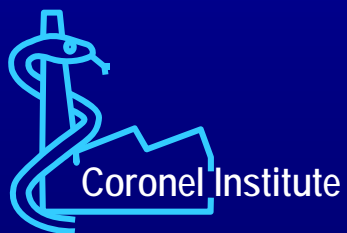


# E-lessons in evidence-based occupational medicine: *a contribution to training and professionalization*

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EASOM Summer school 2008: Teaching Evidence-Based Occupational Medicine



# Outline

- 1. EBM e-learning  
(training in EBM)**
- 2. Knowledge infrastructure  
(access to knowledge)**



# 1. EBM e-learning



# E-learning: what is it?

**Ranges from a simple online collection of resources to supplement traditional teaching to a fully web-based interactive course with all teaching materials, assessments and support provided online**

*Regina Kulier , Julie Hadley et al., 2008*



# Delivery systems

- **Stand alone PC with CD ROM or DVD**
- **Internet & world wide web**
- **Intranets**
- **Interactive TV & PC**
- **Mobile phones/ WAP**



# E-lesson: Why?

- **Allows flexibility: time and place for learning can be chosen**
- **Allows learning to be adjusted to one's own pace and can be revisited whenever necessary**
- **EBM e-learning with live web links can lead trainees directly to relevant evidence-based information sources (Cochrane Library, PubMed)**



# E-lesson: Why?

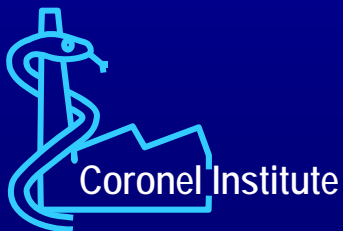
**Key knowledge sources for EBM are universally accessible via the Internet**

- Allows teaching over large geographical distances**
- Allows standardisation of teaching, helping to achieve (international) harmonisation in certification of (EBM) competence**



# E-lesson: Considerations

- **High expenses**
- **Requires adjusted teaching style (facilitator rather than teacher)**
- **(lack of) trainee's personal discipline (motivation)**
- **trainee's unfamiliarity with computers**
- **trainee's perceptions of time constraints**





# E-lessons: needs

- **Technical possibilities and skills**  
**(stable internet connectivity)**
- **Learning: problem-based and self-directed**
- **Interactive exercises (and post-tests) with feedback**
- **CME credits**



# EBM e-learning

## Studies in occupational health



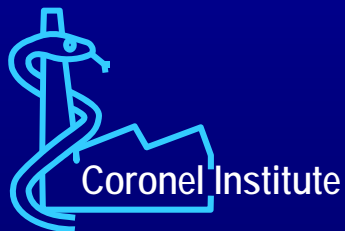
# E-learning in the Netherlands

**Effect of e-learning on mental healthcare knowledge gain is comparable to a lecture-based approach**

Teaching approach		Total score Baseline (SD)	Test version	Total score Post-test (SD)	Test version
<b>E-learning</b>	Group A	50.9 (8.3)	X	64.9 (9.2)	Y
	Group B	53.2 (8.6)	Y	65.3 (10.2)	X
<b>Lecture-based</b>	Group C	55.0 (10.0)	X	63.8 (7.3)	Y
	Group D	49.7 (7.4)	Y	64.9 (10.5)	X

# EBM e-learning international (1)

- **Occupational physicians from various countries were included in a within-subjects study**
- **Measurements were conducted on participants' EBM knowledge, skills, behaviour and determinants of behaviour at baseline, directly after finishing the course and 2 months later**
- **The feasibility and utility of the course were evaluated directly after the course**



# EBM e-learning international (2)

Variables		Mean score (SD)		
		T0	T1	T2
EBM knowledge *	n= 33	66.7 (9.8)	73.0 (12.1)	74.7 (11.7)
EBM skills	n= 25	35.6 (12.3)	51.0 (15.5)	40.1 (12.3)
EBM attitude	n= 32	78.1 (11.1)	83.1 (11.2)	80.6 (13.0)
social context	n= 32	65.9 (15.3)	65.4 (17.1)	66.6 (19.2)
self-efficacy *	n= 32	52.2 (11.3)	58.1 (12.0)	59.2 (12.0)
intention to behaviour	n= 32	71.6 (13.0)	72.5 (15.2)	72.2 (8.7)
behaviour	n= 32	45.6 (30.6)	53.8 (31.5)	49.4 (30.5)

# EBM e-learning international (3)

## The course (n=42):

- offered sufficient information for an introductory course (100%),
- helped to better EBM practice (97.6%)
- improved their quality of work (97.6%)
- matched the educational level (79%)
- was enjoyable taking (79%)
- 93% of the participants would like to take more of this kind of online course

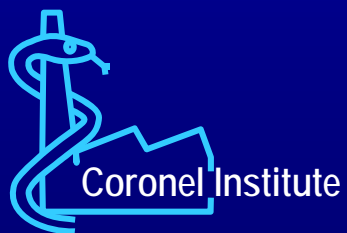


# Conclusions: EBM e-learning

- **leads to mainly a knowledge gain (equivalent compared to face-to-face lectures)**
- **makes participants feel more confident in practicing EBM (information retrieval and analysis skills)**
- **can be a useful and efficient method for reaching a wide-spread population of OPs and getting them acquainted with the basics of EBM**



