	29.8
Odds ratio	14.7	52.2	19.9	13.2
Publication bias	15.4	55.1	18.4	11.0
Likelihood ratio	16.2	53.7	19.9	10.3
Meta analysis	17.3	60.3	14.0	8.5
Heterogeneity	17.6	64.0	11.8	6.6

Of them, more than 51% answered the questions correctly (Table 5).

Barriers to practising EBM in primary care

The major perceived barriers among the respondents were patient overload (29.8%) and the unavailability of a library in the locality (27.9%). Other barriers reported by this group were lack of knowledge about what EBM is (15.9%), limited resources and facilities (14.9%) and lack of training (13.5%), manpower (13.0%), time (12.0%), and other non-clinical responsibilities (7.7%).

Discussion

This study has highlighted many areas of concern regarding the practice of EBM in Asir region. The response rate (86.7%) is

considered very good and it is expected in such type of survey to have a small percentage of non-responders for different reasons. There is no information on the non-responders in this study but they are unlikely to be substantially different from the respondents in their evidence-based practice.

The favourable attitudes of the PHCPs towards EBM are similar to those in the Riyadh region [16] and to British [15] and Australian [20] general practitioners. The median value for the estimated percentage of the respondents' clinical practice that was evidence based is 70% in Asir, 68% in Riyadh [16] and 50% in the UK [15]. This assessment is not objective, however, and has its limitations.

The last decade has been marked by an overabundance of workshops and courses all over the world on practising and teaching EBM, or more correctly, evidence-based health care. Likewise, electronic and online databases of systematic reviews and summaries of evidence are increasingly becoming available [21]. Besides, many books on EBM have been published which present common primary care questions, show how to critically appraise papers, and to evaluate different kinds of evidence. The low level of awareness of these resources among the PHCPs in Asir is concordant with that of Riyadh region [16]. If the current best evidence is not considered, the clinical practice of PHCPs is possibly at risk of becoming out of date, to the detriment of patients [22,23]. It has been shown that a significant negative correlation exists between knowledge and practice of up-to-date care and the years that have elapsed since graduation from medical school [24].

The free-of-charge non-peer-reviewed journals which are sponsored by pharmaceutical companies were the most regularly read: *The practitioner* and *Medicine digest* were read regularly by 20.2% and

Table 5 Baseline knowledge of primary health care physicians in Asir region (n = 272)

Technical term	Knowledge about technical terms		
	No answer %	Incorrect %	Correct %
Mean	8.8	17.3	73.9
Median	9.2	20.6	70.2
Standard deviation	9.5	24.3	66.2
Mode	10.3	25.0	64.7
Odds ratio	37.5	7.0	55.5
Sensitivity	36.0	23.5	40.5
Absolute risk	9.6	51.4	39.0
Negative predictive value	37.5	26.1	36.4
Positive predictive value	37.5	28.3	34.2
Specificity	37.1	30.5	32.4

18.8% of physicians. These journals can be used for disseminating the concept and steps of practising EBM and for publishing pertinent evidence-based summaries and guidelines on a regular basis. Only 13% and 6% of the PHCPs had access to *Medline* and to the Internet respectively. In our earlier study in Riyadh region, *The practitioner* and *Medicine digest* were also the journals usually read by the PHCPs, and only 16% were able to access bibliographic databases and only 10% the Internet [16]. The years since 1999, however, have witnessed a widespread uptake and utilization of the Internet by government and private users; consequently, the corresponding figures will almost certainly be higher.

It was shown a few years ago that the printed *Index medicus* is still the most used literature retrieval method for general practitioners [25], and therefore, it has been argued that there is a need for training physicians in electronic literature retrieval methods. The Internet promotes the practice of EBM by facilitating the generation, synthesis, dissemination and exchange of research evidence [26], thereby enhancing the role of evidence-based decision-making by giving physicians cheap, fast and efficient access to up-to-date, valid and relevant and “just-in-time” knowledge. This is particularly relevant considering the fact that most of the PHCPs in Asir region are practising in rural areas and they would on average spend about 3 hours travelling to and from the nearest medical library.

Interpretation of evidence is a key element in practising EBM, and the PHCPs’ partial understanding (which was displayed among PHCPs in Riyadh region as well) could hinder interpretation and make dissemination of evidence to other members of the primary care team or patients more difficult [15]. The respondents in McColl’s

study were apparently more familiar with these terms but one should keep in mind that only 2.2% and 2.3% of the PHCPs in Asir and Riyadh regions had attended courses on critical appraisal in contrast with 39% in the UK [15,16].

The major perceived barriers to practising EBM in primary care may be further grouped into 3 main barriers. The first relates to the work overload and lack of protected time for professional development. This comprises 62.5% of the responses: patient overload, lack of personal time, other non-clinical responsibilities and lack of manpower. The second group of stated barriers relates to the difficulty in accessing the nearest medical library (37.5% of the responses): no library in the locality and the long travel distance to reach the nearest library. Lack of knowledge (15.9%) and training (13.5%) about EBM among PHCPs in Asir region comprises the third group of barriers.

