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## E- HEALTH AND ITS IMPACT ON MEDICAL PRACTICE

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American College of Physicians  
A Position Paper  
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# **E-HEALTH AND ITS IMPACT ON MEDICAL PRACTICE**

A Position Paper of the  
American College of Physicians

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## Executive Summary

E-Health activities are becoming commonplace within today's society and have the potential to transform the health care delivery system in the United States. Diffusion of technology continues to increase within the health care community with little guidance for physicians, their patients, technology developers, and policymakers. This paper attempts to provide some insight for these stakeholders about the current landscape of e-Health activities by reviewing recent developments, extent of usage, challenges, and benefits; recommend policies and guidelines for incorporating e-Health into health care in ways that support improving quality, safety, efficiency, efficacy, and access; and offer a framework for ongoing discussions, analysis, and review of the impact of e-Health activities on medical practice.

Although there are several contextual definitions of e-Health, the following is one of the most recognized:

E-health is an emerging field in the intersection of medical informatics, clinical practice, public health, and business, referring to health services and information delivered or enhanced through the Internet and related technologies (1).

Interestingly, a follow-up study of published definitions on e-Health identified 51 unique definitions for the term and provided the following observations:

The 51 unique definitions that we retrieved showed a wide range of themes, but no clear consensus about the meaning of the term e-Health. We identified 2 universal themes (health and technology) and 6 less general (commerce, activities, stakeholders, outcomes, place, and perspectives) (2).

For the purpose of this paper, e-Health is defined as the following categories of activities that current, although limited, studies suggest are an alternative means to improving access and quality of care:

1. *Telemedicine activities*, defined in their initial phase of development as remote monitoring and now more generally known as e-Visits, include secure messaging between patients and their physicians to further preventive, acute, or chronic care or to effect or improve care coordination. E-Visits allow the secure exchange of clinical information, such as text, photographs, and data from biometric devices, and often involve multiple physicians, with one serving as a coordinating intermediary.
2. *Patient use of online health-information sources*, which may be self-selected or recommended and vetted by his or her physicians.
3. *Patient use of an interactive Patient Portal or Personal Health Record (PHR)*. These types of applications are relatively new to the care delivery system, and definitions of their functionality are constantly evolving as knowledge of and experience with these tools increase. Nonetheless, such applications typically provide access to patient-oriented views of the physician's EHR with selected views of health information retrieved from multiple sources. These consumer-oriented applications may also support the ability for patients to contact their physician's office or clinic via secure e-mail for administrative or non-medical reasons, and provide links to vetted health information sources.

The advent of e-Health activities brings benefits and challenges to both sides of the physician—patient relationship. For patients, secure e-mail can improve access by providing an additional method to access physicians; for physicians, the use of e-mail to manage non-urgent medical tasks can improve physician capacity by allowing physicians to spend more time with patients in face-to-face encounters. Challenges include the ease with which physicians can integrate e-Health activities into their existing workflows and the privacy concerns of patients who fear the misuse of information shared among providers. Engagement in e-Health activities by both physicians and patients is highly dependent on the availability and cost of information technology, as well as the individual's literacy level with the technology used.

Effective, large-scale deployment of e-Health activities must also consider several medico-legal, financial, and technical issues. These issues range from the basic identification of which e-Health activities are most beneficial to physicians and patients to the identification of standards for managing the secure, private, and accurate transmission of personal health information across a networked community.

The ACP is an active stakeholder in many national initiatives to promote the harmonization of technical standards and develop corresponding policies for managing a networked community. Representation of the physician community by both ACP members and staff in such efforts as the Certification Commission for Health Information Technology, Integrating the Healthcare Enterprise, and the e-Health Initiative ensures the development of technology solutions that are mindful of physician concerns.

Of particular interest to the College is the potential for e-Health activities, if adopted carefully within our current health care delivery system, to advance the patient-centered medical home model of care. Many of the goals of e-Health activities, such as improved access to care for all patients, efficient use of primary care physician resources, and the strengthening of the physician—patient relationship, are compatible, if not identical, to the goals of the patient-centered medical home.

The position statements in this paper reflect current thinking and understanding about e-Health activities and their impact on medical practice. These statements are based on and extend current ACP statements on the use of Healthcare Information Technology (HIT). The College urges all stakeholders to continue discussion and promotion of an e-Health agenda to improve the delivery of care across the nation. Therefore ACP recommends the following:

- GEN1.** ACP supports e-Health activities that enhance patient-physician collaborations. Potential benefits from e-Health include:
- a. Increasing patient access to high-quality health care through established relationships with a physician and his or her clinical team by making health care guidance and specific preventive, acute, and chronic care available without requiring a face-to-face visit;
  - b. Improving patient-physician communication by broadening communication beyond office visits and telephone care to include other effective and convenient strategies using technology;
  - c. Improving patient satisfaction by enhancing access to high-quality health care from his or her physicians and their health care team;
  - d. Improving the efficiency of health care for patients, physicians, and employers through more appropriate use of resources and lowering the cost for payers;
  - e. Facilitating patient participation in health care decision-making and self-management.;
  - f. Enabling virtual teams to contribute to enhanced patient-care processes.
- GEN2.** ACP recommends that the prioritization of any e-Health activities should consider the following:
- a. Evidence that the e-Health activity contributes to the effectiveness (“doing the right things”) and efficiency (“doing things right”) of physician workflows;
  - b. The readiness of health care subsystems, e.g., hospitals, physicians’ offices, and home health, to participate in those work flows;
  - c. The availability of the current infrastructure, i.e., the sophistication and usability of applications for patients and physicians, and the availability of reliable high-speed connectivity to support wide-spread adoption of the e-Health activity;
  - d. The existing and varied sets of federal and local laws and regulations that govern medical licensure and practice, and patient privacy and confidentiality, with a focus on the re-evaluation and harmonization of current HIPAA regulations and local privacy regulations.
- GEN3.** ACP recommends that e-Health activities address the needs of all patients without disenfranchising financially disadvantaged populations or those with low- literacy or low computer literacy. Specifically, e-Health activities need to consider the:
- a. Literacy level of all materials (including written, printed, and spoken words) provided to patients and/or families;
  - b. Affordability and availability of computer hardware and Internet access;
  - c. Ease of use, which includes accessible interface design and language.