## 2. Knowledge infrastructure





# EBM: knowledge infrastructure

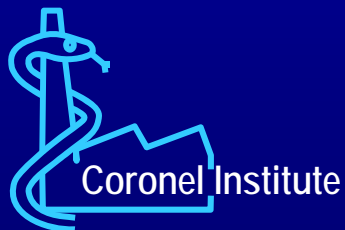
**The development and application of EBM e-learning depends to a large extent on a well developed knowledge infrastructure including high level educational institutes and digital libraries, to organize access to e-learning materials**



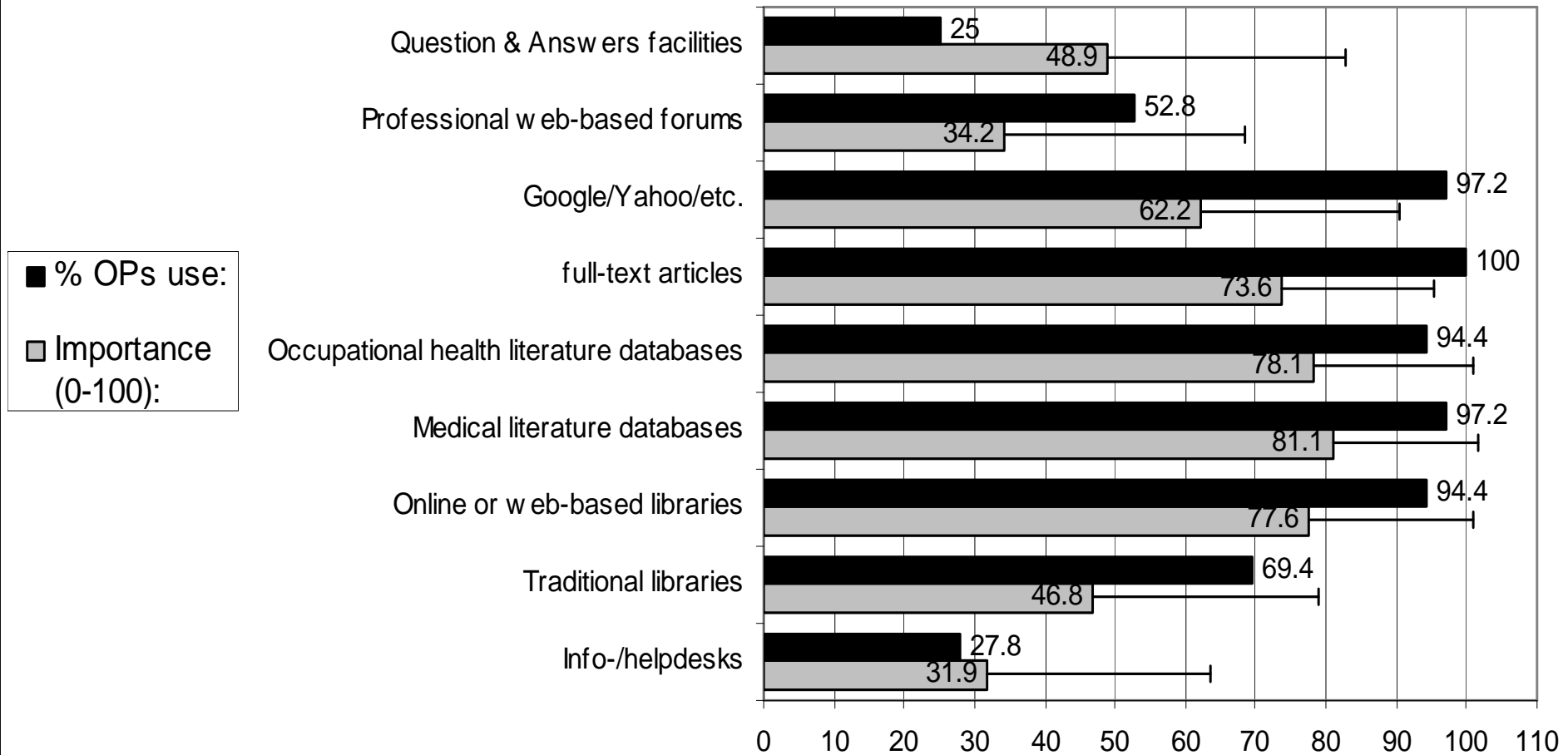
# Knowledge infrastructure

## Four specific elements:

1. Education and training,
2. Research and development,
3. Knowledge products and tools, and
4. Knowledge dissemination and access facilities



## Knowledge access facilities



# KIS access facilities

- **Conventional knowledge access facilities, like traditional libraries seems to be less important. Online or web-based databases and libraries are commonly used.**
- **More novel facilities, like question-and-answer facilities, are presumably gaining in importance**



# Enablers & barriers for practising EBM

Enablers	Barriers
1. Medical literature databases	1. Lack of time
2. Occupational health literature database	2. Payment for full-text articles
3. Online libraries	3. Language difficulties
4. Full-text articles	4. Lack of support
5. Traditional libraries	5. Lack of skills



# Final conclusions

- **In general, occupational physicians have good access to knowledge infrastructure facilities to practice EBM**
- **However, they still lack EBM knowledge and skills and they lack time for an intensive course**
- **An introductory EBM e-learning course can be useful to gain EBM knowledge and – to a lesser extent – skills, determining one's own time, place and pace**



# E-learning: important!

- **Learning objectives:**  
knowledge, skills, behaviour change?
- **Stand alone or blended learning? → depends on learning objectives**
- **English or native language of participants?**
- **Sufficient computer skills participants?**
- **Online support?**
- **Full-text articles are often not accessible!**



# EBM e-learning:

**Thanks to an improving knowledge  
infrastructure inevitable for occupational health!**

**Thank you for your attention!**

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