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Rights and Responsibilities of Electronic Health Record Users

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Key Points

1. Despite potential benefits of electronic health records, clinicians have experienced several challenges in their adoption and use.
2. To encourage debate on strategies to overcome these challenges, we developed a set of 10 clinician-oriented "professional rights" that represent important EHR features, functions, and user privileges that clinicians need in order to provide safe, high quality care.
3. Each "right" is accompanied by a corresponding clinician responsibility, without which the ultimate goal of improving health care quality might not be achieved.
4. While not the main focus of this paper, we acknowledge and provide examples of rights and responsibilities of other stakeholders such as patients, payers, administrators and policy-makers that also need to be considered.

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Introduction

Over the last 10 years the governments of Australia[1], Belgium[2], Canada[3], Denmark[4], United Kingdom[5], and most recently the United States[6], have all made long-term, multi-billion dollar investments in health information technologies (HIT) including electronic health records (EHRs). Although the definition of an EHR might vary across countries, most EHRs include systems that are widely accessible across a healthcare network and provide a computer-based user interface that replaces the paper chart. The primary goal of these HIT initiatives is to transform the collection, display, transmission, and storage of patient data with the aim of improving health, while a secondary goal is to use these data to improve the healthcare delivery system. The rationale for these investments stems from numerous quality and safety concerns related to paper-based systems, which include legibility problems, access limited to a single provider at a single location, difficulties with aggregating information from multiple records, and problems maintaining record confidentiality and accurate backup copies[7]. Comprehensive, well-implemented EHRs with advanced clinical decision support interventions have potential to reduce medication errors[8] and increase the quality, efficiency, and reliability of information transfer[9,10].

Despite progress[11], EHR adoption has resulted in larger than expected challenges in day-to-day clinical processes[12]. For example, processing electronic information[13 14,15] can reduce clinician productivity and increase workload, while other disruptions can result in safety concerns due to loss of attention and situation awareness[16]. Thus, clinicians may perceive that the costs of EHRs (eg, time, monetary or required changes in workflow) outweigh direct benefits to themselves, whereas patients and payers appear to benefit more readily[17]. Clinicians require assurances that EHRs will deliver the features and functions they need and that the regulatory environment will support them.

Based on recent literature and our experiences in clinical informatics-focused health services research, we identified ten emergent topics that, if addressed, could overcome some of these challenges. Topics were grounded in our recently developed 8-dimension socio-technical model of safe and effective EHR use[18]. These topics were circulated among several colleagues, including practicing clinicians, informaticists, and computer scientists, who offered their feedback. This was followed by presentations at four international scientific meetings with multidisciplinary audiences who gave additional feedback. All this input was taken into consideration and used to iteratively refine the rights and responsibilities with a goal of making them as universally acceptable and applicable as possible.

Contextualizing Emergent Topics as Clinician "Rights" and Responsibilities

Some degree of workflow disruption is inevitable with EHR implementation, which requires modification of long-standing work processes derived from paper-based systems. In addition, EHR use often results in loss of clinician autonomy due to increased external oversight (ie, clinician profiling) and control (ie, orderable medications limited to formulary) facilitated by its features and functions. Concomitantly, practicing clinicians are often at a relative disadvantage when negotiating EHR-related issues with other stakeholders (eg, healthcare administrators, HIT vendors, governments, insurance companies or other

payers, policy makers). To preserve a balance and to encourage debate between clinicians and other stakeholders involved, we discuss these topics as what front-line practicing clinicians would want as "professional rights", i.e. not merely desirable but "must-have" EHR features, functions, and user privileges that are important to provide the highest quality, safest, and most cost-effective care. Nevertheless, each "right" is accompanied by a corresponding clinician responsibility, without which the ultimate goal of improving health care quality might not be achieved[19]. We acknowledge that contextualizing these topics as clinician rights has significant implications for other stakeholders, but these issues must be addressed to move the field forward. Although these "rights" are clearly not of the same magnitude or universal importance as the World Health Organization's human rights-based approach to health[20] or the Hippocratic Oath[21], they can reduce the potential impact of unintended adverse consequences on patient care and clinicians' livelihoods. These "rights" could be a foundation upon which HIT designers, developers, implementers, policy makers, and most importantly, users can co-create a new age of computer-assisted healthcare[22].

Ten Professional "Rights" and Responsibilities

- **Universal EHR access.** Extended EHR outages pose a significant risk to patient care. Therefore, clinicians have the right to have an EHR they can access via a secure, organizationally approved, network-attached device 24 hours per day, 7 days per week, 365 days per year. Although no device or system can be 100% reliable, EHR vendors, institutions, and physicians must work together to design, develop, implement, and use fail-safe equipment and downtime processes to ensure that patient care continues in the event of an outage.

