Medicine in the Digital Era – Opportunities and Challenges

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INTRODUCTION

In ancient times, medicine was based on magic and religion. The devine Greco-Roman god of medicine Aesculopius was worshipped in hundreds of temples throughout Greece, the remains of which may still be seen in Cos, Athens and elsewhere. To these resorts or temples the sick gather and wait for healing ritual known as incubation or temple sleep. They lay down to sleep in the dormitory and were visited in their dreams by Aesculopius or one of his priests who gave advice. In the morning the patient often is said to be cured.

The transition of magic and religion to science in medicine was a gradual process. The teaching of Hippocrates born in 460 BC marked the stage in western medicine where diseases was coming to be regarded as a natural rather than a supernatural phenomenon. Doctors were encouraged to look for physical causes of illness and to teach. Hippocrates said " Each disease is not anymore sacred than other diseases, it has its own nature and comes from external causes." Around this period the first medical textbook was written. This marks not only the beginning of scientific medicine but also the dawn of the information age.

MEMORY IS FINITE

When I was a medical student in the late 1950, I was troubled by the emphasis in memorization. As a houseman we were expected to remember the history, the Hb and blood urea levels of every patient under our care. With the exception of Prof Ransome who himself cannot remember much told us to look up the books, none of our tutors encouraged us to seek out knowledge.

This catharsis of words and figures may look smart in rounds but was in fact bad for the patient. The human brain has a finite working capacity and with a rapidly expanding base of information, something will be forgotten. An air-line pilot who is thoroughly familiar with the plane, still needs to go through a check-list everytime before he takes off and lands. Should not the doctors do the same thing - to look things up, to be aware of the latest advances thus further enhancing the doctor- patient relationship.

HOW DOCTORS COMMUNICATE

There are a number of ways in which doctors can help patients become better informed about matters of health and disease. The oldest and in many ways, still the most effective medium is face-to-face communication. This works best one-on-one or in small groups. Since ancient times, communications between larger groups have been through symbols carved on the walls of caves. With the introduction of the printing press, communication has been via the printed word.

In modern times no doctor's office can exist without the telephone. Yet an internal memorandum from Western Union (the equivalent of AT & T presently) in 1876 dismissed the telephone "as having too many shortcomings to be seriously considered as a mean of communication. The device is inherently of no value to us."

Radio had a similar history. Radio talks on medical topics is an established procedure especially in large countries like India. Yet the radio was dismissed in 1920 as a "wireless music box which has no imaginable commercial value. Who would pay for a message sent to nobody in particular."

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ENTER THE COMPUTER

The computer and Internet were first invented as a fail-safe military communication system between various military bases. This is to ensure no breakdown of communication occur during times of war. This is because in cyberspace there are no borders, bits do not stop at customs and nation-states become relatively irrelevant.

Perhaps at this juncture one should define what is a "bit". A bit stands for binary digit and there are two - the one (1) and the zero (0). It is the irreducible unit of information just like the atom which until very recently is an irreducible unit of matter. A bit is colourless, weightless and travels at the speed of light. It is uncontrolled and uncontrollable. When a thing (i.e. matter or atom) is sold, the seller ceases to own it; when an idea, a tune or a blueprint is sold, the seller still possesses it and could possibly sell it again. Information can be replaced at almost zero cost without limit. Things can be replaced only through the expense of manufacturing. Things wear out and exist in a location. Information is nowhere and yet everywhere.

THE INTERNET AND WORLD WIDE WEB

The unprecedented growth of the Internet presents a defining moment at the beginning of this new millennium. In 1998 there were at least 320 million web pages of general interest and more than 150 million people communicate over the Net. In all there are more than 100,000 medical websites and the numbers are still growing. It is estimated that 27% of female and 15% of male Internet users access medical information weekly or daily.

Health-care information on the Internet has potential major benefits for both patients and the health-care individuals.

Patients

The pervasiveness of the Internet and World Wide Web in health and healthcare raises multiple concerns about privacy, confidentiality, quality assessment, professionalism, liability and responsible medical practice. There are a number of self-regulation bodies and voluntary codes of conduct which try to ensure minimum standards and professionalism.

The Healthcare Profession

Similarly health-care professionals like doctors, nurses and pharmacists are also innundated with thousands of web sites. Most of these sites are free but some require payment of subscription. The sites differ in quality, quantity, connectivity, convenience, commitment, commerce, customisation and cost-effectiveness.

Continuing medical education sites are also available for doctors, nurses and medical students. They include full lecture courses, live-lectures, on-line medical journals and textbooks and virtual libraries, congresses, surgery suites and hospitals.

PROBLEMS AND CHALLENGES

The Digital Divide

I have so far discussed the opportunities of the Internet. There are of course problems and challenges. One of the problems have been designated the "digital divide"- the gap between the Internet haves and have-nots.

In Jan 2000 the international research firm Forrester concluded a representative mail survey of more than 80,000 US household. It revealed that African-Americans' online usuage lags behind all other house-holds. The results further indicated that household income rather than ethnicity is the critical driver of online adoption. Once online, the digital divide virtually disappears and all consumers, regardless of ethnicity, use the Internet for the same reasons and do the same things.

Not So Fast

Compared with the non-physician colleague, online doctors generally rate the Net as less useful for tasks ranging from patient education to claims processing. This mismatch potentially spell trouble because the healthcare executives are counting on physicians as part of their own online plan and are spending billions of dollars to achieve this.

At A Snail's Pace

Only a small proportion of patients believes that doctors will answer e-mail personally. This is because doctors are not paid for email encounters. There is also the problem of security, privacy and of course if you have to answer 30 emails a day, it takes up a lot of your time.

Unrealistic Expectation

As expected the quality of information varies widely, from the most up to date practice guidelines produced by leading clinical bodies to out of date, inaccurate or even bizarre recommendations. In countries where patients can participate in the choice of treatment, the Internet could potentially be a rich source of information on treatment options. However increasing patients' expectation and their demand for the best presents an important challenge for providers of health-care especially in the era of restricted resources. Furthermore a doctor may be held negligent for failing to institute recognised best practice. The Bolam principle established in 1957 protect a doctor against a claim of negligence if colleagues would have acted in the same manner but this was recently overturned by an Australian court.

Hence an increasingly knowledgeable patient population and an overworked clinical community provide a recipe for increasing litigation.

Mismatch Between Speed and Peer Review

The Internet can disseminate new scientific results or data instantaneously but the length of time required for careful peer review may take months. In some countries like U.S, pharmaceutical companies are known to advertise directly to patients or patient groups. Doctors are often under tremendous pressure to prescribe a certain drug or product by patients or patient groups before toxicity studies are completed.

CONCLUSION

It is clear that the changing nature of information delivery brings with it enormous implication to health-care. There is a pressing need for dialogue not only within the profession but between doctors and patients.

The medical office of today is a bottle neck of episodic care that does a poor job of healing. The physician is fed up with chunky medical records, misplaced reports, lost X-rays and incessant telephone interruption. Information technology's greatest contribution would be to restore to the doctor the clinical minutes and hours stolen from his or her day with patients.

EPILOGUE
Someday

Doctors will be measured not by the number of patients we see but by the quality of care we provide.

Doctors will be free to care for patients in the best way, determined only by their needs and not by financial incentives.

Patients will be able to communicate with us at any time, without the barriers posed by answering service and call centres.

Patients will gain ownership over their health and healthcare, with unlimited access to medical information and their records.

All current medical information will be available immediately as we decipher our patients' problems.

And when that day comes, we will be our patients' consultants, advisers, confidantes and caregivers – their true personal physicians.

This can happen now, starting today with the new information technology.