- GEN4.** ACP supports the prioritization of e-Health activities through the American Health Information Community (AHIC) and its on-going support of the development of standards that address interoperability, functionality, security, data aggregation, privacy, content, and legal liability by multi-stakeholder groups, such as the Healthcare Information Technology Standards Panel, the Certification Commission for Health Information Technology, and the Health Information Security and Privacy Collaborative.
- GEN5.** ACP recommends the reform of payment policy to appropriately compensate physicians for their investment in and ongoing use of e-Health services, which can positively affect access, care coordination, patient satisfaction, value, and process and clinical outcomes.

***Telemedicine and e-Visits***

- TEL1.** ACP supports the expanded use of telemedicine for those patients with an established physician relationship, to achieve fully integrated, location-independent care processes supported by care teams that are not necessarily all present at a single location at the time of a patient encounter.
- TEL2.** ACP recommends the commitment of federal funds to promote research regarding the safety, effectiveness, and costs of telemedicine strategies, such as those currently sponsored by AHRQ.
- TEL3.** ACP recommends the use of secure Web messaging infrastructure rather than standard e-mail to ensure the highest levels of privacy and confidentiality that are currently available for electronic communications between physicians and their patients.
- TEL4.** ACP recommends that physicians who use Web messaging adopt guidelines as recommended by the American Medical Informatics Association (3); these guidelines provide a strategic process for e-mail-based communications that ensures privacy and confidentiality for patients and appropriate use of physicians' time.
- TEL5.** ACP supports reimbursement for appropriately structured online communications, whether synchronous or asynchronous and whether solely text-based, or supplemented with voice, video, or device feeds, as this form of communication may be a clinically appropriate comparable service alternative to a face-to-face encounter.

***Patient Use of Online Health care Care Information***

- WEB1.** ACP supports the development of a national process to certify for trustworthiness of content for Web sites that offer consumer health information.
- WEB2.** ACP encourages physicians to assist their patients who use the Internet in identifying reputable sources for health information.
- WEB3.** ACP recommends that public and private payers consider reimbursement for the time and effort required to review and manage the increasing frequency and volume of patient-provided health information generated through Internet queries.

***Patient Use of Patient Portals/PHRs and Access to Provider EHRs***

- PHR1.** ACP believes that patient portals or PHR applications provide the greatest benefit to patients when used collaboratively with physicians.
- PHR2.** ACP believes that there may be value in physician review and analysis of summarized information in a patient's connected or freestanding PHR, and that an emerging responsibility may be one of periodic review, analysis, and a resulting set of actions by the physician.
- PHR3.** ACP believes that payers should compensate physicians for the additional work of accepting, reviewing, validating, and analyzing data from a PHR, as well as the additional work of responding to this information, which may include deleting, modifying, or adding medications or other treatments.

## ***Introduction***

Information technology has had a dramatic impact on our daily lives in recent years by providing more convenient ways to accomplish daily tasks and diminishing the impact of long distances in both personal and business interactions. Today, we can order groceries online from the market down the road, pay bills electronically, conduct research for school projects, and send an e-mail to our Aunt Mabel living on the other side of the country from an Internet-connected computer.

Despite this rapid expansion of information technology into daily life and business, the healthcare industry has been slow to adopt and optimize the use of technology to improve quality and business workflows. A recent report from the Robert Wood Johnson Foundation estimates Electronic Medical Record (EMR) use in the ambulatory (physician) setting at 24% and in the inpatient (hospital) setting at 61%. According to a 2006 ACP member survey, adoption also varies by practice size; smaller practices (five or fewer physicians) have an adoption rate of 18%, while larger groups, (20 or more physicians) have an adoption rate of 58% (4). Those practices that have implemented EMRs may also include such services as online appointment self-scheduling and secure patient-physician messaging. This interaction between patients and their physicians through the use of electronic tools for health-related purposes has been broadly defined as “e-Health.”

This paper frames the discussion of e-Health activities as they relate to ACP policy. We begin with an overview of current e-Health activities in the United States, and describe the goals associated with these activities. Subsequent sections provide an analysis of the impact of e-Health activities along the following dimensions: benefits, challenges, medico-legal issues, financial implications, and technical issues. The paper continues with a description of ACP’s efforts to promote an e-Health agenda through participation in national HIT initiatives and ends with recognition of the potential for e-Health activities to support the Patient-Centered Medical Home.

## ***Background and Recent Developments***

Although examples of e-Health can be found as early as the 1960s with the use of telemetry to monitor astronauts in the NASA program, the growth of e-Health in the last decade is a direct result of the increasing pervasiveness of Internet use, advances in technology, and increasing patient involvement in medical decision making and self-management of care. Although no single, harmonized definition exists, e-Health has been defined by some as “health-related Internet applications delivering a range of content, connectivity, and clinical care.”(5) In the context of this paper, e-Health embraces the following activities:

e-Health Activity	Examples
Telemedicine and e-Visits	Direct interventions with the patient that include remote monitoring and video conference e-Consults, Communications between patient and clinicians, clinical teams, or a practice, such as text messaging, reminders, questions, e-Consults, prescription refills, and administrative functions, (e.g., scheduling and bill paying)
Access to physician EHR data	Patients interacting with their clinical data, through a Personal Health Record (PHR), a secure Web portal populated with information from the electronic medical record, or other utilities for the exporting and sharing of EHR data.
Health-seeking on the Internet	Patients seeking health information and opinions on health care issues online, participating in online communities, and interacting with care coordinators or disease management resources.

Recent developments in e-Health strategies in the United States (6, 7, 8) focus largely on the use of web messaging to improve patient access to clinicians and their services. These programs vary by administration (whether hosted by an insurance company or health care facility), setting (hospital vs. ambulatory practice), and levels of reimbursement (none vs. insurance/patient co-pay). Services range from access to lab results to online appointment scheduling. Most facilities use secure, structured Web messaging to facilitate patient requests; structured web messaging, unlike the standard e-mail exchanges provided by such internet service providers as Google or AOL, relies on template-driven communications to manage the information exchanged between the patient and provider. Security is layered on top of this system in order to ensure privacy and the confidentiality of personal health information.

