Clinical uses of e-mail

Sir,

We are truly in an era of information and communication. Now more than ever, communicating and moving vast amounts of information quickly across great distances is one of our most vital needs. From small one-person entrepreneurial efforts, to the largest of corporations, more and more professional people are discovering that the only way to be successful in this century and beyond is to realize that technology is advancing at a break-neck pace and they must somehow keep up. Likewise, doctors and researchers from all corners of the earth are acknowledging this fact. Immediate access to the work of colleagues and a "virtual" library of millions of volumes and thousands of papers affords them the ability to incorporate a body of knowledge hereto unthinkable. Groups of doctors and researchers can now conduct interactive conferences and discussions with each other, paying no need to physical location; the possibilities are endless. This article brings attention to some critical uses of e-mail services for doctors to increase their professional skills and patient care. The Internet is primarily a communications medium and one of its basic tools is e-mail. We have at our fingertips the ability to talk in "real-time" with someone who is far away, or send a 2,000-word discussion story to a group of people who will critique and analyze it for improvement of their knowledge and learning. Electronic mail (e-mail) offers the potential for near-instantaneous transfer of messages and files across thousands of miles. The same message can be sent simultaneously to multiple recipients and forwarded without retyping. Messages can be sent or read at any time, eliminating "telephone tag", and, because the system is paperless, lost, blurred, and incomplete, facsimile transmissions can be minimized. Additionally, e-mail is less expensive than overnight letter services or long distance faxes.[1] All healthcare professionals can use this vital tool and can enter the information superhighway using e-mail. This article provides basic information needed to understand and begin using e-mail and discusses the potential clinical benefits e-mail can bring to the doctor-patient relationship and care.

Basic concepts of e-mail. The desire to communicate is the essence of networking. People have always wanted to correspond with each other in the fastest way possible, short of normal conversation. Electronic mail (e-mail) is the most prevalent application of this in computer networking. It allows people to write back and forth without having to spend much time worrying about how the message actually gets delivered. As technolo gy grows closer and closer to being a common part of daily life, the need to understand the many ways it can be utilized and how it works, at least to some level, is vital.

E-mail address. Electronic mail is hinged around the concept of an address; getting where you want to go can often be one of the more difficult aspects of using networks. If someone were to ask for a home address, they would probably expect a street, apartment, city, state, and zip code. That's all the information the post office needs to deliver mail in a reasonably speedy fashion. Likewise, computer addresses have a structure to them. The general form is: a person's e-mail address on a computer: user@somewhere.domain and a computer's name: somewhere.domain. The user portion is usually the person's account name on the system, though it doesn't have to be, somewhere.domain tells you the name of a system or location, and what kind of organization it is. Your e-mail address provides all of the information required to get a message to you from anywhere in the world. E-mail addresses usually contains @, an "at" – sign. To reach John David on the system south.America.org, one would address the mail as jd@south.america.org. Some other symbols are also used in e-mail addresses such as '!' and '%' for more Unix based old servers. Although most of the addresses correspond to actual people, many of them are other things: Mailing lists: which send a message to whole group of people. Mail server robots: which automatically send back a response. Gateways to other kinds of services: such as Usenet (or Netnews) which is a bulletin board system. Each item someone "posts" to Netnews is passed from system to system until the message eventually goes to all the Usenet hosts in the world. The amount of news and information that flows this way is enormous – close to a gigabyte per day and even growing. To make it easier the items are tagged with topics known as newsgroups.

Many medical web sites allow subscribing for medical news groups for selected topics of interests. Some good sites are www.medicalbox.com, www.medwebplus.com,www.netdoctors.co.uk/news/index, www.health-news.co.uk, www.eurealert.com, and so forth.

E-mail in the clinical setting. In the clinical setting, e-mail holds out great promise. At the doctor-to-doctor interface there is evidence that e-mail is being used regularly and to great effect. Many Internet discussion lists for example www.mailbase.ac.uk/lists/gp-uk, www.netdoctor.com have good numbers of over 1000 subscribers. Research undertaken by Singarella et al[2] concluded that health professionals reported 'a significant positive impact in the use of e-mail… relative to

other forms of communication (for example paper, phone)'. Internet conferences and computer e-mail-assisted groups are innovative means of offering health and mental health services. There are many articles that have reviewed the practice literature on the use of technology-based e-mail groups and presented the results of a survey of groups practitioners that focused on their experiences with e-mail discussion groups, their knowledge and comfort levels with these groups, and their perspectives on the benefits and problems of using technology in e-mail discussion groups.[1] It is clearly indicated that the benefits of using this technology included increased accessibility, convenience, and anonymity.[1,3]

E-mail can also help in the diagnostic fields of medicine. Exchange of pathology and radiology images for consultations and discussion can help narrow down the differential diagnosis to more specific and accurate ones, as this will make more expert opinions available within no time and at least cost.[4] The newly evolved JPEG compression process shrinks the image files from a megabyte to one-tenth that size and makes the process of transferring images by e-mail much easier. JPEG files are inexpensive to create, manipulate, and archive, even on slow, archaic computer networks.[4,5] We practically demonstrated this hypothesis in the Kingdom of Saudi Arabia (KSA) network system, and even with a slower computer such as Pentium I, it worked effectively. This means low-paid physicians in other countries could acquire or send images from any other country like the United States of American (USA) quickly, diagnose them properly, and relay their findings back to the USA via e-mail. Once the legal issues were resolved – and this is nothing more than forward-looking speculation – there would be no scientific or clinical reason why a well-trained pathologist in KSA could not stare deeply into a 14-inch computer screen and do just as good a job as a colleague in the USA. The time difference between the 2 countries might even be an advantage, allowing 24-hour coverage. JPEG images are now considered an acceptable format for exchanging pathology images.[5]

