MA FONCTION PRÉFÉRÉE
SUR WINDOWS

DRAG & DROP!
Information and communication technologies in medical education:
The major challenges
Outline of presentation

Introduction

Challenge #1: The changing behaviors of Internet-savvy patients

Challenge #2: Training on the benefits of using ICTs

Challenge #3: Training to find information and learn

Challenge #4: Changing medical education practices

Conclusion
Introduction

This presentation is about the impacts of ICTs on the practice and teaching of medicine... or any profession.
Introduction

Is Internet really changing the way we learn?
Introduction

One of the key developments in health care in the last 25 years is the incursion of information and communications technologies (ICT).
Introduction

When considering the impact of technologies on fields such as medicine, the first images that come to mind are advanced techniques and highly sophisticated machines.
Introduction

However, few are aware that ICT have also changed the ways in which medicine is practiced and taught.
In 2009, the Internet celebrates its 40 years of existence.
Introduction

... it has become an everyday tool for people on every continent.
Introduction

With ICTs, everything changes – our ways of living, learning, working and socializing.
Top Sites
The top 500 sites on the web.

1. **Google**
   google.com
   Enables users to search the Web, Usenet, and images. Features include PageRank, caching and translation of results, and an option to find similar pages. The company's focus is developing search technology.

2. **Yahoo!**
   yahoo.com
   Personalized content and search options. Chatrooms, free e-mail, clubs, and pager.

3. **YouTube**
   youtube.com
   YouTube is a way to get your videos to the people who matter to you. Upload, tag and share your videos worldwide!

4. **Facebook**
   facebook.com
   A social utility that connects people, to keep up with friends, upload photos, share links and videos.

5. **Windows Live**
   live.com
   Search engine from Microsoft.

6. **Microsoft Network (MSN)**
   msn.com
   Dialup access and content provider.

7. **Wikipedia**
   wikipedia.org
   An online collaborative encyclopedia.
Introduction

With the Web 2.0, Internet users interact with Web pages and other users.
According to Time Magazine, the invention of YouTube exemplifies the advances made by Web 2.0.
Introduction

In the medical field, over 100 000 animations and conference extracts are featured on the Web.
Introduction

ICTs wield a wide range of impacts on medical practice, patients’ experiences and health-care management, to name only a few.
Challenge #1

Preparing physicians for the changing behaviors of Internet-savvy patients
Challenge #1

Are patients Internet-Savvy?
Challenge #1

One of the most important impacts of ICT on medical education is that tomorrow’s physicians must be well prepared to cope with changing patient behaviors.
Challenge #1

Research has shown that patients’ habits have changed significantly in recent years.
Challenge #1

Not only do they use ICT to better understand medical issues, but they also use networking to inform each other, rate their doctors and question medical procedures...
Challenge #1

ICTs have definitively transformed the physician-patient relationship, which implies a new kind of training for tomorrow’s medical practitioners.
Challenge #1

...increasing numbers of patients are consulting their doctors after having navigated the Web.
Challenge #1

...medical knowledge is no longer the prerogative of health-care experts*.
Challenge #1

... and this is the case in most fields, in most professions...
45 billion searches on the Internet each month!
To whom were we asking these questions before?
Challenge #1

A kind of democratization of scientific and medical knowledge has come about...
Challenge #1

it profoundly affects the traditional relationship between the patient...
Challenge #1

Despite this “new” doctor-patient relationship, the increasing use of ICT by patients and medical practitioners alike improves the quality of health care delivery in the end.
Challenge #1

It is also a way to make people more accountable for their health.
Challenge #1

Thus, better informed patients are usually more inclined to get involved in health management.
Challenge #1

Therefore, ICT should not be perceived as a nuisance, but rather as a way to get patients more involved in managing their health.
Challenge #1

Preparing physicians for the changing behaviors of Internet-savvy patients
Challenge #1

The arrival of ICT has caused a paradigm shift in medical practice and teaching.
Challenge #1

this new patient attitude is changing the practice of medicine, and it poses serious challenges to the ways that initial and continuous medical training are handled.
Challenge #2
to raise awareness among physicians in training of the benefits of using ICT
Challenge #2

ICT has many potential benefits for patients and doctors in the areas of health-care organization and management.
Challenge #2

patients can readily interact with health-care experts without having to leave home.
Challenge #2

...to store and transmit data multiplies the possibilities for physician-patient interaction.
Challenge #2

Telemedicine, or practicing various aspects of medicine (prevention, diagnosis, treatment and follow-up) at a distance, has become increasingly common in both initial and continuous medical training.
Challenge #2

Telemedicine can be used to make diagnoses at a distance, to assist other surgeons in complicated operations, and to follow up high-risk patients in their own homes...
Challenge #2

A major advantage of telemedicine is that it enables diverse experts around the world to share their opinions in a few seconds and find the best* solution to a particular problem.
Challenge #2

