

# **NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED SURGICAL TRAINING AND UPDATING**

**Marco Maria Lirici**

***7<sup>th</sup> Panhellenic Congress of  
Laparoendoscopic Surgery  
Ioannina May 19 – 21, 2005***

# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

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Strictly speaking the Internet is an

**INTERNATIONAL NETWORK OF COMPUTERS**

In reality the Net is much more:

**IT IS ABOUT... SHARING KNOWLEDGE**



# **NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING**

**Services and applications are  
increasingly used in the  
HEALTH SYSTEM**

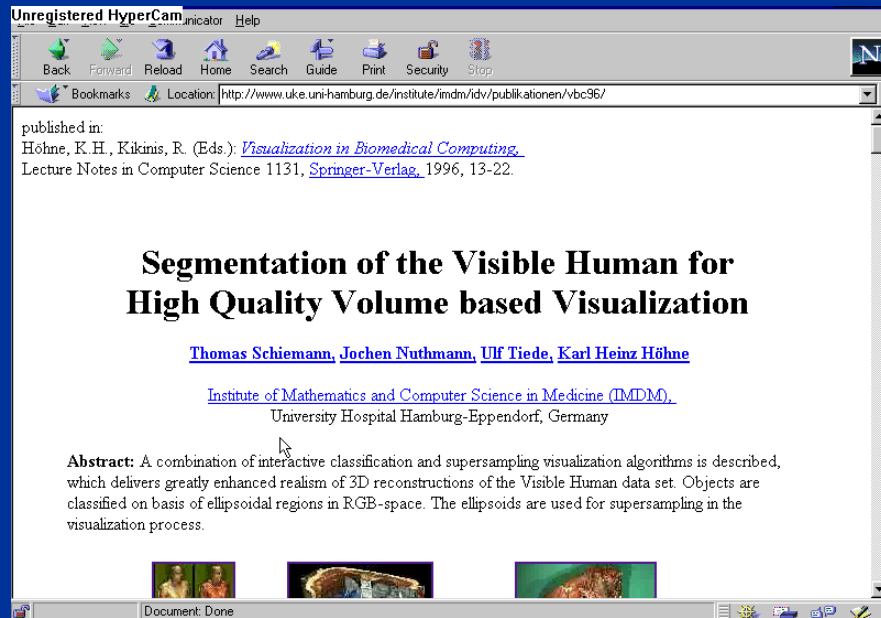
**1st line basic services:  
e-mail, mailing list, usenet, chat-line**

**2nd line basic services:  
search engines, on-line consultation,  
access to medical data-bases, on-line  
medical journal**



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## ACCESS TO MEDICAL DATABASES ON-LINE CONSULTATION



*LEARNING ANATOMY,  
PLANNING PROCEDURE*



# **NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING**

## **THE...HIDDEN SIDE**

- **QUANTITY OF MEDICAL DATA/INFORMATION**
- **QUALITY OF MEDICAL INFORMATION**
- **QUALITY CONTROL**
- **SAFETY AND SECURITY OF ON LINE DATA**
- **TIME WASTING**



# **NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING**

**THE NET IS CERTAINLY AN UNRIVALLED  
MEDICAL LIBRARY. THIS MAKES THE WWW AN  
EXTRAORDINARY TOOL, WITH THE HIGHEST  
POTENTIAL FOR MEDICAL EDUCATION.**

**BUT...**

**QUANTITATIVE AND QUALITATIVE PROBLEMS  
ARISE FROM THE AMOUNT OF INFORMATION  
EXISTING ON THE NET**



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SEARCH ENGINES CAN SCAN BILLIONS OF WEB PAGES IN A MATTER OF SECONDS: THEY DETECT THE PRESENCE OF A SEARCH TERM ON A WEB PAGE AND CANNOT JUDGE THE ACTUAL RELEVANCE OF A SITE



