



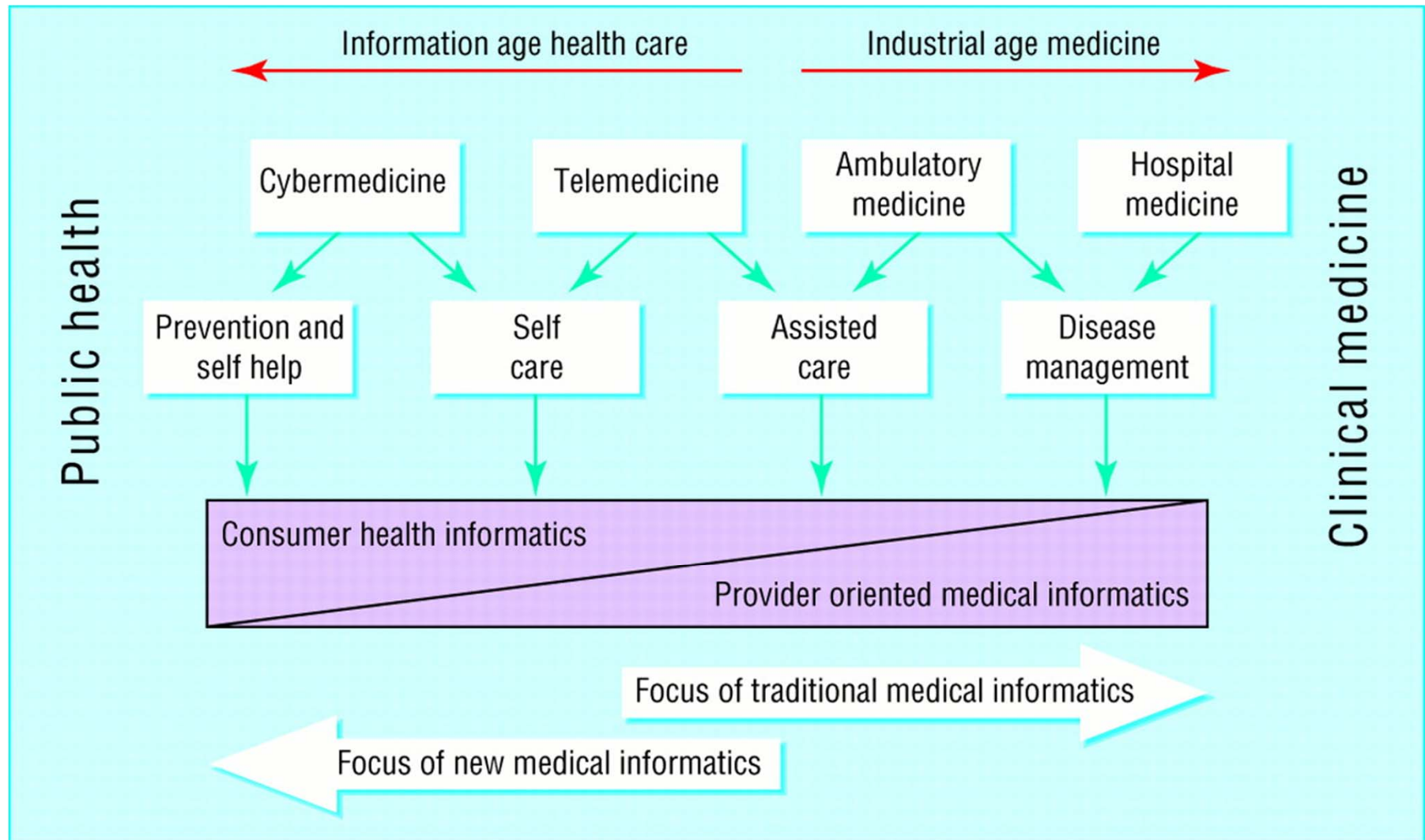
CONSUMER HEALTH INFORMATICS (CHI)

301 Medical Informatics
College of Medicine
King Saud University

Outline

- Definition and Scope of CHI
- Demand and supply of HI
- How Credible is HI on the Web?
- How can Consumers Assess Health Information?
- Patient accessible health records, PHR
- Different CHI tools and applications
- Roles of Health Professionals in CHI

The focus of traditional medical informatics is shifting from health professionals to consumers



Consumer Health Informatics

- Branch of health informatics that:
 - Analyzes information needs of consumers
 - Studies and implements methods of making health information accessible to consumers
 - Integrates consumer preferences into health care information systems

Other definitions of CHI

- Integration of consumer health information and information technology in an environment of shared healthcare decision-making that supports effective self-health action.