The newest e-Health strategy that has captured the public's imagination and curiosity is the Personal Health Record (PHR). The well-publicized loss of paper-based health records for many of those affected by Hurricane Katrina highlighted the need for a more durable individual health recordkeeping strategy than office-based paper records, especially for those with chronic conditions. In light of the limited penetration of EHR technology in many physician offices and the lack of a clear near-term strategy to accelerate adoption, PHRs have emerged as a patient-empowered approach for ensuring that an individual's most important health data are not lost even if the paper (or electronic) record is damaged or destroyed.

Today, PHRs exist either as free-standing recordkeeping systems ("stand-alone PHRs") or as a component of an existing EHR system ("connected PHRs"). The information contained within the PHR may be prepopulated from existing information, e.g., a physician's EHR or insurance claims, or manually entered by the patient or consumer; the scope of which entities may populate a PHR depend largely on the PHR vendor and its relationships with the populating data sources. The business models to support PHRs are in the formative stage; some PHRs are offered free-of-charge, whereas others charge a subscription fee. (10)

Current PHR use remains low among patient-consumers and varies among PHR providers. Kaiser Permanente reported in 2005 that 6% of their Kaiser Permanente Northwest region were registered users of their Kaiser Permanente HealthConnect application; the system had been in place since 2002 (11). Cigna reported in a 2007 story on PHR usage that their adoption rate since the launch of its myCIGNA.com to its 7 million subscribers averages less than 9,000 per month (12). A study conducted by UNC-Chapel Hill (13) identified three skills needed by consumers using PHRs:

- Basic computer literacy, e.g., navigation skills, typing/entering data into a system, managing files;
- Basic understanding of medical/health concepts and terms; and
- Experience with personal recordkeeping, e.g., observation and collection of personal health habits and clinical information.

Attitudes that are likely important to increased consumer PHR use include a sense that creating, maintaining, and updating a PHR is worthwhile, and that the sharing of information through PHR applications carries no greater risk to the privacy, confidentiality, and security of their protected health information (PHI) than the technologies deployed in current electronic health information exchanges.

The Internet as a “networked community” has also encouraged patients to seek health-related information and support online. Some sites are managed as chat rooms, e.g., [www.insulinpumpers.org](http://www.insulinpumpers.org); others assist patients in improving basic health literacy, e.g., the Partnership for Clear Health Communication ([p4chc.fhdbeta.com/about-the-partnership.aspx](http://p4chc.fhdbeta.com/about-the-partnership.aspx)). Patients learn about such sites through online searches, recommendations from their community hospitals, support groups, outpatient educators, and personal physicians.

Another growing industry is the development of home monitoring devices (14). The advent of wireless network technology, the reduced cost of information technology tools to consumers, and increasing consumer willingness to self-manage their health have spurred development of devices for patient home monitoring that can interface with EHR systems. Behavior modification and management of chronic disease in the elderly are just a few benefits of remote monitoring systems (15). A study of the use of remote physiological monitoring (RPM) for heart failure patients reported an association with reduced costs of care, emergency room visits, and hospitalizations in addition to high levels of patient satisfaction and improved self-care management of a chronic condition (16). This e-Health activity offers patients the opportunity to stay healthier longer, by reducing the number of emergency room visits through improved health status monitoring and early detection of problems, and has the potential to improve their ability to live independently in their own homes instead of in an institutional facility.

### ***The Goals of e-Health***

From patient-physician e-mail exchanges to wireless devices that collect vital signs and forward them to remote EHRs, the proliferation of e-Health activities introduces a new model of patient-physician interaction, one that could supplement and could reasonably replace a portion of traditional face-to-face encounters, increase convenience and timely access to healthcare services for patients, and save costs for employers and payers. Stakeholders in the development and use of well-designed and appropriately implemented e-Health solutions include not only patients, their physicians, employers, and payers, but also clinical and administrative staff, public health entities, Quality Improvement Organizations (QIOs), and Healthcare Information Technology (HIT) standards development and integration organizations. The following table describes some of the general goals of these stakeholders for implementing e-Health activities:

<b>Goal</b>	<b>Means</b>
Increased access to health care	Remote consultation and remote monitoring for individuals who have limited ability to travel to see a care provider, live in rural areas, or are homebound.
Expanded capacity of clinicians	E-mail requests for information regarding follow-up care, prescription renewals, referrals, and non-urgent matters can provide efficiencies for a physician because their asynchronous nature can replace time spent on closing the communication loop and increase time available to access knowledge resources as needed to promote best practices.
Better outcomes for patients	E-mail exchanges can strengthen the patient-physician relationship and engage the patient more fully in his or her care.
Reduced costs of care	Remote monitoring can provide physicians with an “early detection system,” thereby reducing the incidence of higher and more costly health care interventions. Allows the clinical team to interact with patients, caregivers, and family members (when appropriate) to respond to questions or concerns without necessitating time off from work or need for transportation to office.
Personalized health care	Use of interactive Web applications tailored to specific conditions, online support groups, tracking tools, and automated alerts based on clinical conditions, medication, or treatment plans
Increased patient participation and self-management of health	PHRs, e-mail, and remote monitoring programs can all facilitate an individual’s participation in medical decision making and self-management.
Development of virtual care teams/virtual group practices	Teleconferencing primary care physicians and specialists, care coordinators, educators, caregivers and family members.
Increased work productivity, reduced lost work time, decreased return-to-work time, reduced	Increased access through all e-Health activities

### ***Benefits of e-Health Activities***

1. **ACP supports e-Health activities that enhance patient-physician collaborations. Potential benefits from e-Health include:**
  - a. **Increasing patient access to high-quality health care through established relationships with a physician and his or her clinical team by making health care guidance and specific preventive, acute, and chronic care available without requiring a face-to-face visit;**
  - b. **Improving patient-physician communication by broadening communication beyond office visits and telephone care to include other effective and convenient strategies using technology;**
  - c. **Improving patient satisfaction by enhancing access to high-quality health care with his or her physicians and their health care team;**
  - d. **Improving efficiency of health care for patients, physicians, and employers by allowing more appropriate use of resources and lowering the cost for payers;**
  - e. **Facilitating patient participation in health care decision making and self-management.**
  - f. **Enabling virtual teams to contribute to enhanced patient-care processes. (*GEN1*)**
2. **ACP recommends the commitment of federal funds to promote research regarding the safety, effectiveness, and costs of telemedicine strategies, such as those currently sponsored by AHRQ. (*TEL2*)**

### ***Physician Benefits***

Physicians engaged in e-Health activities accrue benefits largely by the increased and improved communication with their patients; in addition, the lowering of communication barriers through such interactions as Web messaging and home monitoring strengthens the patient-physician relationship. A stronger patient-physician relationship can result in patients who are more engaged in their self-care, e.g., medication adherence, diet/exercise, and monitoring routines. Improved patient compliance to treatment regimens and self-management could positively impact outcomes.