**HEALTH PROFESSIONALS  
NEED:**

- **MEDICAL RESOURCES  
DIRECTORIES**
- **MEDICINE ORIENTED  
BROWSERS OR SEARCH  
TOOLS**



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

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## EXAMPLES

**MEDLINE**

**MEDSCAPE**  
**MEDSCAPE**

**COCHRANE LIBRARY**





# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## QUALITY ASSURANCE...

of medical information is a prerequisite for spreading on-line CME. For the time being only the 5% of all credits are earned on-line in the USA

Gandsas and McIntire, Min Invas Tech & Allied Technol 2002:  
11(2)



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## QUALITY ASSURANCE

**VANCOUVER GROUP** guidelines for the  
scientific contents of medical sites

**IT MUST BE DISCLOSED:**

authorship, copyright, date of creation of  
document, name of the editor and  
organisation, references and sources,  
owner of the website, possible sponsor



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## QUALITY ASSURANCE

**HEALTH ON THE NET FOUNDATION**  
autoregulation principles to be met to get  
labelled with the **HONCODE** logo:

**Authority**

**Complementarity**

**Confidentiality**

**Attribution**

**Justifiability**

**Transparency of authorship**

**Transparency of sponsorship**

**Honesty in advertising & editorial  
policy**



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## QUALITY ASSURANCE

**HEALTHWEB** is a collaborative project of the health sciences libraries of the Greater Midwest Region, the National Network of Library of Medicine and the Committee for Institutional Cooperation with the support of the National Library of Medicine that has **FOUR FUNCTIONS:**

Identifying relevant resources

Evaluating resources

Providing access to resources

Making new resources available on the Internet



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## QUALITY ASSURANCE

**OMNI – Organising Medical Networked Information** is a **gateway** to evaluated, qualified Internet resources in health and medicine. It is a **FILTER-BASED SERVICE** that presents a catalogue of resources selected according to the **BIOME** evaluation guidelines established by the BIOME Special Advisory Group for Evaluation (SAGE).



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**OTHER PROBLEMS ARISING**

**CONNECTION TIME**

**SAFETY, SECURITY**



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**PROBLEMS SOLVING**

**BROADBAND INTERNET**

**Secure Socket Layers  
SSL data encryption**



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## THE FUTURE 1



## VIRTUAL UNIVERSITIES





# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

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## VIRTUAL UNIVERSITY a new concept of real time university

IT IS NO LONGER POSSIBLE TO HAVE A 30-YEAR  
CAREER BASED ON THE KNOWLEDGE  
TRANSFERRED AT THE UNIVERSITY, WHEN  
TECHNOLOGIES ARE CHANGING EVERY 5 TO 10  
YEARS