Lewis, D. & Friedman, C. (2002). Consumer health informatics. In M.J. Ball, K.J. Hannah, S.K. Newbold, & J.V.Douglas (Eds.). *Nursing informatics: Where caring and technology meet (3rd ed.)*. New York; Springer-Verlag.

A distinct subfield of medical informatics?

- Because of its frequent patient centered approach CHI may have a stronger overlap with public health
- The design of CHI applications require more frequent input from patient and consumer

“Consumers”

- All persons, sick or well, who seek information and take action in accord with personal preferences, life situations and individual health goals.
- Broader than “patient “ – includes the well and caregivers
- Very diverse group

Empowered Consumers

- Empowerment: Granting of power to a dependent group or enhancing an individual's ability for self determination
- “a social process of recognizing, promoting and enhancing people’ abilities to meet their own needs, to solve their own problems, and mobilize the necessary resources in order to feel in control of their lives” (Gibson, 1991)

Brennan&Safran.Chapter 2 Empowered consumers.
In: Lewis, Eysenbach, Kukafka, Stavri, Jimison. Consumer Health Informatics
Springer, 2005

Empowered Consumers

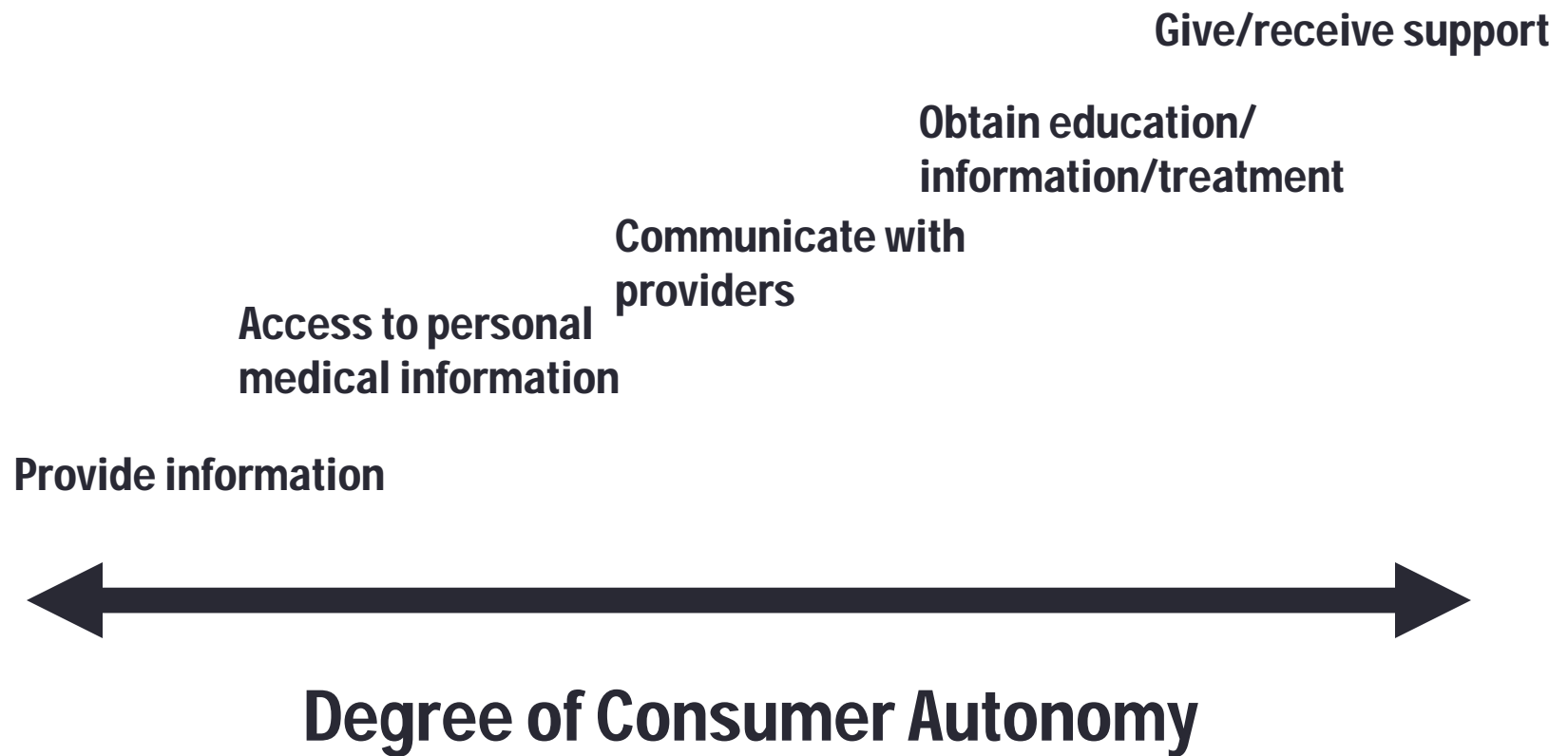
- CHI applications support the ideology of empowered consumers (a power balance in the patient-health professional relationship) by: e.g.
 - ✓ Informing about health concerns
 - ✓ Assisting in finding others with similar concerns
 - ✓ Assisting in navigating the health care system
 - ✓ Access to clinical records and personal care management tools.

