



## Case Study: Large Medical Database on a Handheld Computer

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# Presentation Agenda



- Database background, contents, size
- Implementation on **Palm OS**
- Implementation on **Pocket PC**
- Summary

## The Database



- **Evidence-Based Medicine Guidelines: concise and easy-to-use clinical guidelines for primary care**
- **Contains practical and specific treatment recommendations**

## Evidence-Based Medicine Guidelines



- **Based on evidence: Contains clearly graded summaries of scientific evidence based on Cochrane reviews and DARE abstracts**
- **Updated twice a year**
- **First release in 1991 on CD-ROM**

# Evidence-Based Medicine Guidelines



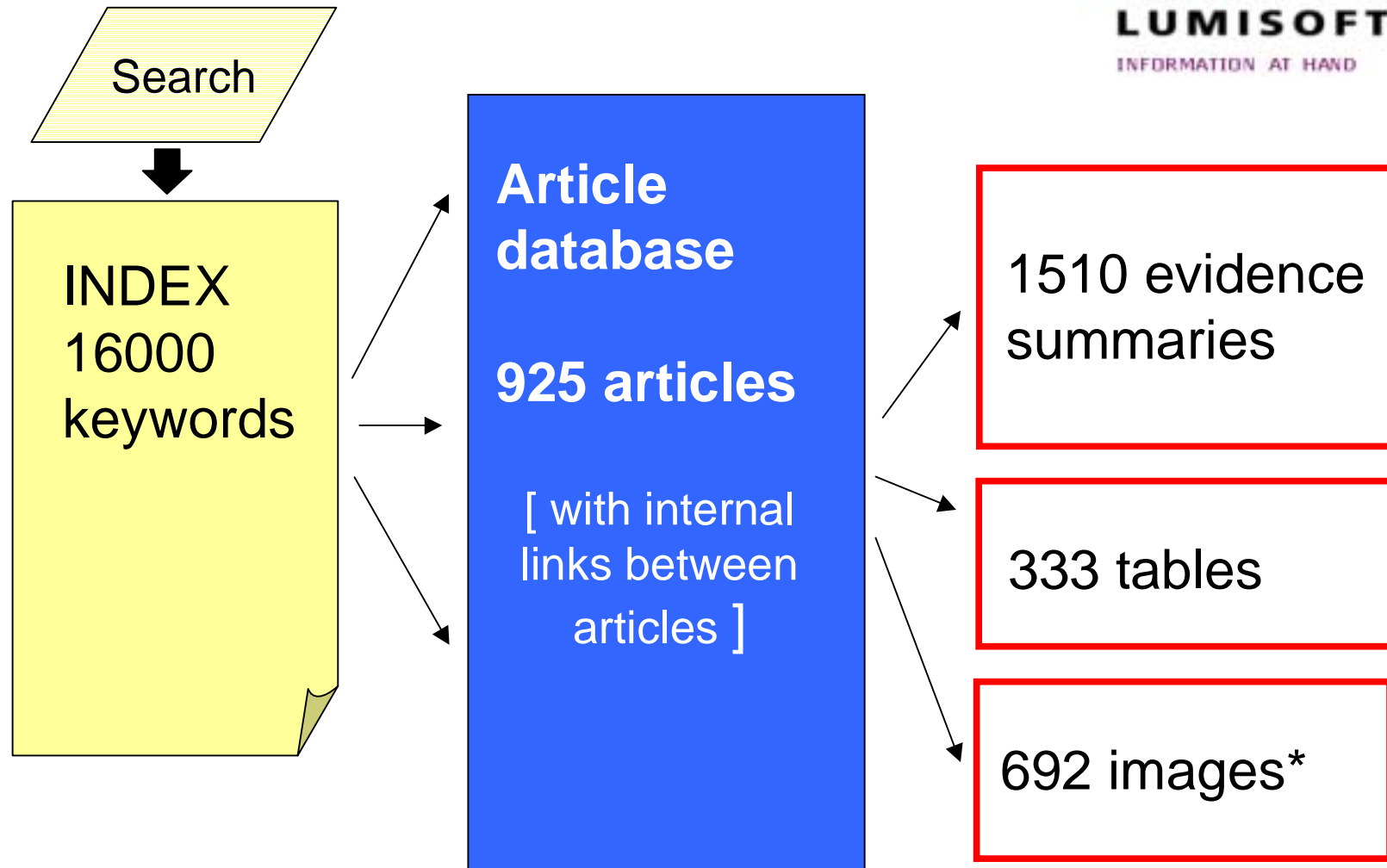
[www.ebm-guidelines.com](http://www.ebm-guidelines.com)