Maissonneuve, Marescaux MITAT 11(2) 2002



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## THE FUTURE 2



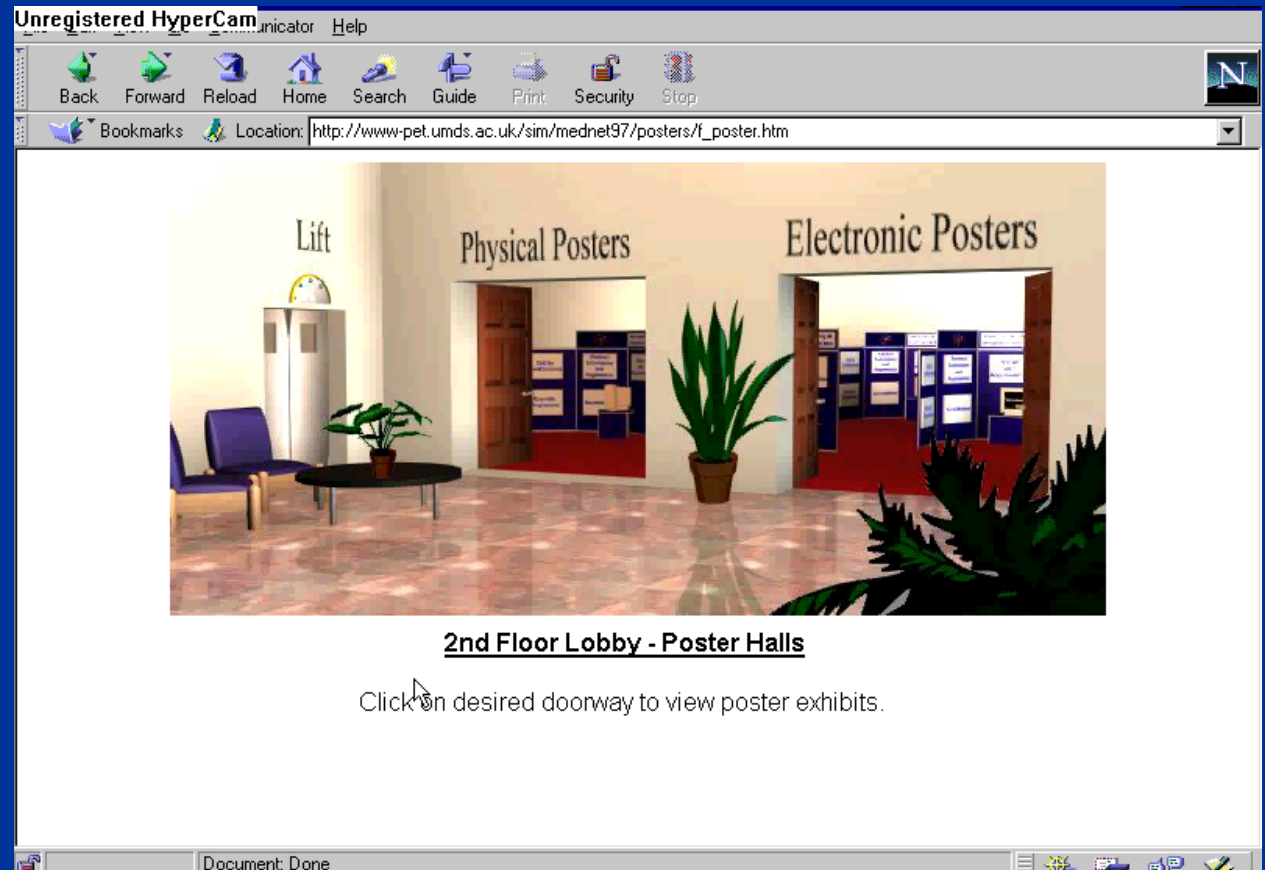
## VIRTUAL CONGRESSES



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

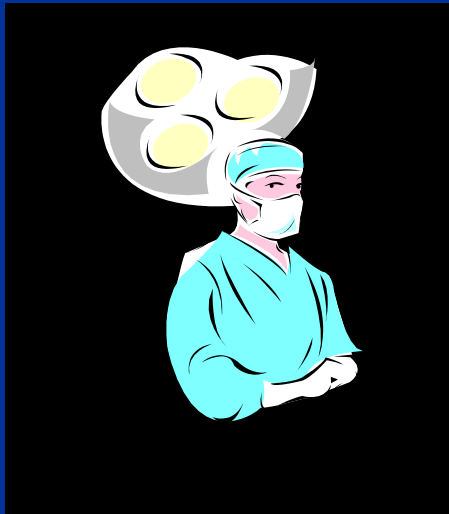
## VIRTUAL CONGRESSES

### 9TH INTERNET WORLD CONGRESS FOR BIOMEDICAL SCIENCES INABIS 2004



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## THE FUTURE 3



**VIRTUAL TRAINING**



# **NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING**

## **TEACHING AND LEARNING SURGERY**

**MODERN SURGERY HAS SHIFTED FROM DIRECT  
HANDS-ON MANOEUVRES TO INDIRECT MINIMAL  
ACCESS PROCEDURES INVOLVING INTERNAL  
CAMERAS AND RESULTING IN A HAND-EYE  
DISCONNECTION**



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## VIRTUAL REALITY SURGICAL SIMULATOR. THE FIRST STEP

RM Satava

Surg Endosc 1993 7(3): 203-205

The virtual-reality surgical simulator signals the **beginning of computer simulation for surgery**. The surgical resident of the future will learn new perspectives on surgical anatomy and repeatedly practice surgical procedures until they are perfect before performing surgery on patients.

