

Patient Access to Online Radiology Reports: Frequency and Sociodemographic Characteristics Associated with Use

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Rationale and Objectives: Our objective was to evaluate the frequency with which patients viewed their online radiology reports in relation to clinical and laboratory notes and identify sociodemographic factors associated with report viewing.

Method and Materials: We conducted a cross-sectional study of 129,419 patients who had online patient portal access in our large health system in 2014. We determined whether patients viewed their radiology reports, laboratory reports, and clinical notes. We also collected patient sociodemographic information including gender, age, primary spoken language, race/ethnicity, and insurance status. We performed multivariate analyses to determine significant associations between viewing of radiology reports and viewing of other types of clinical reports and patient characteristics.

Results: Of 61,131 patients with at least one radiology report available, 31,308 (51.2%) viewed them. Patients who also viewed laboratory reports or clinical notes were significantly more likely to view their radiology reports ($P < 0.001$). Women (56.2%), patients 25–39 years old (59.5%), and English speakers (53.6%) were most likely to view radiology reports. In multivariate analysis, Asian-Americans were more likely and African-Americans were less likely to view their radiology reports compared to whites (OR = 1.07 and OR = 0.39, respectively; $P < 0.001$ for both). Patients with Medicaid were less likely to view radiology reports compared to patients with commercial insurance (OR = 0.38, $P < 0.001$).

Conclusion: More than half of patients with access to online radiology reports viewed them, with higher viewing rates associated with viewing other types of reports and lower rates associated with characteristics of traditionally underserved patient populations.

Key Words: Web portal; radiology reports; electronic medical records; personal health records.

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INTRODUCTION

Patient web portals are online tools that provide patients direct and secure access to their personal medical records. Recent trends leaning toward increased transparency and improved communication between doctors and patients have led to the rapid proliferation of web portals, changing the dynamics of shared health information and

decision-making (1). These changes have been highlighted by federal policies enacted to promote meaningful use of health information technology with the aims of improving productivity and efficiency of healthcare delivery (2). Although initial doctor and patient adoption of online web portal tools was modest, demand has steadily increased over the past couple of decades (3). Financial incentives by Medicare and private insurers have aided in successful implementation of online web portals at large, integrated health systems, where use has been established for numerous functions including patient scheduling, test result notification, and doctor-patient communication (4,5).

Although long-term outcome data are limited, potential benefits include improvements in medication adherence, patient safety, patient engagement, rates of screening, patient-provider communication, efficiency of office visits, and satisfaction with care (6–10). Initial research has been mostly positive, but patient- and doctor-related obstacles have been identified including privacy concerns, increases in clinical report preparation time, and difficulty addressing controversial issues related to candid, written assessments by doctors regarding their

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patients' substance abuse, mental health issues, and obesity (11–13). Despite these possible challenges, both doctors and patients remain enthusiastic about patients playing a more active role in their healthcare through direct access to their medical record (14,15).

Compared to other parts of the medical record, however, online access to radiology reports presents many distinct challenges. Although direct reporting to patients is mandated in mammography by the Mammography Quality Standards Reauthorization Act, notification of imaging results in other areas of radiology has consisted primarily of private reporting between doctors, with ordering doctors communicating results to patients. Prior research has demonstrated patient dissatisfaction with this current practice because of delays in receiving test results and lack of clarity with result findings (16). Furthermore, disparities exist between the current model of results communication and patient preferences in receiving test results, as patients seek more timely and active forms of notification (17). In concert with this broader movement, there is growing patient desire to view their full radiology reports (1,18).

Thus far, information regarding online portal access of radiology reports has been limited. Prior reports evaluating patient web portal use have largely focused on patient access to clinical notes, medication lists, and laboratory values (19). Although patient preferences regarding report content and timeliness of results have been examined mostly through surveys with small sample sizes, no study has evaluated real-world access to radiology reports in a large, ethnically and socioeconomically diverse sample of patients with a wide range of diseases (16,18). As a result, clinical and socioeconomic factors influencing use of online imaging reports have not been fully assessed. Thus, our study objectives were to evaluate the frequency with which patients viewed their radiology reports in relation to their viewing of their laboratory reports and clinical notes, and to determine whether patient sociodemographic factors were associated with radiology report access.

MATERIALS AND METHODS

Study Setting and Population

We conducted a cross-sectional study involving patients in the University of Washington (UW) health system, UW Medicine. UW Medicine encompasses multiple affiliate hospitals and clinics in the greater Seattle, Washington area. It also serves bordering states for specialized services. There are 64,000 admissions and 1.3 million outpatient visits annually (20). Through the health system's electronic web portal, patients can schedule appointments, request referrals, request prescription renewals, view test results, view health summaries from inpatient visits, and communicate securely with their medical team. The UW eCare web portal has been systematically implemented at different UW sites beginning in 2007 at smaller affiliate hospitals with widespread implementation throughout the UW health system by 2014.

We included all patients 18 years of age and older who were registered on the portal and thus had access to their radiology reports, laboratory reports, and/or clinical notes between January 1, 2014 and December 31, 2014. Patients voluntarily sign up for the electronic web portal and are sent e-mail alerts once a medical report or note is made available through the electronic web portal system. Imaging results are released immediately to patients after review by ordering doctors. If imaging results are not reviewed by ordering doctors, reports are automatically released 2 weeks after the examination is performed. Similarly, laboratory results are released immediately after review with automatic release after 4 days if not reviewed by the ordering doctor. Clinic notes are released immediately after being signed by a doctor. Although the patient portal provided access to laboratory and radiology reports throughout the entire year, patients were not offered access to their clinical notes until October 21, 2014.

Data Collection

This study was approved by the UW institutional review board. We obtained data regarding whether patients had radiology, laboratory, or clinical notes available during the study period, and if they ever clicked on their respective report folder (radiology, laboratory, or clinical notes).

We also obtained information on patient sex, age, race/ethnicity, primary spoken language, and insurance status from the electronic health record. Classifications of race/ethnicity were self-reported and categorized as one of the following: American-Indian, Asian-American, Black or African-American, Hispanic or Latino (non-white), Native Hawaiian or other Pacific Islander, White, multiracial, or unknown for patients who declined to answer. Insurance status included the following designations: commercial, Medicare, Medicaid, self-pay, and other.

Statistical Analysis

We performed both univariate and multivariate analyses to determine statistically significant associations between sociodemographic factors and the likelihood of viewing a radiology report. The chi-square test was used to compare radiology report viewing rates between groups. Multivariate analysis was performed using logistic regression models with all patient characteristics included as independent variables and viewing of radiology reports as the dependent variable. Categorical variables were summarized as percentage (count) and continuous variables were summarized as mean \pm standard deviation. We also conducted sensitivity analyses to assess the impact of including patients who were missing values for some sociodemographic variables, excluding variables with missing values, and excluding patients with missing values. All statistical calculations were conducted with the statistical computing language R (version 3.1.1; R Foundation for Statistical Computing, Vienna, Austria). Throughout,

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