**EBMG Presentation tomorrow @ 16:35 / W7b**

## Search capabilities



- **Database index contains 16000 keywords**
- **Searches can be made by symptoms, disease names, body parts, etc.**
- **A search takes max. 2 seconds**
- **No need to type complete keywords**



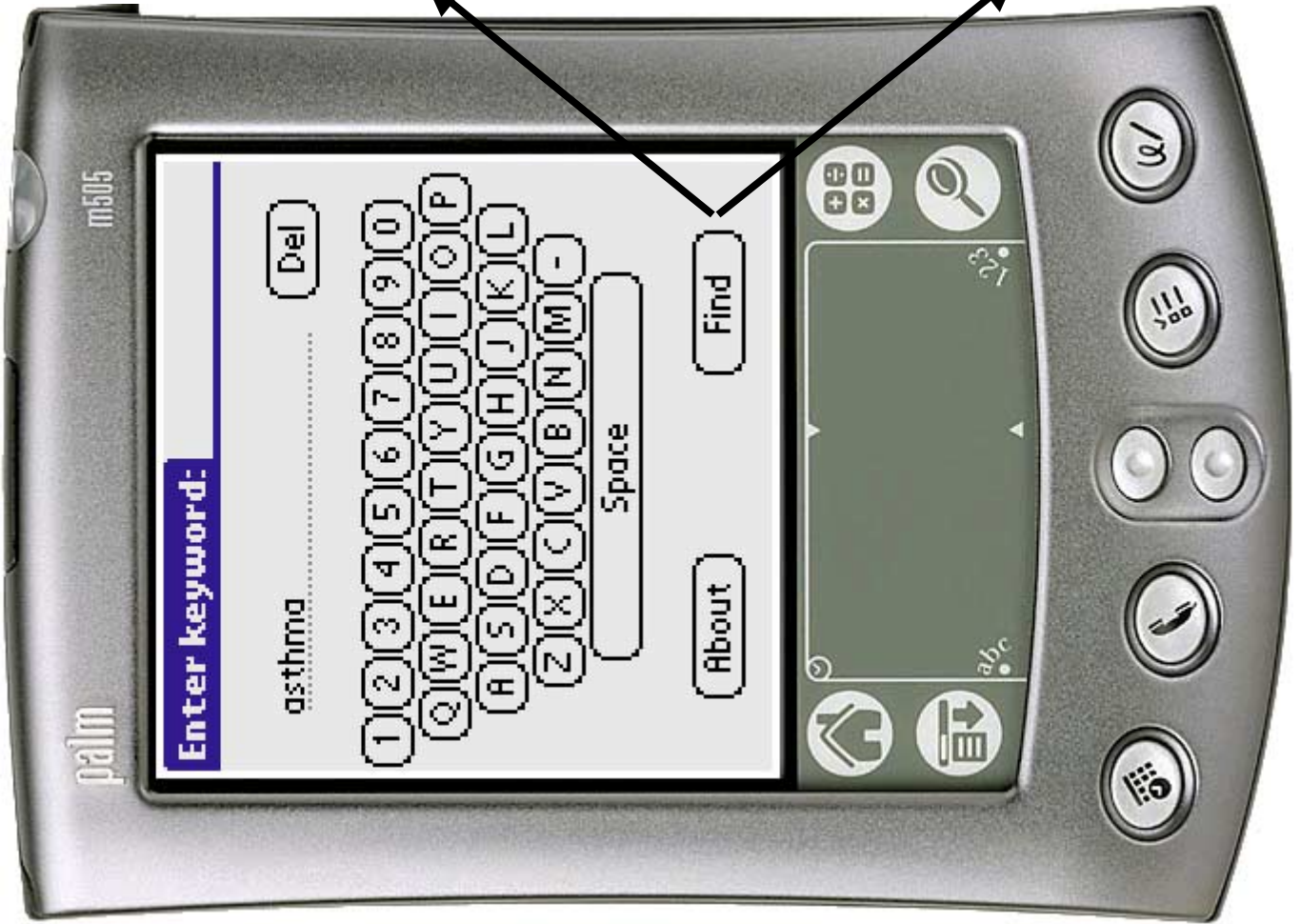


**Palm OS version:  
No installation  
required**



**LUMISOFT**

INFORMATION AT HAND



**Select keyword:**

- ASTHMA ATTACK (1)
- ASTHMA PATIENT (1)
- ASTHMA, BRONCHIAL (37)
- ASTHMA: SYMPTOMS AND DIAGN... (1)
- ASTHMA (37)
- ASTHMATIC CRISIS (2)
- ASTHMATIC SHOCK (2)
- ASTIGMATISM (2)
- ASTRAGALUS (1)
- ASTROBLASTOMA (8)
- ASTROCYTIC GLIOMA (1)

Back

Up

Down



**Select article:**

Treatment of acute exacerbation of ...  
Systemic disease

**Treatment of acute exacer ...**

**Immediate treatment**

1. Put the patient in a comfortable sitting position, legs down if possible, so that he or she can bend down, if needed, and have support for the hands and legs.