Although additional research on factors affecting the costs and benefits of e-Health activities is needed, there is the potential to expand capacity for primary care physicians through the use of e-Health strategies, particularly secure Web messaging through demand management of physicians' time and use of a team-based approach to respond to patient and family needs. A well-designed system can reduce the amount of physician time currently spent on nonurgent tasks, such as prescription refills or returning nonurgent patient calls, allowing the physician to spend more time with patients or accept new patients and implement team-based approaches to improving clinical care.

### ***Patient Benefits***

Consumer empowerment is on the rise in the United States, and the recognition of patients as consumers of health care services is reflected in today's health care industry. In a 2005 Harris Interactive Poll (17), 83% of those polled "strongly favor" the use of home monitoring devices; 81% favor the use of e-mail for doctors and patients to communicate directly. Today's patients enjoy the conveniences of an Internet-enabled world and increasingly expect the same in managing their health. In his 2002 report, Dr. Tom Ferguson suggested a taxonomy of e-Health activities to describe "what patients do online" (18). Among the activities listed, he included the following:

- Search for health-related information
- Exchange e-mail with family and friends regarding health issues
- Use online medical guidance systems
- E-mail with their local physicians
- Receive one-way e-mail messages from their clinicians
- Participate in online patient support groups

An early survey of the patients in a small private practice in Tucson, Arizona (19) revealed that 74.6% of those surveyed were willing to pay a small annual fee for one or more of the following services: 1) viewing parts of their record, 2) e-mailing with their physician, 3) requesting medication refills, 4) requesting appointments, and 5) inquiring about billing.

Another e-Health benefit to patients is improved access, particularly with the introduction of home monitoring devices to the consumer market. Telemedicine facilitates "the continual feedback loop between patients and clinicians" (20). This activity is especially effective in managing chronic disease in an elderly population, whose members may not have sufficient mobility or resources to regularly participate in traditional face-to-face office visits. For these individuals, "early intervention is a key component of any chronic disease management effort" (21), and remote monitoring or e-visits from the comfort and safety of their own homes can create new opportunities for beneficial care decisions and actions that would otherwise be missed. A study of the use of telemedicine technology on a population of "frail" elderly within the University Health Systems of East Carolina identified several benefits, including reductions in the number of hospital admissions, total hospital days, and ED admissions.

### **Challenges of e-Health Activities**

1. ACP recommends that the prioritization of any e-Health activities should consider the following:
  - a. Evidence that the e-Health activity contributes to the effectiveness (“doing the right things”) and efficiency (“doing things right”) of physician workflows;
  - b. The readiness of health care subsystems, e.g., hospitals, physicians’ offices and home health, to participate in those work flows;
  - c. The availability of the current infrastructure, i.e., the sophistication and usability of applications for patients and physicians, and the availability of reliable high-speed connectivity to support widespread adoption of the e-Health activity;
  - d. The existing and varied sets of federal and local laws and regulations that govern medical licensure and practice and patient privacy and confidentiality, with a focus on the re-evaluation and harmonization of current HIPAA regulations and local privacy regulations. (*GEN2*)
2. ACP recommends that e-Health activities address the needs of all patients without disenfranchising financially disadvantaged populations or those with low-literacy or low computer-literacy. Specifically, e-Health activities need to consider the:
  - a. Literacy level of all materials (including written, printed, and spoken words) provided to patients and families;
  - b. Affordability and availability of computer hardware and Internet access;
  - c. Ease of use, which includes accessible interface design and language. (*GEN3*)

### **Challenges for Physicians**

One of the most-discussed risks for physicians who wish to participate in e-Health activities is the effect of these activities on their practice workflows. Although physicians report using e-mail for personal use, adoption of this technology as part of practice workflow is low; physicians are reluctant to communicate via e-mail because of the potential lack of security in using this technology and its impact on patient confidentiality and privacy. In addition, physicians may have the perception of potentially large volumes of e-mail to which they must respond (22) and for which they are generally not currently compensated.

This reluctance to participate in e-Health activities is even more profound when considering patient interactions that involve Internet research supplied by patients during a face-to-face office visit. A study of primary care physicians in Toronto revealed the following challenges in managing such information (23): 1) perceived reactions of patients, 2) physician burden, and 3) physician interpretation and contextualization of information. Physicians in the survey reported that patients fell into three distinct categories: 1) those that were confused by the information they found on the Internet, 2) those that were distressed (“sicker”) by the information, and 3) those that were purely self-educating about their health.

Regardless of the patient’s reaction, physicians in the study felt that they were responsible for helping the patient understand the information they discovered. One physician stated: ...patients are coming informed with information from the Internet, and sometimes from good sources and sometimes from more anecdotal personal Web pages where the information may not be entirely correct. Then, you have to do lots of damage control and try not to disinform but try to undo and re-educate.

The potential difficulty of managing Internet information within the structure of an office visit, concerns about the quality and accuracy of the Web site information, and the additional time sometimes needed to sort through and clarify for patients the information they provided were all cited as additional demands on their practice workflows. Lastly, physicians also mentioned the additional physician computer literacy that was required—a skill that they often felt they did not have the time to develop.

### ***Challenges to Patients***

Conflicting with patients' desire for e-Health activities, such as Web messaging and PHRs, is their need for privacy. For consumers, there are too many unknown variables about who will own, store, and share their personal health information. Laws protecting privacy are fragmented; the HIPAA Privacy Rule is considered the least common denominator for privacy regulation in that it requires explicit patient consent only for use and disclosure of data beyond the purpose of treatment, payment, or operational activities (24). State laws vary in the degree to which personal health information is protected, and these rules supersede the federal law if they are more stringent in that protection. Patients fear that misuse and inappropriate disclosure of their personal health information could lead to adverse effects, particularly if such information is available to potential employers and health insurance plans.(25)

Compounding these privacy and confidentiality needs, patients may face additional fundamental technical and learning challenges. Despite the ubiquitous nature of the Internet, not all people have Internet access. Possibly more critical are challenges for patients with limited literacy and computer skills.