It is anticipated that the full development of the surgical simulator will take **less than the 40 years** which was required for flight simulator to become an indispensable ingredient of pilot training



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## VIRTUAL REALITY TRAINING

VIRTUAL REALITY TRAINING IMPROVES OPERATING ROOM PERFORMANCE: RESULTS OF A RANDOMISED, DOUBLE-BLINDED STUDY

Seymour, Gallagher, O'Brien, Bansal, Anders, Satava  
Ann Surg. 2002, Oct; 236 (4)458-63; discussion 463-4

Surgeons who trained on MIST were

- 29% faster
- made 6 times fewer errors
- were 5 times less likely to injure non-target tissue when performing a lap. cholecystectomy



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## THE NEXT STEP

DO YOUR OWN ONLINE SURGICAL SIMULATION

### WEB-BASED SURGICAL TRAINER

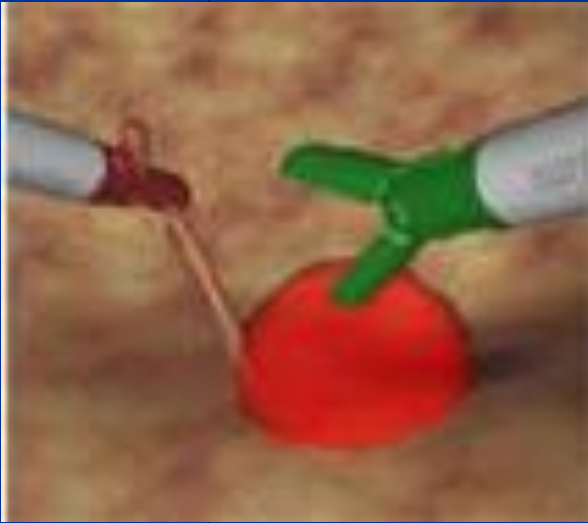
THE SIMULATOR IS RUN THANKS TO AN  
IMPLEMENTED VIRTUAL REALITY MODELLING  
LANGUAGE (VRML)

**WebSET Web-BASED STANDARD EDUCATIONAL  
TOOL**, PROJECT FUNDED BY THE EUROPEAN  
COMMISSION WITHIN THE 5TH FRAMEWORK  
PROGRAMME. INNOVATIVE USE OF INTERACTIVE  
Web TECHNOLOGIES



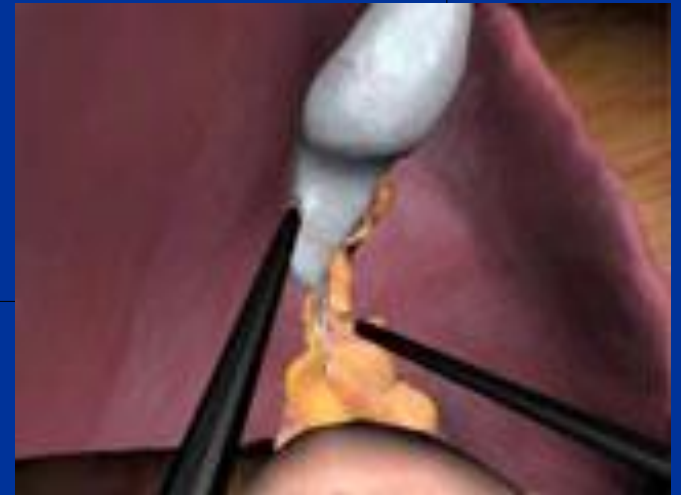


# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING



**webSET**  
**web-based Standard**  
**Educational Tool**

**WEB BASED**  
**SURGICAL TRAINER**



# **NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING**

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## **THE FUTURE 4**

**WEBCONFERENCES**

**TELECONSULTING**

**ON-LINE CONSULTING AND ACCESS TO  
MEDICAL AND SURGICAL GUIDELINES  
AND EXPERT PANELS**



# Use of the World Wide Web to implement clinical practice guidelines

Example : How to use the site [www.epage.ch](http://www.epage.ch)  
(European Panel on the Appropriateness of  
Gastrointestinal Endoscopy)