2. Give oxygen (usually 35% is enough; in resuscitation maximal concentration and flow).
3. Give a high dose of an inhaled

Back

Back

Prev

Up

Down

## **Ingrowing toenail: avulsion ...**

Techniques

Treatment of paronychia

Bibliography

— See picture (LINK)

### **Basic rule**

— If bathing the toe and using

Back

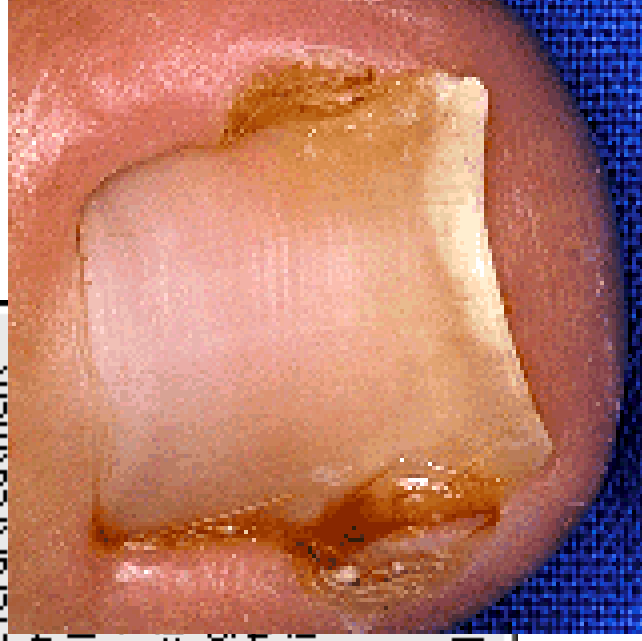
Up

### **Image info**

Toe, the most typical site of this painful condition. Several treatment modalities are offered for consideration. Simple phenolization is the first choice. Wedge excision is a more traumatic. Cryosurgery combined with curettage and extra granulating tissue is another option.

Back

Show



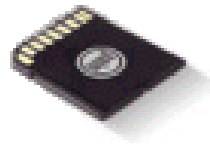
**LUMISOFT**

INFORMATION AT HAND

## Distributed on a Memory Card



- **Palm OS version is distributed on a postage stamp sized memory card (32 MB)**



