

What the Patient Wants: An Analysis of Radiology-Related Inquiries From a Web-Based Patient Portal

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Abstract

Purpose: With the development of patient portals, the opportunity exists to identify gaps in practice by analyzing priorities patients place on the receipt and comprehension of radiology reports. Our purpose was to describe the nature of radiology-specific patient information requests by analysis of patient-initiated messages submitted through a web-based electronic patient portal.

Methods: Institutional review board approval was obtained and informed consent waived for this HIPAA-compliant retrospective cross-sectional study. All patient-initiated messages submitted to the web-based patient portal at a large academic medical center between October 1, 2014 and December 11, 2014 were analyzed. Messages containing radiology-specific key terms including “x-ray,” “xray,” “xr,” “ct,” “cat,” “mri,” “scan,” “ultrasound,” “image,” and “radiology” were identified and messages categorized by content. The demographics of message writers were also analyzed. Diagnostic imaging studies performed during this period were tabulated by modality. Proportions were compared with χ^2 tests.

Results: During the time period studied, there were 1,597 messages from 1,489 patients inquiring about 1,609 examinations. Messages containing ≥ 1 radiology-specific keyword were significantly more likely to originate from women than from men (64% [946/1,489] versus 36% [543/1,489], $P < .0001$), with 53% of studies (52,322/98,897) performed on female patients and 47% (46,575/98,897) on male patients. The relative percentages of modality-specific patient inquiries were significantly discrepant ($P < .001$) from actual scan volume for some modalities (MRI: 38% [607/1,609] versus 11% [11,152/98,897], CT: 25% [400/1,609] versus 19% [19,032/98,897], plain radiography: 23% [368/1,609] versus 55% [54,497/98,897]). The most common inquiry was for imaging results (33% [521/1,597], $P < .001$); these were submitted a median of 5 days (range: 0-368 days) after imaging. The radiology turnaround time (between exam completion in the Radiology Information System and signoff on report) was 5 hours, versus 70 hours for referring provider review. Inquiries about radiation dose or radiation risk represented 0.1% (2/1,597) of all inquiries.

Conclusion: Patients submitting radiology-specific messages through an electronic patient portal are most concerned about imaging results, particularly those pertaining to advanced (CT and MRI) imaging studies.

Key Words: Patient portal, electronic medical record, patient preferences, informatics, CT, MRI, ultrasound, radiography

J Am Coll Radiol 2016;■:■-■. Copyright © 2016 American College of Radiology

INTRODUCTION

Patient portals—web-based patient-centered health care information systems that are tethered to a patient’s electronic medical record (EMR)—were first introduced in the United States in the late 1990s [1]. Early adopters

may have been responding to stipulations in the Federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), which required that patients be able to see and obtain copies of their medical records and request amendments to those records [2]. In 2009, the

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The authors have no conflicts of interest related to the material discussed in this article.

Health Information Technology for Economic and Clinical Health Act was passed, which encouraged improvements in care coordination and patient and family empowerment by offering provider-based financial incentives [3-5]. Recognizing patient portals as an innovative tool that can be used to reach these goals, many medical centers across the United States have since begun hosting patient portals, with up to 50% of US hospitals and 40% of US physicians now having a patient portal in place [6].

Patients may view finalized radiology reports through a patient portal, either before or after results have been reviewed and released by their referring physician, and may communicate directly with their health care providers using electronic portal messaging. Although these features serve to promote patient empowerment and improve access to and coordination of care, patient portals also create vast stores of patient-centered data. By analyzing unprompted inquiries submitted by patients, health care providers may detect trends and identify gaps in practice that could be improved to provide a better patient-centered experience.

The purpose of our study was to better understand radiology-specific patient needs by an analysis of patient-initiated messages submitted through our patient portal. Because no analysis of these data has previously been performed, trends found among a large group of radiology utilizers could identify common questions, comments, or complaints that may illustrate weaknesses in the radiology-related workflow at our medical center. Once they are identified, attention could be directed at these patient-perceived shortcomings, for example by altering the scheduling of examinations, patient portal interface, radiology reporting process, or other workflows. By changing and improving these gaps, we may create an increasingly patient-centered experience.

METHODS

Institutional review board approval was obtained and informed consent waived for this HIPAA-compliant retrospective cross-sectional study. No external funding was utilized.

Patient Population

A query of all patient-initiated messages submitted to the patient portal linked to the EMR system (Epic Systems, Verona Wisconsin) at a large quaternary academic medical center between October 1, 2014 and December 11, 2014 was performed. This period of time was arbitrarily selected for

study owing to the large volume of messages sent monthly at our institution. A total of 53,277 patient-initiated messages were sent during the studied time period. Relevant messages containing one or more case-insensitive radiology-specific keywords (“x-ray,” “xray,” “xr,” “ct,” “cat,” “mri,” “scan,” “ultrasound,” “image,” and “radiology”) were identified. Keywords related to mammography, nuclear medicine, and interventional radiology were not included owing to national or institutional workflow differences in these areas. The search yielded 3,248 messages (6.1% [3,248/53,277]) sent from a patient or their designee to a physician during this time period. Multiple unique messages sent by the same patient were included. The full text of each message was obtained along with the date and time of message submission, patient age, gender and race.

A single postgraduate year (PGY) 5 diagnostic radiology resident performed a manual review of the 3,248 messages to determine eligibility. During this manual review, 1,651 messages were excluded for one or more of the following reasons: only incidental mention of a radiology-specific key term (eg, a patient asking whether to get unrelated labs drawn after undergoing a CT); the radiology-specific key term was only mentioned in a nested message falling outside of the date range of this study; erroneous matching of a radiology-specific key term (eg, an address including “CT” [Connecticut]); or messages for which a radiology-specific key term was unable to be identified on manual review. A sample (18.2% [300/1,651]) of the excluded data was evaluated by two attending radiologists with 4 and 15 years of experience and by a second PGY 5 diagnostic radiology resident to determine whether these data were appropriately excluded; the discrepancy rate with the original assignment was 3.0% (10/300) and there was no observed systematic bias. The final study group consisted of 1,597 unique, radiology-relevant messages from 1,489 patients describing 1,609 radiologic examinations. This is 3.0% (1,597/53,277) of all messages sent via the patient portal during this time period.

During the study period, 54,497 radiographic studies, 14,216 ultrasound examinations, 19,032 CT examinations, and 11,152 MRI examinations were performed (total = 98,897), equaling 55%, 14%, 19%, and 11% of all studies performed, respectively. Of the radiographic studies performed, 50% were on female patients (27,500/54,497) and 50% were on male patients (26,977/54,497). Of the ultrasound examinations, 65% were on female patients (9,285/14,216) and 35% were on male patients (4,931/14,216). Of the CT examinations,

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