Brennan&Safran.Chapter 2 Empowered consumers.
In: Lewis, Eysenbach, Kukafka, Stavri, Jimison. Consumer Health Informatics
Springer, 2005

History of CHI

- Consumer movement of 1970s
 - Increased demand for information
 - Greater participation in “medical” decision making
- Prominence of “self-help” phenomenon of 1980s
 - Huge increase in health information for lay audience
- Widespread use of the Internet
 - Increased dramatically throughout 1990s

CHI Continuum

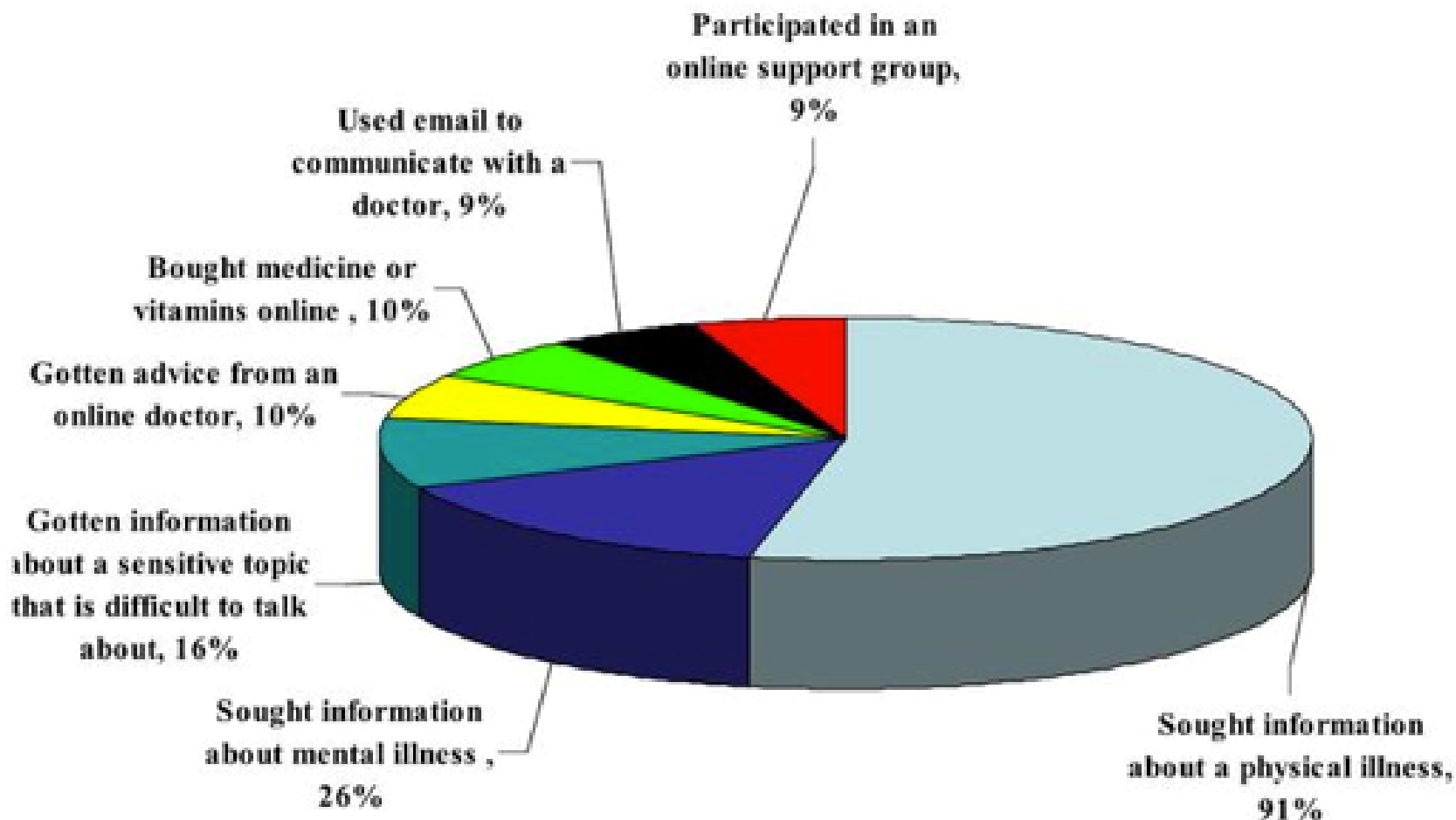


What is Consumer Health Informatics?

- Branch of health informatics that:
 - Analyzes information **needs** of consumers
 - Studies and implements methods of making health information accessible to consumers
 - Integrates consumer preferences into health care information systems

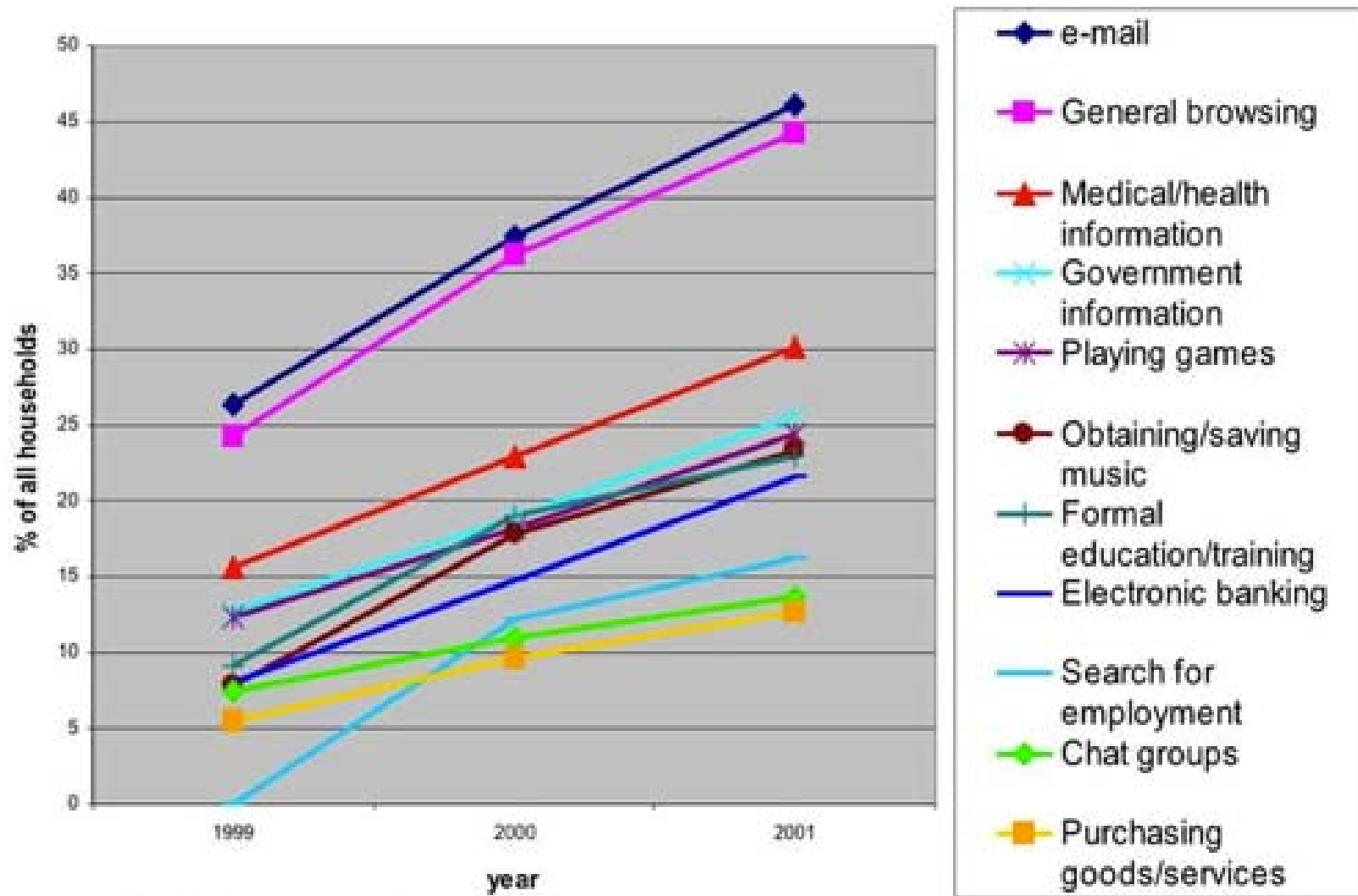
The demand side: Health Seekers on the net