### ***Medico-legal Issues***

1. **ACP recommends the use of secure Web messaging infrastructure rather than standard e-mail to ensure the highest levels of privacy and confidentiality that are currently available for electronic communications between physicians and their patients. (TEL3)**
2. **ACP recommends that physicians who use Web messaging adopt guidelines as recommended by the American Medical Informatics Association (26); these guidelines provide a strategic process for e-mail-based communications that ensures privacy and confidentiality for patients and appropriate use of physicians' time. (TEL4)**
3. **ACP believes that there may be value in physician review and analysis of summarized information in a patient's connected or free-standing PHR, and that an emerging responsibility may be one of periodic review, analysis, and a resulting set of actions by the physician. (PHR2)**

The medicolegal issues surrounding e-Health activities are similar to those found in any networked, interoperable health care environment. Security and protection of privacy and confidentiality for e-mail exchanges between physicians and their patients have been addressed by the College in their recommendation of a secure Web messaging system:

Physicians must assure that electronic communication with patients is performed on a secure Web site and that records of communication are protected in accord with the requirements of HIPAA.(27)

Additional concerns include the liability of physicians for exchanged available information, protection of personal health information, and the patient's responsibility and ability to provide appropriate, relevant information. Despite the growth in PHR offerings, either standalone or connected to an EHR, these concerns have inhibited uptake by both physicians and patients. As health care becomes more digitized and access to these electronic forms of clinical information become more widespread, the physician's professional responsibility must be more clearly defined. Previous College statements on the use of PHR information by physicians included the following recommendations (28):

- The existence of a PHR should not obligate a treating physician to review, correct, edit, contribute to, or manage in any way such a PHR.
- Physicians should be responsible for reviewing data selectively imported by the physician from a PHR electronically to an EHR or printed/incorporated into a paper-based medical record.
- Physicians should be responsible for the quality, accuracy and presentation of data exported to and incorporated in a tethered Personal Health Record from the physician's electronic medical record."

The ability to define the right amount of information to share and how to manage the situations where a patient's preferences for sharing (or not) may impact the clinician's decision-making ability seem to be at the root of these concerns. Physicians fear the potential for claims of negligence should they begin to incorporate patient-generated PHR data in clinical decision making, given the privacy rights of patients to withhold data (often described as "mask" or "seal"); patients fear the social and economic ramifications of inappropriate disclosure and use of their health information and are sometimes loathe to document, let alone share sensitive health information. In a 2007 NCVHS Subcommittee on Privacy and Confidentiality hearing, the College provided the following testimony (29) (see Appendix C for the entire statement):

Privacy issues are of paramount importance and should reflect preferences of individuals to the extent that such preferences do not negatively impact clinical care. The College supports specific privacy protections for mental health therapy notes. However, we believe that certain other data types, such as medications and allergies, should be represented because they are essential elements of the medical record and critical for effective clinical evaluation and safe therapeutic practices. The absence of such information—or even delayed access—could result in otherwise avoidable patient harm. Further, the source of all health information represented should be identifiable, as well as an audit history of any changes made to this information. Where state regulation or other policies dictate the protection of certain elements of the medical record so that they are not visible to an otherwise authenticated and authorized user, the record should specifically indicate the restricted nature of the missing data and provide a clear reason for the restriction (e.g., state law, mental health condition, and patient choice). Even with these indicators in place, we remain concerned about physicians' ability to fully trust a medical record where a patient, who generally is not a clinician, has restricted access to clinical information. If there are in effect two different presentations of the medical record—the patient-restricted version and the original source (legal medical record)—what are the treatment and accountability implications for physicians? Which presentation will payers turn to for adjudication decisions, and determination of coverage and insurability? And if insurance companies won't trust the patient-edited data compilations for payment and coverage decisions—should physicians trust them for decisions about care?

### ***Financial Implications***

1. ACP recommends the reform of payment policy to appropriately compensate physicians for their investment in and ongoing use of e-Health services, which can positively affect access, care coordination, patient satisfaction, value, and process and clinical outcomes. (*GEN5*)
2. ACP supports reimbursement for appropriately structured online communications, whether synchronous or asynchronous and whether solely text-based or supplemented with voice, video, or device feeds, as this form of communication may be a clinically appropriate comparable service alternative to a face-to-face encounter. (*TEL5*)
3. ACP recommends that public and private payers consider reimbursement for the time and effort required to review and manage the increasing frequency and volume of patient-provided health information generated through Internet queries. (*WEB3*)
4. ACP believes that payers should compensate physicians for the additional work of accepting, reviewing, validating, and analyzing data from a PHR, as well as the additional work of responding to this information, which may include deleting, modifying, or adding medications or other treatments. (*PHR3*)

For physicians, the financial implications of incorporating e-Health offerings are considerable. The economics of practicing medicine are based on an underlying orientation of “fee-for-service” transactions. Physicians are paid almost exclusively for the volume of work they accomplish during a face-to-face encounter with their patients, and except in a few cases where payers are paying for e-mail consultations, physicians are not currently reimbursed for e-Health interactions or even telephone consultations. If e-Health continues to grow without consideration of its potential impact, physicians could be inundated with patient e-mail and patient-provided information, and the time required to manage these activities could reduce practice productivity.

Another financial concern that will affect the use of e-Health is the cost of purchasing systems that support e-Health activities. This can be a burden for both the physician and the patient. For physicians, the cost of purchasing an EHR that supports PHRs, Web messaging and other e-Health activities is a considerable investment, with the average system cost of \$44,000 per practitioner. Ongoing maintenance and support fees, estimated to average \$8,500 per year per practitioner, are yet another cost to physicians to support e-Health activities (30). Although home computers and Internet access are becoming the norm across the United States, those without the means to connect over the Internet are left out. This access issue is common to other areas as well, e.g., public school system use of websites Web sites for school assignments and communications. A health care delivery system that leverages Internet connectivity should consider the impact on those facing challenges with access to technology.