In the doctor-patient relationship the benefits of using e-mail can be equally be strong. Doctors and their patients can communicate with each other at a time that is convenient to each other. Even better, a record of the exchange can be kept, and with the widespread use of e-mail, it means that this is a workable technology.[4] The Internet also enables doctor-patient relationships to extend beyond the traditional geographic boundaries. A growing number of online professionals are happy to offer advice and information to anyone who contacts them over the Internet. Though these 'virtual providers' cannot, for example, undertake a physical examination, prescribe drugs or offer any follow-up care, a recent edition of the Ferguson Report (http://www.fergusonreport.com/articles/tfr07-01.htm) concluded that these doctors are acting as a valuable resource for patients. Many online patients say that they are more comfortable exchanging e-mail with an online doctor they have never met than discussing their medical concerns with their own physicians.[4] Indeed, a number of medical unions and associations have expressed concerns about the use of clinical e-mail in day-to-day practice and have produced best practice guidelines for managing doctor-patient exchanges over the Internet. E-mail also represents another avenue for enquiry, which in addition to phone (mobile and fixed line), fax and letters takes up time.[4]

Electronic mail has become an everyday part of more people's lives – and an important part of the way business is carried out. However, use of e-mail communication with patients creates a new set of potential dangers that doctors must consider; What defines the doctor-patient relationship? Should diagnoses be made and delivered via e-mail? How can privacy and confidentiality be maintained? Can marketing be carried out tastefully via e-mail? Many authors have addressed each of these issues from a medico-legal perspective and offered advice on professional and ethical ways to communicate with patients via e-mail.[5] In conclusion this article has thrown light on the benefits of the uses of e-mail in a clinical setting. It will explode and grow more once hospital staff and doctors are encouraged to have their own e-mail and web access and develop their own websites. They should place their e-mail contact addresses on their visiting cards and pads. This is not crystal ball gazing; all clinical units having their own websites will become the norm in the not too distant future. We should try to adopt these advances as fast as possible because they are going to be standards of practice very soon.

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Antiphospholipid antibodies associated with different presentations at a University Hospital

Sir,

Antiphospholipid antibody syndrome (APS) is characterized by antibodies directed against either phospholipid or plasma proteins bound to anionic phospholipids. Antiphospholipid antibody syndrome is considered to be present if one of the following clinical criteria and at least one of the following laboratory criteria are present.[1,2] Clinical criteria include one or more episodes of venous, arterial or small vessel thrombosis, recurrent abortions, and thrombocytopenia. Laboratory criteria include the presence of Immunoglobulin (Ig) G, IgM, or both, anticardiolipin antibody using an enzyme-linked immunosorbent assay (ELISA).[3] This disorder is referred to as the primary APS when it occurs alone; or it can also be found in association with systemic lupus erythematosus (SLE), some rheumatologicl diseases, certain infections and drugs. The purpose of this study was to assess the association of antiphospholipid antibodies (APA) with different clinical presentations.

King Abdulaziz University Hospital (KAUH) is a governmental teaching hospital providing health care to a multinational population of mixed socio-economic status. A total of 40 positive cardiolipin antibodies were collected in the immunology laboratory at KAUH over the 2 year period between January 2000 and December 2001. Cardiolipin antibodies, either IgG or IgM, were measured by Varelisa standardized ELISA for ß2 - glycoprotein 1 dependent anticardiolipin antibodies, lupus anticoagulant activity, or both. Clinical notes of patients with positive cardiolipin antibodies were reviewed retrospectively. Relevant data such as patients' age, sex, and nationality were included. Various clinical presentations such as SLE or lupus nephritis were included. The diagnosis of SLE was made according to The American Rheumatism Association.[2] Cases of venous and arterial thrombosis were accepted only if they were confirmed radiologically by Doppler ultrasound, venogram in cases of deep vein thrombosis (DVT) or by angiogram in cases of arterial thrombosis. Brain Computerized Tomogram (CT) or Magnetic Resonance Imaging (MRI) examinations were accepted as confirmatory evidence of infraction. Patients with known causes of recurrent abortion were excluded (bicornuate uterus, incompetent cervix, diabetes, toxoplasma). Statistical analysis was carried out using the Statistical Package for Social Science (SPSS 7.5). Group results were presented as median $\pm$ standard deviation (SD) or as a percentage. Chi-square was used appropriately. Results were considered as significant if the p value was less than 0.05.

A total of 40 patients had positive cardiolipin antibodies either IgG or IgM. Median age at presentation was 29.5 ($\pm$11.32 SD) years. Patients included in the study were 38 (95%) females and 2 (5%) males with F:M ratio of 19:1. Twenty-four (60%) was Saudi while 16 (40%) were non-Saudis. **Table 1** illustrates different clinical presentations of APS. Repeated abortion was the most common clinical presentations especially in Saudi females, followed by SLE with or without renal involvement. Lupus nephritis was seen in 12.5% of SLE patients in whom the diagnosis was confirmed by renal biopsy and 12.5% of patients had repeated DVT at different sites. Three patients with DVT had pulmonary embolism, which was fatal in one. One patient with cryoglobulemia with positive APA developed axillary and mesenteric artery thrombosis, which was diagnosed by angiogram. Another patient from the Asian subcontinent presented with vasculitic malar

Table 1 - Clinical presentations of APA.

Clinical presentations	N (%)
Deep vein thrombosis	5 (12.5)
Repeated abortion	15 (37.5)
SLE	10 (25)
Lupus nephritis	5 (12.5)
CVA	3 (7.5)
Cryoglobulemia	1 (2.5)
Leprosy	1 (2.5)
Total	**40 100**

APA - antiphospholipid antibodies; N - number; SLE - systemic lupus erythematosus; CVA - cardiovascular accident