In the US, (52 million) of those with internet access have used the web to get health or medical information



Source: Pew Internet & American Life Project health seekers survey, August, 2000

Canada



Source: Statistics Canada

Saudi Arabia: Internet Growth and Population Statistics

YEAR	Users	Population	% Pop.	Usage Source
2000	200,000	21,624,422	0.9 %	ITU
2003	1,500,000	21,771,609	6.9 %	ITU
2005	2,540,000	23,595,634	10.8 %	C+I+A
2007	4,700,000	24,069,943	19.5 %	ITU
2009	7,761,800	28,686,633	27.1 %	ITU
2010	9,800,000	25,731,776	38.1 %	ITU

<http://www.internetworldstats.com/me/sa.htm>

Demand: Online Health Information

- In 2010, it was estimated that:
- **Google:** 34,000 searches per second (2 million per minute; 121 million per hour; 3 billion per day; 88 billion per month, figures rounded)
- **Yahoo:** 3,200 searches per second (194,000 per minute; 12 million per hour; 280 million per day; 8.4 billion per month, figures rounded)
- **Bing:** 927 searches per second (56,000 per minute; 3 million per hour; 80 million per day; 2.4 billion per month, figures rounded)
 - <http://searchengineland.com/by-the-numbers-twitter-vs-facebook-vs-google-buzz-36709>
- Manual Analysis of 3.000 search engine queries show that 4.5% of all queries are health related

What is Consumer Health Informatics?

- Branch of health informatics that:
 - Analyzes information needs of consumers
 - Studies and implements methods of making health information **accessible** to consumers
 - Integrates consumer preferences into health care information systems

100

BMJ 1997;314:1875 (28 June)

Information in practice

Reliability of health information for the public on the world wide web: systematic survey of advice on managing fever in children at home

Piero Impicciatore, *research fellow*,^a Chiara Pandolfini, *research fellow*,^a Nicola Casella, *research fellow*,^a Maurizio Bonati, *head*^a

^aLaboratory for Mother and Child Health Institute di Ricerche Farmacologiche "Mario Negri", Via Eritrea 63, 20157 Milan, Italy

Correspondence to: Dr Bonati Mother_Child@afma.niegi.it

- ▶ See [abstract](#)
- ▶ [Extra: Data Supplement](#)
- ▶ [Send a response to this article](#)
- ▶ [PubMed citation](#)
- ▶ [Related articles in PubMed](#)
- ▶ [Download to Citation Manager](#)
- ▶ This article has been cited by [other articles](#)
- ▶ Search Medline for articles by [Impicciatore P](#) | [Bonati M](#)
- ▶ Alert me when:
[New articles cite this article](#)

Empirical Studies Assessing the Quality of Health Information for Consumers on the World Wide Web

A Systematic Review

Main issues with CHI

- Quality of web based information
- Credibility

Quality control of health information on the internet

- The quality control of health information on the internet rests on **four pillars**:
 - educating the consumer
 - encouraging the self regulation of providers of health information
 - having third parties evaluate the information
 - enforcing consents in cases of dissemination of fraudulent or harmful information.