# Summary

- Description of the clinical situation
- Connection to the Web site
- Choose the procedure
- Choose the chapter
- Advance into the chapter
- About bibliography research

# A clinic situation ...

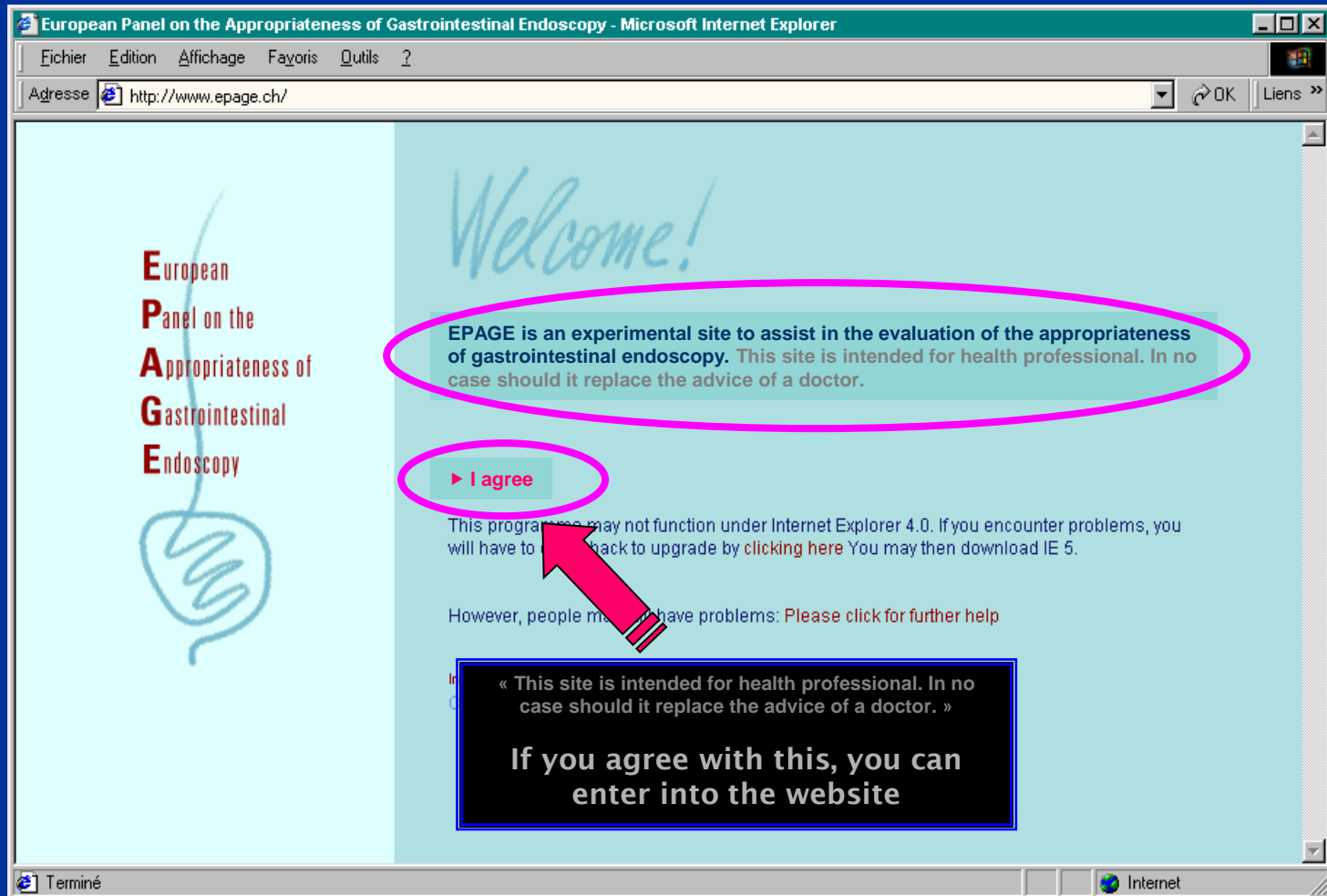
- Your patient has a known Barrett's esophagus
- He is asymptomatic, but had no gastroscopy for 3 years
- The last exam does not show any intestinal metaplasia