- **No installation required**
- **Updates distributed via internet or CD-ROM**

EBMG - Evidence-Based Medicine Guidelines

# EBM Guidelines

Evidence-Based Medicine

**D**

|               |            |                |           |             |                |      |
|---------------|------------|----------------|-----------|-------------|----------------|------|
| Show (F2)     | Erase (F7) | Thesaurus (F3) | MeSH (F8) | Browse (F4) | Update (F9)    | Exit |
| Term 1        | asthma     |                |           | 39          | EBM Guidelines | 37   |
| Term 2        |            |                |           |             | Pictures       | 1    |
| Term 3        |            |                |           |             | Audio          | 1    |
| Term 4        |            |                |           |             |                |      |
| Author        |            |                |           |             |                |      |
| Type          |            |                |           |             |                |      |
| Speciality    |            |                |           |             |                |      |
| Text word     |            |                |           |             |                |      |
| Pictures (F5) | Settings   | Help           | Version   | Hits: 39    |                |      |

**Search Screen of PC Version of EBM Guidelines**

**EBM Pulmonary function tests**

Asthma: symptoms and diagnosis

\*Long-term management of asthma

\*Treatment of acute exacerbation of asthma

Occupational asthma

Sleep apnoea and other sleep-related breathing disorders

Investigation of atopia

Allergen-specific immunotherapy

Systemic diseases in pregnancy

Wheezing in children

Treatment of wheezy bronchitis and acute asthma

Dosage of salbutamol for children

Prolonged cough in children

Childhood panic disorder

Exposure to microbes in water-damaged buildings

**AUDIO Wheezing of asthma**

EBM Individual selection of antihypertensive drugs for different patient groups

Dyspnoea

Hyperventilation

*A prolonged cough in adults*

Databases

[Combination](#)

[EBM](#)

[PICT](#)

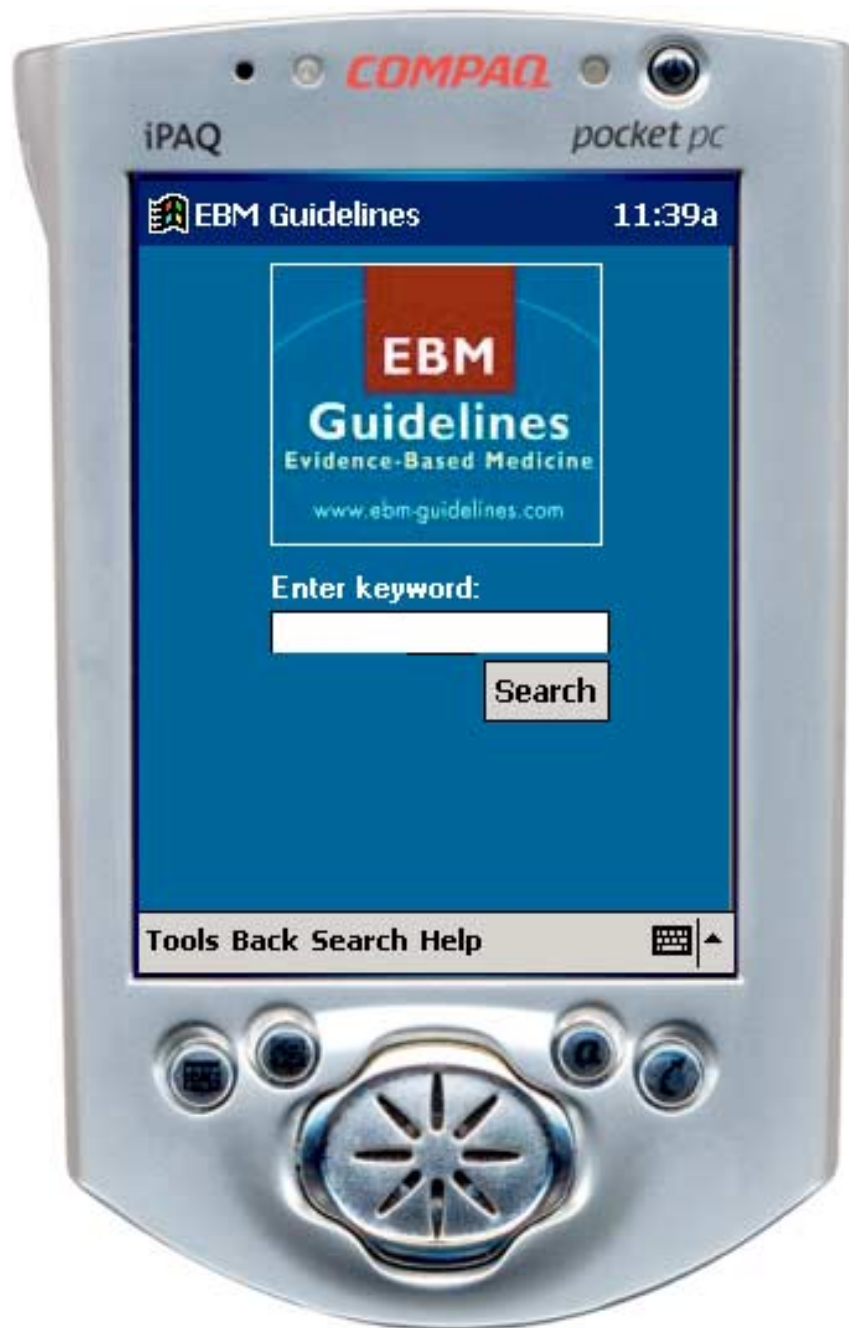
[AUDIO](#)