### ***Technical Implications***

- 1. ACP supports the prioritization of e-Health activities through the American Health Information Community (AHIC) and its ongoing support of the development of standards that address interoperability, functionality, security, data aggregation, privacy, content, and legal liability by multistakeholder groups, such as the Healthcare Information Technology Standards Panel, the Certification Commission for Health Information Technology, and the Health Information Security and Privacy Collaborative. (GEN4)**
- 2. ACP supports the development of a national process to certify for trustworthiness of content for websites Web sites that offer consumer health information. (WEB1)**
- 3. ACP encourages physicians to assist their patients who use the Internet in identifying reputable sources for health information. (WEB2)**
- 4. ACP believes that patient portals or PHR applications provide the greatest benefit to patients when used collaboratively with physicians. (PHR1)**

There are several technical challenges associated with e-Health activities: the creation of standards for valid content and re-usable transactions; the development of infrastructure and available bandwidth in remote areas; the integration with e-Health activities to existing and future EHRs and larger HIE (health information exchanges). The College has developed a set of guiding principles regarding the exchange of clinical information that emphasize the need for harmonized standards and policies to achieve safe, secure, confidential, and effective exchanges (31). Of these, the development of standards to manage e-Health activities is the most critical; although there are many federally funded initiatives working with standards organizations to identify a set of best practices for interoperable health care systems, the progress is incremental. There is no harmonized information model that incorporates messages, transactions, and content that adequately fulfill the privacy needs of patients; without such a model, it is difficult to ensure privacy across exchanges. However, once the standards are defined and accepted by a broad base of stakeholders, the development of infrastructure and interoperable networks that facilitate e-Health becomes easier.

The federal government currently supports efforts to increase the adoption of use of HIT among providers through the work of the Office of the National Coordinator (ONC) within the Department of Health and Human Services. Initial contracts were awarded to the following groups to address the following needs:

- 1. CCHIT (Certification Commission for Health Information Technology):** Baseline functionality for EHRs used in the ambulatory care setting,
- 2. HISPC (Health Information Security and Privacy Collaboration):** Privacy and security concerns related to the exchange of health information,
- 3. HITSP (Healthcare Information Technology Standards Panel):** Harmonization of multiple HIT standards into a set of “best practice” implementation guides and specifications
- 4. NHIN (Nation-wide Health Information Network):** Prototype development of a nation-wide health information network.

To assist the ONC in setting HIT priorities, the American Health Information Community (AHIC) was created as a multistakeholder forum for identifying areas of care that would benefit from increased use of HIT.

Treating patients who take advantage of the Internet to learn more about their health status reflects the ability of technology to impact medical practice. Tech-savvy patients, for example, often lack the knowledge to assess the quality of the information retrieved on the Internet; the burden falls to the physician to explain and vet this information. Although there are existing programs to accredit websites that provide health information, such as HONCode and URAC, a national certification program would improve both physicians' and their patients' ability to identify trustworthy sites.

A similar situation exists for those patients who wish to maintain a PHR; many applications are available at little or no cost to patients through their insurance plan or from a standalone vendor. Microsoft's HealthVault initiative (32) is one example of the growth in this market. Not all information contained in a PHR may be relevant to a specific patient encounter; guidance from a physician on what types of information to include is important to facilitate effective and efficient use of these new tools.

### ***ACP's Efforts to Promote e-Health***

As critical nodes in any community-based electronic health information exchange, physicians must participate as an active stakeholder in HIT activities. The College promotes e-Health activities to develop the infrastructure components and standards required to support e-Health, as well as in promoting wider adoption of the Electronic Health Record through participation in the following national initiatives:

1. CCHIT (Certification Commission for Healthcare Information Technology): College members participate on both the CCHIT board and ambulatory EHR workgroup
2. HITSP (Healthcare Information Technology Standards Panel): College members and staff participate on the HITSP Board and technical committees.
3. AHIC (American Health Information Community): College members participate in the Quality Workgroup; executive leadership collaborates with the AAFP AHIC member. The College has also provided feedback to AHRQ regarding the development of AHIC 2.0.
4. IHE (Integrating the Healthcare Enterprise): The College is a domain sponsor for the Patient Care Coordination (PCC) domain, which focuses on integration issues across care settings. The clinical co-chair of the PCC domain is a College member. Staff also participates in the Quality and Infrastructure domains within IHE.
5. HL7 (Health Level Seven): The College is an organization member of HL7 and College staff participates in several of the HL7 domains.
6. PEHRC (Physicians Electronic Health Record Coalition): The College is a regular participant in the PEHRC which serves as an information-sharing venue for over two dozen medical professional associations. A College member has served as the group's co-chair.

The College has also developed an EHR Value Purchasing Program (VPP) for its members. By building upon the existing CCHIT-certification, the VPP provides additional information on certified ambulatory EHR vendors and provides a toolkit for EHR selection, purchase and implementation.

### ***E-Health and the Patient-Centered Medical Home***

1. **ACP supports the expanded use of telemedicine for those patients with an established physician relationship, to achieve fully integrated, location-independent care processes supported by care teams that are not necessarily all present at a single location at the time of a patient encounter. (TEL1)**
2. **ACP recommends that the prioritization of any e-Health activities should consider the following:**
  - a. **Evidence that the e-Health activity contributes to the effectiveness (“doing the right things”) and efficiency (“doing things right”) of physician workflows;**
  - b. **The readiness of health care sub-systems, e.g., hospitals, physicians’ offices, and home health, to participate in those workflows (GEN2a, 2b)**
3. **ACP recommends that e-Health activities address the needs of all patients without disenfranchising disadvantaged populations or those with low literacy or low computer literacy. Specifically, e-Health activities need to consider the:**
  - a. **Literacy level of all materials (including written, printed, and spoken words) provided to patients and families;**
  - b. **Affordability and availability of computer hardware and Internet access. (GEN3a, 3b)**
4. **ACP recommends the reform of payment policy to appropriately compensate physicians for their investment in and ongoing use of e-Health services, which can positively affect access, care coordination, patient satisfaction, value, and process and clinical outcomes. (GEN5)**

The Patient-Centered Medical Home (PCMH) and e-Health activities share many of the same goals, e.g., reducing costs of care, improving access, and improving the care of those with chronic medical conditions. For example, telemedicine activities which include IT-enabled synchronous communication between patient and physician incorporating video, audio, monitoring data and other real-time health information transmission modalities can improve the quality and continuity of care, particularly for patients who need close management or who have difficulty accessing health care services. More importantly, both the PCMH and e-Health activities place the patient-consumer squarely in the middle of the care community and address the need for a coordinated team of providers and the use of technology to resolve issues of access and information sharing.