  Clinicians have the responsibility to protect their passwords, log off the system when done, and access only records of patients under their care or within their administrative purview.

- **No "missing" data.** Clinicians have the right to see all clinical data that were captured in the normal course of care for each of their patients[23]. Amid concerns about patient privacy, some argue that patients or clinicians should be able to "hide" specific data (eg, records of psychiatric or substance abuse treatment)[24] or even to "opt-out" of having their data available to other clinicians[25,26]. This withheld data increases clinician liability unnecessarily.

  Clinicians have the responsibility to ensure that having all patient data on their desktops does not replace the time-honored tradition of observing, listening to, and examining patients[27].

- **Succinct patient summaries.** Current EHRs contain a wealth of clinical data. As more community-wide health information exchanges come online, the amount of data available for review will grow exponentially, increasing the likelihood that relevant information will be overlooked. Clinicians thus have the right to EHRs that provide succinct summaries of their patients' medical problems, medications, laboratory test results, vital signs, and progress notes[23]. Some EHRs currently have "summary" views that arrange data by type (eg, all laboratory results together) and time (eg, most recent data first) on different screens. However, future innovations in this area are needed. For

example, problem-oriented summaries that integrate data from different sources on one screen could potentially facilitate better information processing and exert a lower cognitive load[7].

Clinicians conversely have the responsibility to maintain accurate, up-to-date problem lists using a controlled clinical terminology (eg, SNOMED-CT) and link them with corresponding diagnostic and treatment elements through the EHR to prevent "incomplete care"[28].

- **Overriding computer-generated interventions.** Clinicians receive a large number of computer-generated alerts, many of which are considered unnecessary.[29] These alerts can cause cognitive overload and fatigue. Even more troublesome a few cannot be overridden because of local institutional configuration decisions requiring "hard stops" (i.e., the computer prohibits completion of the task)[30]. Clinicians should have the right to override, but not permanently disable, any computer-generated clinical intervention. In the event of an exceptionally hazardous scenario or when the organization's clinical leadership decides that a particular order should never occur, clinicians should be required to obtain an overriding co-signature from a higher ranking or more experienced clinician before completing the task. Disallowing overrides through hard-stops implies that computers have access to more accurate data and greater medical knowledge and expertise than clinicians. In reality, computers are often not able to interpret or convey the clinical context for many reasons: unavailable or inaccurate data; errors in logical processing (eg, software bugs); situation-specific clinical exceptions (eg, user request for blood transfusion denied by a computer-generated intervention that did not capture active bleeding since last hemoglobin result); and user-interface limitations (eg, limited screen space available to show most recent laboratory results near medication order).

  Clinicians have the responsibility to justify overrides and be accountable for decisions by agreeing to have their actions reviewed. Additionally, they must participate on clinical decision support (CDS) oversight committees and work with other stakeholders to review, redesign, test, re-implement, or remove CDS interventions judged ineffective[31].

- **CDS Rationale.** Advanced CDS interventions are necessary if EHRs are to generate expected improvements in healthcare quality, safety, and effectiveness. Nevertheless, clinicians have the "right" to request and receive a clear, evidence-based rationale at the point of care for all computer-generated clinical interventions (eg, alerts or reminders).

  Physicians have the responsibility to carefully consider computer-generated clinical interventions; either blindly following or ignoring CDS interventions can lead to errors[32].

- **Reliable performance measurement.** EHR-based performance measurement is inevitable. Current data collection and measurement methods are not fail-safe and often measure what is easy to measure[33]. To correct discrepancies, clinicians have the right to review all EHR-based processes used to generate reports that inform policy decisions or performance measurement[34]. All computer-based measurements should have unambiguous exclusion criteria and allow clinicians to identify patients to whom the measure does not apply (eg, no diabetic foot exams on patients with

bilateral below-the-knee amputations). If needed, clinicians should have access to queries, data extracts, and statistical methods used. Proactive collaboration with stakeholders such as organizational leaders will help ensure that performance measures are valid.

To ensure continuous quality improvement, physicians have the responsibility to review the performance feedback they are provided and act on it.

- **Safe EHRs.** EHR software errors and usability issues are increasingly linked to safety hazards that can lead to patient harm (e-iatrogenesis)[35,36]. Clinicians have the right to expect that all EHR-related errors will be reported, investigated, and resolved in a timely manner[37]. EHR vendors and healthcare organizations responsible for maintaining the EHR should make these reports, along with their responses, publically available so that others can learn from them[38].