## Basic rules

- The patient, relatives and the physician often underestimate the severity of acute exacerbation of asthma.
- The aim of the treatment is
  - to prevent asthma deaths
  - to restore pulmonary function as soon as possible and improve the condition of the patient as much as possible.
  - to maintain optimal pulmonary function and prevent recurrence of exacerbation.

## Recognition of exacerbation of asthma

- Occurrence of only one of the following signs means that the attack is severe:
  - Wheezing and respiratory distress have increased so that the patient cannot finish one sentence without stopping for breath, or stand up from a chair.
  - Respiratory frequency is constantly 25/min or more.
  - Heart rate is constantly 110/min or more (> 30 minutes after



## Pocket PC version of EBM Guidelines



**LUMISOFT**  
INFORMATION AT HAND



**EBM Guidelines**

**11:00p**

Found 37 documents in following categories:

- [ASTHMA PATIENT \(1\)](#)
- [ASTHMATIC SHOCK \(2\)](#)
- [ASTHMATIC CRISIS \(2\)](#)
- [ASTHMA ATTACK \(1\)](#)
- [ASTHMA: SYMPTOMS AND DIAGNOSIS \(1\)](#)
- [ASTHMA,BRONCHIAL \(37\)](#)
- [ASTHMA \(37\)](#)

**Tools Back Search Help**



**EBM Guidelines**

**11:00p**

### **ASTHMATIC CRISIS**

- [Treatment of acute exacerbation of asthma](#)
- [Systemic diseases in pregnancy](#)

**Tools Back Search Help**



### Signs that indicate that the attack may be fatal

- Silent respiration sounds
- Cyanosis
- Bradycardia or hypotension
- Exhaustion, confusion or unconsciousness
- Arterial blood  $pO_2 < 8$  kPa even after oxygen therapy, and  $pCO_2 > 6$  kPa.

### Immediate treatment

1. Put the patient in a **comfortable sitting position**, legs down if possible, so that he or she can bend down, if needed, and have support for the



**Example of article**  
**“Treatment of acute exacerbation of asthma”**



## Holding chamber versus nebulisers for beta-agonist treatment of acute asthma

Level of evidence = B

**Holding chambers are at least as effective as nebulizers, and may have some advantages in children.**

**Sixteen** trials of variable quality, involving 686 children and 375 adults, were included in a Cochrane review [\[1\]](#). Method of delivery of beta-2-agonist did not appear to affect hospital admission rates. In adults, the odds



**Example of evidence summary**

## Summary



- **Palm OS** version: very simple to deploy and simple to start using right away.
- **Pocket PC** version: more powerful: Closer to PC version. Learning Pocket PC requires more time.
- **Database**: A custom database was most cost effective solution because no two-way synchronisation is required.

## Questions?



- **Lumisoft Ltd. creates custom made software for handheld computers, including Palm OS, Pocket PC and Nokia Communicator.**
- **Website: [www.lumisoft.co.uk](http://www.lumisoft.co.uk)**