The ACP is a primary proponent of the PCMH, working collaboratively with the AAFP, AAP, and AOA to develop a set of joint principles for the PCMH that emphasize the use of information systems to facilitate the coordination of care and collection of clinical information for managing the quality of care. In addition, a multistakeholder collaboration, the Patient-Centered Primary Care Collaborative (PCPCC – [www.pcpcc.net](http://www.pcpcc.net)) brings together payers, providers, consumers, and employers and other interested organizations to promote the development, testing and benefits of the PCMH. Lastly, the College has begun to work with these stakeholders to propose demonstrations projects to evaluate the PCMH model.

## Conclusion

It is clear that ongoing discussion among interested stakeholders must occur to advance a health care delivery system in the United States that leverages e-Health activities. The recommendations of the College highlight the impact of e-Health activities on medical practice. The challenges for promoting e-Health lie not only in the adoption of harmonized technical standards for the exchange of electronic health information, but also in a more fundamental concern of economic support for HIT. The impact on medical practice affects both sides of the physician-patient relationship in terms of access to affordable, usable technology solutions. The College recommends ongoing investment in demonstration projects to assess the benefits of e-Health activities, particularly within the context of the Patient-Centered Medical Home (PCMH) model. The College looks forward to continued discussions with all stakeholders as business and technical models to support e-Health activities begin to emerge.

## Appendix A: Current Legislative Focus

As of this writing, several bills have been introduced that address e-Health activities, with emphasis on incentives to adopt technology, develop standards for interoperability and privacy, and encourage the creation of telemedicine programs. Many of these bills are currently in committee; their passage into law before the 2008 presidential election is tenuous, at best. The following table is a representative sample of legislation related to e-Health:

Bill Number	What the Bill Proposes for e-Health:	Status
S. 321	Expansion of the use of telemedicine for Medicare populations in rural and underserved areas throughout the country.	Referred to Finance Committee
S. 1065	Expansion of the use of telemedicine programs within the DoD and VHA.	Referred to Finance Committee
S. 1693	Enhance the adoption of a nationwide interoperable health information technology system and to improve the quality and reduce the costs of health care in the United States.	Referred to Health, Education Labor and Pensions (HELP) Committee
S. 1455	Provide for the establishment of a health information technology and privacy system.	Referred to HELP Committee
HR. 477	Proposed grant program to fund telehealth stroke treatment programs.	Passed House; in Senate HELP Committee
HR 727	Grant money approved to improve trauma care through the use of telehealth.	Law
HR. 1368	Establish a program to provide financial incentives to encourage the adoption and use of interactive personal health records	Referred to Ways and Means Committee
HR. 1467	Authorize the National Science Foundation to award grants to institutions of higher education to develop and offer education and training programs	Passed House, in Senate
HR. 1601	Facilitate the delivery of telehealth services.	Referred to Energy and Commerce Committee; Ways and Means Committee
HR. 2406	Authorize the National Institute of Standards and Technology to increase its efforts in support of the integration of the health care information enterprise in the United States	Referred to Science and Technology Committee

## Appendix B: Glossary

Term	Definition
<b>Asynchronous communication</b>	Communication that does not require the recipient to receive or reply to the message. Examples of asynchronous communication are regular mail, e-mail, and voicemail. See <i>synchronous communication</i> .
<b>CCD</b>	Continuity of Care Document. A standard that harmonizes the ASTM CCR (Continuity of Care Record) and HL7's CDA (Clinical Document Architecture) specifications.
<b>CCHIT</b>	Certification Commission for Healthcare Information Technology. Began as a contracted activity with ONC. The CCHIT is responsible for developing test criteria for ambulatory and inpatient EHR systems; it also oversees the testing program for vendor certification.
<b>EHR, EMR</b>	Electronic Health Record and Electronic Medical Record. These terms are often interchanged; in the last few years the term EHR has become the preferred term. The commonly accepted distinction between EMR and EHR is that the EMR is an application-oriented environment; the "record" is similar to the legal paper record of a care delivery entity (clinic, hospital, imaging center). An EHR, on the other hand, is often viewed as a set of health information (often summarized and generated dynamically) about a person that is a product of regional or community exchanges. The federal government is currently in the process of explicitly defining these two terms.
<b>HITSP</b>	Healthcare Information Technology Standards Panel. A contracted activity between ANSI/HIMSS and the ONC. The HITSP is charged with developing a set of technical implementation guides for vendors to use exchanging health information.
<b>HONCode</b>	A set of principles developed by the nongovernment organization Health On the Net (HON). The HONcode accreditation ensures that information on a medical or health Internet Web site is trustworthy and of high quality.
<b>IHE</b>	Integrating the Healthcare Enterprise. An international collaboration of vendors and clinicians working to identify and resolve interoperability issues that result from multiple interpretations of HIT technical standards. The IHE allows vendors to come to an agreement on the best implementation of a given interoperability problem.
<b>MedlinePlus</b>	The National Library of Medicine's (NLM) Web site for consumer health information. The NLM is part of the National Institutes of Health (NIH).

<b>ONC</b>	The Office of the National Coordinator. The area under the Department of Health and Human Services that oversees the development of an interoperable health record system as urged by President Bush.
<b>PHR</b>	Personal Health Record. A system which allows a patient to store his or her personal health information. PHRs may be a component of a larger enterprise application, e.g., hospital, insurance, or physician practice EHR system.
<b>Synchronous communication</b>	Communication that requires the receiver to be present to receive and reply to the message. Examples of synchronous communication are face-to-face conversations, instant messaging, and phone calls.
<b>URAC</b>	Originally the acronym for the Utilization Review Accreditation Commission, this This not-for-profit quality improvement organization accredits medical management organizations, medical Web sites, health plans and hospitals.

## Appendix C: ACP Testimony to NCVHS

**Statement for the Record  
Hearing of the Department of Health and Human Services  
National Committee on Vital and Health Statistics  
Subcommittee on Privacy and Confidentiality  
Testimony of the American College of Physicians  
April 17, 2007**

Thank you, Mr. Rothstein for the opportunity to offer testimony on behalf of the American College of Physicians.

I am Dr. Michael Zaroukian—currently Medical Director of the Michigan State University (MSU) Clinical Center Internal Medicine Clinic and the University’s Chief Medical Information Officer. As a member of the ACP’s Medical Informatics Subcommittee, it is my pleasure to speak to the issues before the subcommittee and offer the viewpoint of the American College of Physicians. I apologize for not being able to attend in person and thank you for arranging remote access to the hearing.