Credibility Criteria

- The FA4CT Algorithm: A New Model and Tool for Consumers to Assess and Filter Health Information on the Internet
- **CREDIBLE Criterion**
- Current and frequently updated
- Reference cited
- Explicit purpose
- Disclosure of sponsors
- Interest disclosed and no conflicts found (e.g financial)
- Balanced
- Level of Evidence
 - Eysenbach G, Thomson M. The FA4CT Algorithm: A New Model and Tool for Consumers to Assess and Filter Health Information on the Internet. In: Kuhn K (ed.) Medinfo 2007 Proceedings (in press)

What is Consumer Health Informatics

- Branch of health informatics that:
 - Analyzes information needs of consumers
 - Studies and implements methods of making health information accessible to consumers
 - **Integrates consumer preferences into health care information systems**

Where clinical IS and Consumer health informatics meet

- Patient Portals: Patient interface to clinical information systems
- Personal Health Record: Internet based- set of tools that allows people to access and coordinate their life-long health information and make appropriate parts of it available to those who need it

Important Notes

Please phone the office 360-675-2288 for urgent medical problems or dial 911 for medical emergencies.

Your physician will respond to your message Monday through Friday during office hours. If you do not receive a timely response, please phone the office. During evenings and weekends, please

Contact My Doctor/Provider

Please complete the following information:

To:

Subject:

Message:

Dr Jones, the sample medication you gave me at my last visit does not seem to be working. Should I continue to use this or should we change to something else?

Thanks,

Steve

Important Notes

Please phone the
office at (800) 451-1234 for
urgent medical
problems or dial 911 for
medical emergencies.

Request an Appointment

Our appointment scheduling staff will handle your request, and will reply with date and time options for you to confirm.

Please complete the following information:

Type of Appointment

Complete Physical Exam



Reason for Appointment
(Optional)

I need my yearly physical exam

Special Requests, Comments, etc.

Calendar

Date Requested:

Time

☒ Morning ☐ Afternoon ☐ No Preference

Send Appointment Request

Important Notes

Please report any medication side effects or allergies.

All patients must be seen at regular intervals to evaluate your medical problems and medications.

Some insurance plans will only permit enough medication for one month at a time.











We will forward your

Refill/Renew My Medications

Please complete the following information regarding your medication refills.

(Check only those medications you need refilled or renewed at this time. You must select at least one checkbox. If you do not see your medication listed below, please [Click here](#) to update your medication list. Once you have updated your medication list, you can return to this page and request a refill.)

Add/Edit Meds

Check to Refill	Medication Name	Dosage (mg, ml)	Dosage Frequency	Quantity	
<input type="checkbox"/>	Lantus	14 units	Once Daily	1 	Days 
<input type="checkbox"/>	Regular insulin	as needed	Three Times	1 	Days 
<input checked="" type="checkbox"/>	Lasix	20 mg	Once Daily	1 	Days 
<input type="checkbox"/>	Lovastatin	20 mg	Once Daily	1 	Days 
<input type="checkbox"/>	Lisinopril	20 mg	Once Daily	1 	Days 

Important Notes

This form will be reviewed by your doctor for approval. You will be notified about approval, the need to visit your primary care doctor, etc.

Request a Referral

To receive a referral to a specialist, please complete the following:

Specialist Type	Allergist
Specific Doctor	Dr Green
Medical or Surgical Problem (Describe)	Allergies
Have you seen this specialist before?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Have you consulted your primary care physician for this problem?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Comments	



HOME | SEND MESSAGES | READ MESSAGES | MY CHART | MY ACCOUNT | SIGN OUT |  NO NEW MAIL


Important Notes

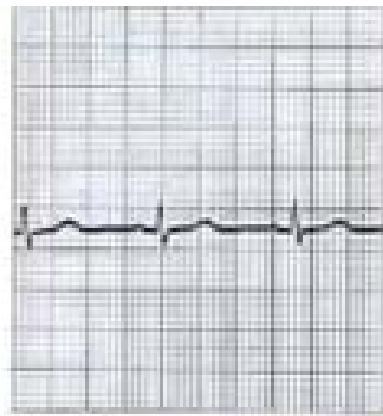
Please phone the
office 303-871-2205 for
urgent medical
problems or dial 911 for
medical emergencies.