# Question ?

→ Is there an indication for a new gastroscopy?



# .....Connection to the Web site



# Choose the procedure ...

EPAGE (European Panel on the Appropriateness of Gastrointestinal Endoscopy) - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Adresse <http://www.epage.ch/start2.html> OK Liens »

## EPAGE

- ▶ Instruction for use
- ▶ Definitions
- ▶ Disclaimer
- ▶ Appropriate Health Care
- ▶ The European panel
- ▶ Bibliography
- ▶ About us
- ▶ Restart
- ▶ Home

Please choose the procedure you are considering for your patient:

Upper GI Endoscopy	1-7
Colonoscopy	8-19

This programme was developed at the Institute of Social and Preventive Medicine (IUMSP) and the Medical Outpatient Clinic (PMU) of the University of Lausanne, Switzerland, in collaboration with the Swiss Federal Institute of Technology (EPFL). It was financed by those institutions with support from the European Union (BIOMED-II), the Swiss Federal Office for Education and Science and the Swiss National Science Foundation.

Institute for Social and Preventive Medicine [guidelines@inst.hospvd.ch](mailto:guidelines@inst.hospvd.ch)  
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For this clinic situation,  
you have to choose the  
link :  
« Upper GI Endoscopy »

<http://www.epage.ch/colo.html> Internet



# Choose the chapter ...

EPAGE (European Panel on the Appropriateness of Gastrointestinal Endoscopy) - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Précédente Suivante Arrêter Actualiser Démarrage Rechercher Favoris Historique Courrier Imprimer Edition Discussion

Adresse <http://www.epage.ch/start2.html> OK Liens »

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Please select the most suitable clinical situation for your patient

Alphabetic selection:

Or generic selection:

1. **Uncomplicated dyspepsia**
2. **Frequent symptoms** ( $\geq 2/\text{wk}$ ) **suggesting gastroesophageal reflux disease** (GERD) or history of reflux-associated mucosal disease of the esophagus, without alarm symptoms and without Barrett's esophagus
3. **Known Barrett's esophagus**, without alarm symptoms
4. **Atypical chest pain**
5. **Alarm symptoms**: recent upper GI bleeding, esophageal dysphagia, unexplained weight loss, iron deficiency anemia
6. **Risk factors and premalignant conditions** of the UGI tract: pernicious anemia, atrophic gastritis, status post-gastrectomy, gastric polyps, familial adenomatous polyposis
7. **Miscellaneous indications**: assess healing of benign gastric ulcer, follow-up of sclerotherapy/banding, suspected malignant lesion on UGI series, suspected malabsorption syndrome

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To enter into the chapter, choose :  
« **Known Barrett's esophagus** »

Internet

# Advance into the chapter ...

EPAGE (European Panel on the Appropriateness of Gastrointestinal Endoscopy) - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Précédente Suivante Arrêter Actualiser Démarrage Rechercher Favoris Historique Courrier Imprimer

Adresse <http://www.epage.ch/start2.html> OK Liens

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### SUMMARY OF PATIENT CHARACTERISTICS:

- Clinical Indication 3: Upper GI endoscopy - Known Barrett's esophagus, without alarm symptoms