...providing access to a vast store of information about the patient in the form of a digital file.
Challenge #2

It facilitates follow-up, teleconsultation of the patient’s file, and patient education so that patients can learn more about their condition.
Challenge #2

There are a growing number of handheld devices that support new and promising applications.
Challenge #2

...to enable personalized care by empowering people to adopt a preventive lifestyle with an emphasis on early diagnosis.
Challenge #2

These handheld devices are being used increasingly to transmit patient information and provide better patient follow-up.
Challenge #2

...portable devices are equipped with sensors that automatically send a range of patient information to the health-care specialist...
Challenge #2

to raise awareness among physicians in training of the benefits of using ICT
Challenge #3

to motivate physicians in training to use ICT to find information, learn and develop
Challenge #3

Several studies have noted the shortcomings of medical faculties in terms of integrating ICT into initial and continuous medical training.
Challenge #3

ITC should be a mandatory component in initial and continuous medical training... in any professional training!
Challenge #3

On the one hand, ICT are omnipresent in the workplace, and on the other hand, they are vital for health-care professionals to update their knowledge...
Challenge #3

The importance of informational literacy
Challenge #3

Informational literacy is defined as knowledge and mastery of a variety of technical tools that facilitate access to information (Web sites, databases, etc.) in order to find solutions to problems that arise.
Challenge #3

The greatest problems facing physicians who seek information on the Internet are the phenomenal quantity of facts that are available.
SPECIAL REPORT

Internet encyclopaedias go head to head

Jimmy Wales’ Wikipedia comes close to Britannica in terms of the accuracy of its science entries, a Nature investigation finds.

One of the extraordinary stories of the Internet age is that of Wikipedia, the free online encyclopaedia that anyone can edit. This radical and rapidly growing publication, which includes close to 4 million entries, is now a much-needed resource. But it is also controversial: if anyone can edit entries, how do users know if Wikipedia is as accurate as established sources such as Encyclopaedia Britannica?

Several recent cases have highlighted the potential problems. One article was removed as falsely suggesting that a former assistant to US Senator Robert Kennedy may have been involved in assassination. And podcasting pioneer Adam Curry has been accused of editing the entry on podcasting to remove references to competitors’ work. Curry says he merely thought he was making the entry more accurate.

However, an expert-led investigation carried out by Nature — the first to use peer review to compare Wikipedia and Britannica's coverage of science — suggests that such high-profile examples are the exception rather than the rule. The exercise revealed numerous errors in both encyclopaedias, but among 47 entries tested, the difference in accuracy was not particularly great.

The average science entry in Wikipedia contains around four inaccuracies, Britannica about three. Considering how Wikipedia articles are written, that result might seem surprising. A college professor could, for example, work on the entry on the Sun, but would have the same status as a contributor without an academic background. Disparities about content are usually noticed by discussion among users.

But Jimmy Wales, co-founder of Wikipedia and president of the encyclopaedia parent organization, the Wikimedia Foundation of St Petersburg, Florida, says the findings show the potential of Wikipedia. "I am pleased," he says. "Our goal is to get it to Britannica quality, or better."

Wikipedia is growing fast. The encyclopaedia has added 1.7 million articles in 2009, the same as it was founded in 2001. The English version has more than 1.5 million registered users, and added about 3,000 new articles every day in October 2005. Wikipedia has become the 27th most visited website, according to Alexa, a web-ranking service.

But critics have raised concerns about the site's increasing reliance on unstaffed, peer-reviewed articles. It may be that these errors can never be completely avoided, because they are not always easy to detect. But Nature's investigation suggests that Britannica's advantage may not be great at least where it comes to science entries. In the study, entries were chosen from the websites of Wikipedia and Encyclopaedia Britannica on a broad range of scientific disciplines and sent to a relevant expert for peer review. Each reviewer examined the entry on a single subject from the two encyclopaedias; they were not told which article came from which encyclopaedia. A total of 47 notable reviews were returned out of 50 sent out, and these were then examined by Nature's reviewers.

Only eight serious errors, such as misinterpretations of important concepts, were
Challenge #3

Most importantly, ICT allow physicians to stay better informed and to more easily communicate with each other.
-Bonjour Roxanne! Je m'appelle Cyrano. Je suis jeune, beau et...
Challenge #3

There are many resources that specifically target health care professionals.
Challenge #3

http://casemed.case.ed
u/cancergenetics
Challenge #3

The studies by Charlin and colleagues found that physicians in training could develop clinical reasoning through the use of interactive ICT applications.
Challenge #3

A number of specialized Web sites are dedicated to research data.
Challenge #3

Tufts University School of Medicine in Boston

www.tufts.edu/med/
Challenge #3

An increasing number of scientific references are available on the Internet, and many circumvent copyright issues.
Thus, initiatives such as PLoS and BioMed Central are willing to share.
Challenge #3