View EKG

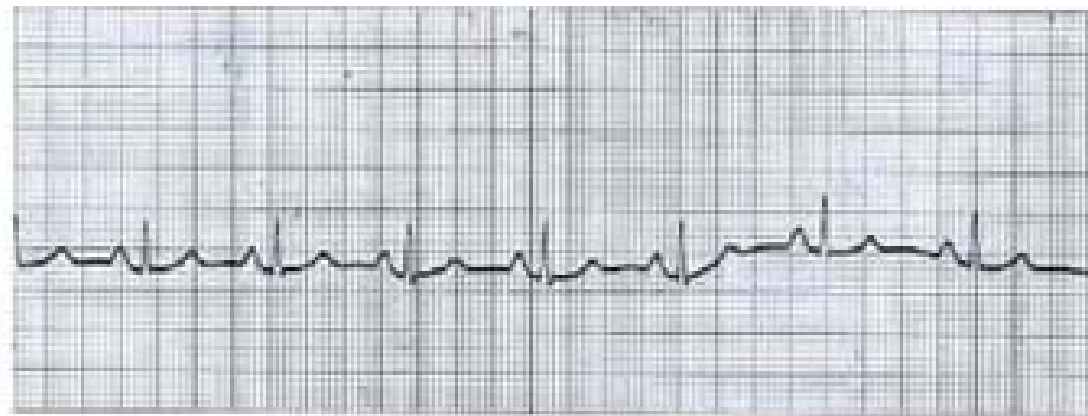
Click on the title to view a document.

Results for **Steve Johnson**:

Title	Description	Print
<u>3-30-2003</u>	Normal	



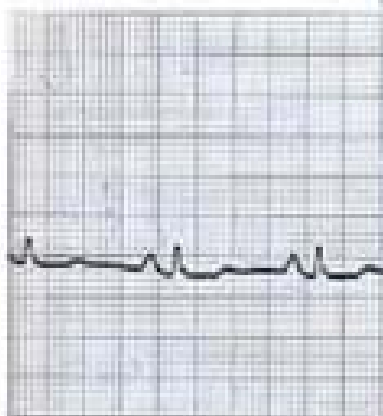
aVR



aVL

aVF

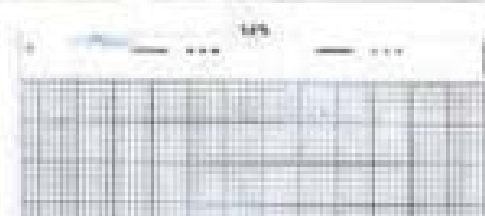
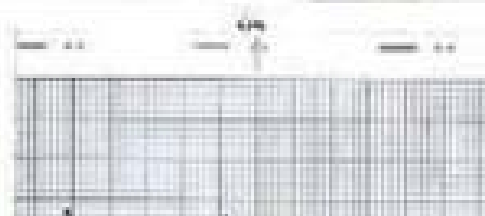
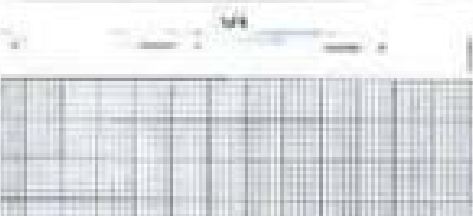
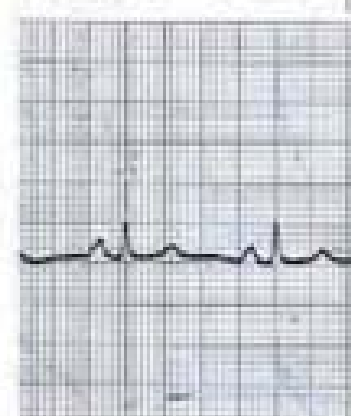
aVF



aVF



aVF



Consumer Health Informatics

- Is not restricted to the use of computers and telecommunications but also includes:
 - The delivery of information to patients through other media: the theoretical framework of consumer informatics, for example the analysis of their information needs, is independent of the media through which the information is presented.