### Last endoscopy ?

To make a choice, press the *red* button

- ☒ Last endoscopy  $\geq 2$  years
- ☐ Last endoscopy  $\geq 6$  months and  $< 2$  years
- ☐ Last endoscopy  $\geq 6$  months and  $< 12$  months

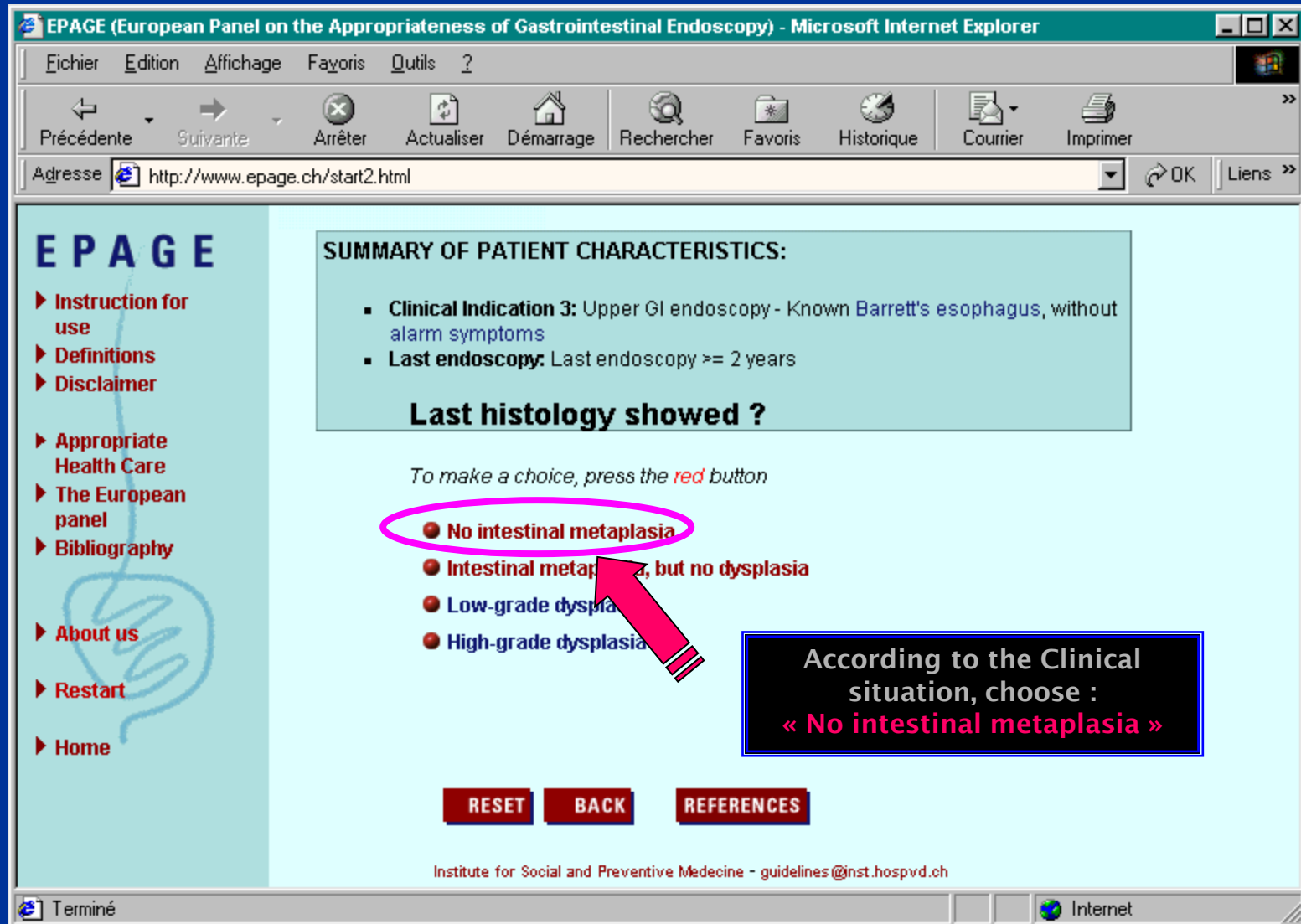
The last gastroscopy was made 3 years ago, so choose :  
« Last endoscopy  $\geq 2$  years »

RESET BACK REFERENCES

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Internet

.....following into the chapter..