Lack of personal time was also the main perceived barrier to practising EBM in McColl’s study (71%) [15]. General physicians must come to grips with 19 original articles per day, 365 days per year, if they want to keep abreast of their field [27]. Sackett has suggested methods to spend time more efficiently [28]. Dawes also suggested that 1 hour a week spent on searching and reading evidence would greatly advance the implementation of evidence [2]. The “information mastery” [29] and other web-based courses on how to practise EBM are particularly relevant here. Small group learning through online case-based discussion is a promising strategy for encouraging family physicians to access current research [30].

About two fifths of the PHCPs in Asir (37%) thought that moving from opinion-based to EBM would best be done by using

evidence-based clinical practice guidelines while 34% thought it should be by learning the skills of EBM. The proportions are generally similar to those of PHCPs from Riyadh although a larger proportion (42%) was in favour of learning the skills of EBM [16]. The corresponding figures in McColl's study were 57% for using evidence-based guidelines or protocols developed by colleagues for use by others, 37% for seeking and applying evidence-based summaries and only 5% for practising the traditional 5-steps approach [15]. Focusing on workshops and courses on critical appraisal and EBM for all PHCPs is a process that would be logistically difficult and time-consuming. Moreover, it has been shown that not all physicians are interested in attaining an advanced level of EBM skills [31]. Therefore, other methods for disseminating and implementing evidence should be considered.

It has also been shown that interventions that use only the dissemination of information were unlikely to induce changes in performance and registered little or no effect on health care outcomes [32]. Even with well-developed evidence-based guidelines, tensions and contradictions impede their translation into policy and practice [33]. General practitioners who were trained in critical appraisal were more likely to translate evidence from systematic reviews into practice [34].

Strategies that included enabling (facilitating the desired change in the practice site) and/or reinforcing (by reminders or feedback) were more effective. Examples of strategies of proven effectiveness included: physician reminders, outreach visits, and opinion leaders [32]. It has been suggested that if the clinical practice guidelines are incorporated into electronic medical record systems, to assist clinical decision-making at the point of care, it may greatly enhance the delivery of evidence-based clinical practice

[35]. Multifaceted activities were generally better than single interventions and change occurred more frequently when barriers to change were addressed and resources deployed to help learners [32].

The use of comparative evidence-based indicators is also suggested as a method for turning evidence into everyday practice [36]. For the effective implementation of these indicators at a national level, many barriers must be overcome in order to minimize the variations between the centres in their employment of evidence [37].

To put research evidence into practice, the evidence needs to be relevant to the practitioner in the sense that it should answer questions that PHCPs really want answers to and not simply cover topics that are interesting or researchable [38]. Furthermore, selecting the most appropriate professional and disciplinary strategy(ies) should relate to how the physician is most likely to react to new information about the effectiveness of clinical strategies that may affect many of their patients [39]. With more systematic reviews on prospective trials becoming available, changing clinical behaviours would become better understood and more effectively supported.

Conclusions

The results of this study shed a new light on factors that are relevant to the promotion of EBM in rural areas of Saudi Arabia. The results again are expected to help postgraduate tutors, Ministry of Health and health authorities, university departments of family and community medicine and local research centres in designing local strategies for encouraging the implementation of EBM in primary care, taking into consideration the local variations of each region. Prompt action is needed to improve

access to and implementation of evidence-based guidelines and summaries. At the same time, equipping all the PHCPs with the skills of “information mastery” should also be considered. Improving access to and utilization of Internet-based evidence databases should particularly be encouraged. Strategies for promoting change among the PHCPs and addressing the perceived and real barriers should be part of the decision-makers’ vision.

The National Scientific Evidence Based Medicine Committee has recently been formulated by the Minister of Health, geared to encouraging the principles, methods and practices among health care professionals in primary health care and other specialties throughout Saudi Arabia. This board is

expected to be sensitive to the local needs and future prospects of each region. Emphasis should be placed on the ethical issues and patient values (the third element of Sackett’s definition of EBM) [19] as they are expected to be the key determinants of selecting the actions to be put into effect.

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Dengue Symposium and Course, Cuba, August 2007

The Pedro Kourí Tropical Medicine Institute (IPK) is pleased to announce the symposium *25 Years of Experience Struggling against Dengue*, 9-11 August 2007, and the 10th International Dengue Course *20 Years Strengthening Capacities*, 6–17 August 2007, which will be held at IPK's facilities in Havana, Cuba.

Sponsored by:

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Both the Course and the Symposium will be open to professionals working or researching on dengue and haemorrhagic dengue. Internationally renowned professors will be lecturing during these two events, providing participants with the most updated and advanced knowledge about this disease.

For more information contact: Professor María G. Guzmán, Head of Virology Department, Pedro Kourí Tropical Medicine Institute; Director, WHO/PAHO Center for the Study of Dengue and its Vector.

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Website: <http://www.ipk.sld.cu/cursos/dengue2007/index.htm>