Consumer Health Informatics Systems

- Consumer health informatics can be organized into three general systems that:
 - *provide* health information to the user (one-way communication)
 - *tailor* specific information to the user's unique situation (customized communication)
 - allow the user to *communicate* and *interact* with health care providers or other users (two-way communication)

Consumer Health Informatics Systems

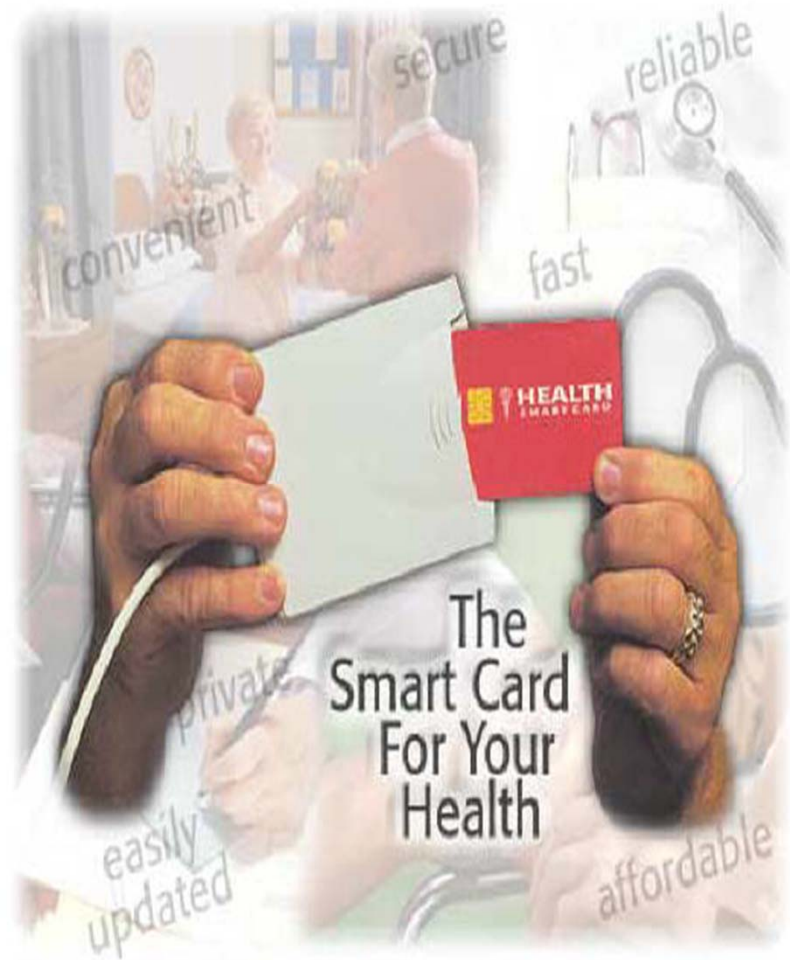
- **One-way communication:** CD-ROMs, on-line health articles
- **Tailor:** automated systems that obtain information from the consumer about his or her general health or other health-related factors (such as family disease histories and smoking habits) and, on the basis of this information, suggest a need for preventive health procedures (such as mammograms), or identify actions to curb high-risk behaviors.
- **Two-way communication:** electronic mail, electronic bulletin boards, on-line discussion groups.

Roles of Health Professionals in CHI

- Professionals serve as sources of content
- Professionals provide important guidance in moderating public electronic discussion groups and responding to patients' electronic messages
- Clinicians become information brokers and interpreters for patients.

The Future: Trends

- Universally, present computing
- Powerful handheld devices
- Applications with consumer awareness



Writing in the July 28, 2005 edition of the New England Journal of Medicine, John Halamka, M.D., chief information officer at BIDMC and Harvard Medical School and an emergency room physician, says the chip implanted in his arm would allow anyone with a handheld reader to scan his arm and obtain his 16-digit medical identifier. Any authorized health care worker can visit a secure Web site hosted by the chip manufacturer and retrieve information about his identity and that of his primary care physician, who could provide medical history details.

Implantable Chips



Further Reading