# Results

The results giving by the panelists is that  
**Indication for gastroscopy is INAPPROPRIATE**

EPAGE (European Panel on the Appropriateness of Gastrointes

Fichier Edition Affichage Favoris Outils ?

Précédente Suivante Arrêter Actualiser Démarrage

Adresse <http://www.epage.ch/start2.html> OK Liens »

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- ▶ Home

### SUMMARY OF PATIENT CHARACTERISTICS:

- **Clinical Indication 3:** Upper GI endoscopy - Known Benign Esophagus, without alarm symptoms
- **Last endoscopy:** Last endoscopy  $\geq$  2 years
- **Last histology showed:** No intestinal metaplasia

According to the EPAGE criteria, the indication for gastroscopy is:

**INAPPROPRIATE**

Panel vote distribution for appropriateness:

Scale	1	2	3	4	5	6	7	8	9
Frequency	2	3	5	0	1	2	1	0	0

The median is **3**

How appropriateness is determined from the panel vote

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Clinical Indication 3:1

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Terminé Zone inconnue (Mixte)

# About bibliographic research

- By clicking on the "references" button, the reader can access a review article on the subject of upper GI endoscopy in Barrett's oesophagus, as well as MEDLINE abstracts of related articles.

# References button

EPAGE (European Panel on the Appropriateness of Gastrointestinal Endoscopy) - Microsoft Internet Explorer

Fichier Edition Affichage Favoris Outils ?

Précédente Suivante Arrêter Actualiser Démarrage Rechercher Favoris Historique Courrier Imprimer Edition Discussion

Adresse <http://www.epage.ch/start2.html> OK Liens »

## EPAGE

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### SUMMARY OF PATIENT CHARACTERISTICS:

- **Clinical Indication 3:** Upper GI endoscopy - Known Barrett's esophagus, without alarm symptoms
- **Last endoscopy:** Last endoscopy  $\geq$  2 years
- **Last histology showed:** No intestinal metaplasia

According to the EPAGE criteria, the indication for Endoscopy is:

## INAPPROPRIATE

Panel vote distribution for appropriateness:

Scale	1	2	3	4	5	6	7	8	9
Frequency	2	3	5	0	1	2	1	0	0

The median is **3**

How appropriateness is determined from panel vote

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Clinical Indication 3:1

**RESET** **BACK** **REFERENCES**

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# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## CONCLUSION 1 WHAT THE FUTURE HOLDS

Mastering the Internet is becoming a prerequisite for all those need to be updated in the medical field. Broadband Internet will depict a scenario where virtual meetings, virtual training, teleconsulting, ready access to medical data bases will enhance the quality of both medical education and medical practice.

**Furthermore: all this makes the most advanced information to any professional in the health system available throughout the world, from the richest and most industrialized countries to the third world.**



# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

**CONCLUSION 2**  
**TEACHING AND LEARNING SURGERY**  
**TIME-HONOURED TRADITION BASED UPON THE**  
**SEE ONE, DO ONE, TEACH ONE**  
**APPRENTICESHIP MODEL**

**WHAT FOR THE THIRD MILLENNIUM?**





# NEW HORIZON IN CONTINUING MEDICAL EDUCATION: WEB-BASED TRAINING AND UPDATING

## CONCLUSION 2

**THE FUTURE OF MEDICAL EDUCATION IS NO LONGER BLOOD AND GUTS, IT IS BITS AND BYTES**

**Gorman PJ, Meier AH, Rawn C, Krummel TM**

**At the Center for Advanced Technology in Surgery at Stanford we envision the future: within the next 10 years we will select, train, credential, remediate, and recredential physicians and surgeons using simulation, virtual reality, and Web-based electroning learning**