  Clinicians have the responsibility to report, help investigate, and learn from EHR-related safety hazards.

- **Training and assistance.** State-of-the-art EHRs are complex tools designed to facilitate the entry, storage, review, interpretation, and transmission of patient data. Clinicians have the right to receive training – either from their EHR vendor or their healthcare organization - in all EHR features. Ongoing training and support should include access to online instruction and availability of real-time assistance while caring for patients, preferably in-person[39].

  Clinicians have the responsibility to maintain a high level of user proficiency with the same level of diligence as for other clinical skills. To improve efficiency and safety, clinicians must learn to type, complete EHR training, and demonstrate competence in use of all functions required to care for patients (eg, enter orders, add problems, initiate referrals). Finally, clinicians are responsible for asking for help when they reach limits of their EHR proficiency.

- **EHRs that are compatible with real-world clinical workflows.** Clinicians have the right to a safe, effective, and usable EHR that contains evidence-based, problem- and task-specific order sets, documentation templates, and information displays designed to be compatible with their clinical workflows[40].

  Clinicians have the responsibility to work with EHR vendors and local information technologists to design, develop, and implement data entry, review, and CDS tools and to modify previous paper-based workflows to overcome limitations of EHRs.

- **EHRs that facilitate communication, coordination, and teamwork.** EHRs fundamentally change the way clinicians coordinate their work activities, communicate, and collaborate to deliver high-quality, safe, and effective healthcare[41]. Most current EHRs are not optimal for team-based care that includes patients and their caregivers[42]. Clinicians have the right to future EHR innovations that facilitate complex communication and coordination tasks across time, space, and people.

> Clinicians have the responsibility to use EHRs in ways that foster teamwork. They must document their findings, decisions, and actions succinctly, avoid reckless copy-and-paste, and respond to human- and computer-generated requests for information and action in a timely manner.

Setting the Groundwork for Future Debate

Although our essay lays the groundwork for future debate, it has several limitations. First, we do not specifically outline who might enforce these clinician "rights" and responsibilities or what alternatives could be pursued if these conditions are not met. However, we believe it is premature for us to do so at this conceptualization stage without further debate and agreement. Second, we recognize that even with consensus regarding the necessity of these "rights," delivering them in the short-term will be difficult using today's technology and in today's socio-political and economic environments. Our goal, however, is to lay the foundation for a long-term agenda for providing clinicians access to safe, effective and easy- to-use EHRs that support their cognitive and physical work processes. Finally, we recognize that achieving high-quality and affordable healthcare is a complex, socio-technical endeavor. Thus, these clinician rights might not be the perfect solution because there are many competing and often opposing views of the best way to accomplish this endeavor.

A competing view is that other stakeholders in this debate, including payers, administrators, policy makers, and patients, are also entitled to an equally important and valid set of "rights" which may conflict with one or more of the clinicians' "rights". Payers, administrators, and/or policy makers, for example, have the right to mandate use of EHR-related functions that promote patient safety (eg, order entry), prohibit use of EHR-related functions that jeopardize patient safety (eg, use of a non-secure, web-based calendar to facilitate clinician workflow[43] or use of text messaging for order entry[44]), enforce specific rules and regulations (eg, reprimand users for unauthorized access to patient data), create new CDS interventions to encourage efficient, effective, evidence-based care, and evaluate clinicians' performance using EHR data. Likewise, patients have the right to access their data, have any data entry errors corrected, obtain a list of everyone who has viewed their data, confidentially communicate electronically with their providers, and request that certain data not be used for purposes other than research or public health benefit without their written consent[45]. In the event that one group's rights infringe upon those of another group, we are optimistic that organizations and the constituents they represent will participate in an open, constructive debate on these "rights" and reach consensus[46]. Following ratification, relevant stakeholders (eg, EHR vendors, EHR implementers, professional boards, hospital committees, users, patients, and government agencies) can work together to design and implement EHRs and the corresponding policies, procedures and regulations required to ensure these "rights".

Summary

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We discuss ten key EHR-related issues that form a “must have” set of EHR features, functions, and user privileges that clinician users require in order to deliver high-quality, safe, and effective care. Issues discussed are generalizable to clinicians and EHRs across the globe. Addressing these rights and responsibilities comprehensively, though difficult, can make the care delivered through the “EHR-enabled work-system” safer and more efficient.

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