Virtual communities
Challenge #3

There are many virtual communities of professionals who are interested in particular topics and who regularly communicate through the Internet.
Challenge #3

Meanwhile, blogs have sprouted everywhere.
Challenge #3

These are individual, regularly updated sites that allow anyone interested to read and respond to posted messages.
Challenge #3

For example, scienceroll.com, clinicalcases.org, healthcarebloglaw.blogspot.com and askdrwiki.com, all award-winning sites, receive millions of visitors.
These sites target medical students as well as practitioners.
Challenge #3

Such resources allow the exchange of best practices, best sites, recent discoveries and the latest cures, in the aim of improving medical practice.
Challenge #3

e-learning

One of the key challenges facing medical faculties is to introduce e-learning into initial and continuous training programs.
Challenge #3

The literature reports on the many inherent advantages of e-learning, with flexibility the most often cited.
Challenge #3

Users of e-learning can proceed at their own pace, wherever they happen to be, and usually in the way that best suits them.
Challenge #3

Virtual simulators
Challenge #3

The use of simulators has grown tremendously in the medical field in recent years.
Challenge #3

They are as effective in education as they are in practical training. Virtual simulators have been used primarily to reduce medical error.
Challenge #3

The literature on virtual simulators documents the clear advantages of using ICT in medical training.
Medical Simulation in the Virtual World of Second Life

by MUVErs LLC, http://muvers.org

March 15, 2009
Challenge #3

However, this is particularly true when (a) neophytes are trained in the use of ICT and (b) use of the virtual simulator is not limited by lack of technological skills.
Challenge #3

Hence the importance of introducing physicians in training to these innovations at the initial training stage.
Challenge #3

3D animations on the Web
Challenge #3

Graphic representation of information appears to be central to the acquisition of medical knowledge.
Challenge #3

For some years now, medical faculties and other medical organizations have constructed extensive image banks to help specialists better understand a variety of medical issues.
The literature shows that online images foster knowledge acquisition in a variety of specific fields.


**Artheriosclerosis**

*Atherosclerosis is a disease affecting arterial blood vessels. It is a chronic inflammatory response in the walls of arteries, in large part due to the accumulation of macrophage white blood cells and promoted by low density (especially small particle) lipoproteins (plasma proteins that carry cholesterol and triglycerides) without adequate removal of fats and cholesterol from the macrophages by functional high density lipoproteins, (see apoA-1 Milano). It is commonly referred to as a "hardening" or "furring" of the arteries. It is caused by the formation of multiple plaques within the arteries.*
Arteriosclerosis

From Wikipedia, the free encyclopedia

Arteriosclerosis refers to a stiffening of arteries.[1]

Arteriosclerosis is a general term describing any hardening (and loss of elasticity) of medium or large arteries (from the Greek Arterio, meaning artery, and sclerosis, meaning hardening)

It should not be confused with "arteriolosclerosis" or "atherosclerosis", which are described in greater detail below.

Types

- Arteriolosclerosis is any hardening (and loss of elasticity) of arterioles (small arteries). It is often due to hypertension.
- Atherosclerosis is a hardening of an artery specifically due to an atheromatous plaque. Atherosclerosis is the most common form of arteriosclerosis. Atherosclerosis is characterized by a thickening of the intima with plaques that can contain lipid-laden macrophages ("foam cells"). The plaques contain free lipid (cholesterol, etc.) and are prone to calcification and ulceration.
- Arteriosclerosis obliterans is typically seen in medium and large arteries of the lower extremity. Characterized by fibrosis of the intima and calcification of the media. The lumen of the vessel may be obliterated or markedly narrowed.
Challenge #4

to change medical education practices
Challenge #4

...how to implement this innovation into medical education in universities and hospitals?
Have you been paying attention?
Conclusion

How do we face the major challenges?
Conclusion

To better prepare medical students for the changing behaviors of patients...who are sometimes better informed on their disease.
this new patient attitude will transform the practice of medicine, and physicians of the future must be prepared for the new reality.
Conclusion

The term patient empowerment is increasingly used in the literature.
Conclusion

To raise awareness among physicians in training of the many benefits of ICT for improving the quality of interventions and care provided to patients, and for better organizing the health-care system.
The examples of telemedicine and virtual communities of practitioners are only a few of the many benefits of ICT for improving the quality of medical practice.
It would therefore appear necessary to introduce medical students to these changes now so they can take advantage of them later to improve the quality of health care delivery.
Conclusion

Motivating medical students to use ICT to find information, learn and develop is the third challenge.
Conclusion

The focus here is on informational literacy, which is considered a mandatory skill in the training of all physicians.
The issue of e-learning is also important, because although this teaching mode is not very widespread in medical faculties, it represents the future of initial and continuous medical training.
Conclusion

...how to implement this innovation into medical education in universities and hospitals?
MERCI!

QUESTIONS ?