The College is the largest specialty society in the U.S., representing 120,000 internal medicine physicians and medical students. ACP is extremely interested in the confidentiality and privacy issues pertaining to personal health information and electronic health records. Control of content and access by individuals to clinical information are critical issues that will greatly influence acceptance and use of the NHIN. The impact of policies adopted and implemented to address these complex concerns could be substantial with respect to the accuracy, reliability, and usability of information exchanged electronically.

First, let me state unequivocally, that ACP strongly believes in the goal of widespread adoption and use of health information technology to improve quality of care. The College supports the concept of safe and secure electronic health information exchange and advocates that clinical enterprises, entities, and physicians wishing to share health information develop principles, procedures, and policies appropriate for the electronic exchange of information to specifically address the issues before the subcommittee. The College believes that model language addressing these issues should be developed to inform state legislation. Creating a level of standardization would reduce the variability among state-specific policies which even today add further complexity to electronic exchange of health information across geographic boundaries.

The specific questions raised in your June 2006 report to Secretary Leavitt, “Privacy and Confidentiality in the Nationwide Health Information Network,” relate to the practical implications of policy decisions regarding an individual’s right to control access—or access to specific portions—of his or her record through the NHIN and the degree of such control. Our presumption is that the NHIN will follow the federated model—that patient data will be persisted (stored) only within the clinical system in which they are generated and that the NHIN will be comprised of registries of metadata that point to these original data sources. We will not address the other elements, such as opt-in or opt-out, because the premise of recommendations #6 and #7 is that the individual has elected to make his or her personal health information accessible via the NHIN.

However, it is important to note that deliberations and decisions on other issues could directly affect our recommendations.

Individuals should be able to access their health and medical data conveniently, reliably, and affordably. Further, individuals should be able to review which entities and providers have accessed their personal health information. One model suggested is that individuals should control access by choosing either to have their entire record accessible through the NHIN or not, rather than by selecting specific elements of the record for viewing. We acknowledge that this “all-in/all-out” system is unrealistic given existing state laws and policies regarding the need to accommodate individual wishes (e.g., Washington state), as well as regional efforts underway that already provide a significant level of choice—whether individuals have availed themselves of these options or not. Therefore, in recognizing the incredible complexity required to manage the granular access control to patient data in existing HIE efforts, the College recommends that the NHIN consider role-based access models. Such models should ensure that clinical information is provided appropriately, based on defined privacy algorithms that consider title of the requestor, role of the requestor, and the source and type of information requested. This system would include a “break-the-glass” option for true emergencies for full access to an individual’s record while maintaining a detailed audit trail of the individuals who break the glass and their declared rationale for doing so.

Privacy issues are of paramount importance and should reflect preferences of individuals to the extent that such preferences do not negatively impact clinical care. The College supports specific privacy protections for mental health therapy notes. However, we believe that certain other data types, such as medications and allergies, should be represented because they are essential elements of the medical record and critical for effective clinical evaluation and safe therapeutic practices. The absence of such information—or even delayed access—could result in otherwise avoidable patient harm. Further, the source of all health information represented should be identifiable, as well as an audit history of any changes made to this information. Where state regulation or other policies dictate the protection of certain elements of the medical record so that they are not visible to an otherwise authenticated and authorized user, the record should specifically indicate the restricted nature of the missing data and provide a clear reason for the restriction (e.g., state law, mental health condition, and patient choice). Even with these indicators in place, we remain concerned about physicians’ ability to fully trust a medical record where a patient, who generally is not a clinician, has restricted access to clinical information. If there are in effect two different presentations of the medical record—the patient-restricted version and the original source (legal medical record)—what are the treatment and accountability implications for physicians? Which presentation will payers turn to for adjudication decisions, and determination of coverage and insurability? And if insurance companies won’t trust the patient-edited data compilations for payment and coverage decisions—should physicians trust them for decisions about care?

A major concern is that at this time there are no clear, comprehensive standards to support recommended privacy requirements. A standard structure for encoding all privacy requirements and patient preferences does not exist. One prerequisite for the capacity to manage these elements of the NHIN is a standard privacy reference model with controlled terminologies that specify the exact meaning of privacy terms. Such models need to be developed and tested prior to implementation to insure that adequate protections – as well as appropriate access – are facilitated.

The College is advocating for these features of the NHIN on the basis that providing safe, effective care is dependent on the integrity and context-rich value of the legal medical record. We know that medical care in the United States can be improved. The current system of information sharing is ineffective at best—and dangerous at worst. The argument described in the June 2006 letter to Secretary Leavitt that the NHIN should reproduce the inadequacies of a paper-based medical record because the paper chart indirectly provides a perception of security is short-sighted and, if adopted, will undermine the potential utility of the NHIN to enhance the quality and safety of health care. Further, the idea also expressed in the June 2006 report that patients will accept bad outcomes for the right to withhold information may be true, but any physician acceptance of such a right will probably only last as long as the first malpractice suit filed on the basis of treatment rendered by a well-intentioned physician using incomplete information.

## Summary

The ability of health information technology and electronic information exchange to enhance the quality of care and efficiency with which care is provided will be highly dependent on trust. Individuals and their health care providers will need to trust that the information provided is complete, accurate, and the best available representation of clinical data for the purpose identified. Anything short of these objectives will undermine the efforts to use the NHIN to achieve the quality improvements and cost savings many have projected. To facilitate this trust, we first need to address the significant gaps in the availability of standards, controlled terminology, and the reference model to support the desired privacy and confidentiality features of the NHIN. Development and testing of these foundational elements is essential prior to implementation. It is also important that we remain aware of emerging implications of improved access to clinical information. This improved access may create new expectations of and responsibilities for physicians and entities to be aware of and act upon clinical information generated across the NHIN. Therefore, the medical, legal, financial, and workflow implications—as well as the reimbursement requirements of such expectations and responsibilities—warrant significant discussion and exploration. These are difficult issues and we need to resist the temptation to reproduce the inadequacies of our existing paper-based systems for the sake of expediency or to avoid complexities that can be overcome by good debate and sound policies.

## Conclusion

The College commends NCVHS and this subcommittee for taking on these very difficult issues and for holding this important hearing. We look forward to commenting on other topics as the subcommittee sees fit.

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