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Evaluation of a patient-centered after visit summary in primary care

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ABSTRACT

Objective: To test the impact of a redesigned, patient-centered after visit summary (AVS) on patients' and clinicians' ratings of and experience with the document.

Methods: We conducted a difference-in-differences (DiD) evaluation of the impact of the redesigned AVS before and after its introduction in an academic primary care practice compared to a concurrent control practice. Outcomes included ratings of the features of the AVS.

Results: The intervention site had 118 and 98 patients in the pre- and post-intervention periods and the control site had 99 and 105, respectively. In adjusted DiD analysis, introduction of the patient-centered AVS in the intervention site increased patient reports that the AVS was an effective reminder for taking medications ($p = .004$) and of receipt of the AVS from clinicians ($p = .002$). However, they were more likely to perceive it as too long ($p = .04$). There were no significant changes in overall rating of the AVS by clinicians or their likelihood of providing it to patients.

Conclusions: A patient-centered AVS increased the number of patients receiving it and reporting that it would help them remember to take their medications.

Practice implications: Improvements in the patient-centeredness of the AVS may improve its usefulness as a document to support self-management in primary care.

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1. Introduction

Patient-centered care has emerged as a central feature of the modernization of U.S. health care [1–5] and the adoption of patient-centered practices has been aggressively encouraged across the country [6–9]. At its core, patient-centered care encourages clear communication between patients and providers to ensure that patients' preferences and needs are met [10,11]. However, communication between patients and providers often does not achieve these goals [1,12–19].

The electronic health record (EHR) has often been cited as a tool that could aid in improvement of patient-provider communication [20–22]. The typical EHR has various tools to improve patients' access to their personal health information and their healthcare provider, including Internet portals with e-mail exchange

functions and access to personal health information, as well as the automated creation of after visit summaries (AVS). The AVS is a paper or electronic document that summarizes elements of the visit and of the patients' health and healthcare in general. It is a promising communication tool because it provides an opportunity for the clinician to review key information with the patient, to clarify areas of uncertainty, to reinforce important take home points, and to support retention of that information [23–31]. The AVS was until recently a Meaningful Use standard, part of a set of standards required of clinical practices to receive payments for their EHR investments [32], as well as a required element for Patient-Centered Medical Home accreditation [9,33].

Unfortunately, the AVS has had its own shortcomings. We previously reported qualitative findings of low satisfaction among patients and clinicians with the AVS and identified a number of AVS features from various electronic health records that do not follow standards for design of print materials to optimize communication [34,35]. Based on the results of these qualitative studies, we redesigned the AVS for an Urban, low-income hospital-based primary care practice to fit the content, formatting, and topic ordering preferences of patients, and applied best practices for the

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design of print materials to optimize the document's readability and actionability. In this study, we tested the impact of the redesigned AVS on patients' receipt and use of the document and their impressions of it.

2. Methods

2.1. Settings

Data were collected in one primary care practice each of the Mount Sinai Health System and the Montefiore Medical Center in New York City. The practices are located in upper Manhattan and the south Bronx, respectively, and serve largely low-income, predominantly Hispanic and African-American patient populations. Both sites have resident and attending physicians providing direct care to patients. In the Mount Sinai site, care is provided to approximately 55,000 patients annually by 35 attendings, 145 residents, and 7 nurse practitioners. The Montefiore practice serves 15,000 patients annually and hosts 18 attendings and 30 residents. At the time of data collection, both practices used the Epic electronic medical record system (Version 2014, Epic Systems, Madison, WI). This study was approved by the institutional review boards of the Icahn School of Medicine at Mount Sinai and the Montefiore Medical Center prior to all recruitment efforts.

2.2. Data collection

Patients were recruited and interviewed in two waves, a pre-treatment period from June 1 to October 31, 2016, and a treatment period, January 1 to March 31, 2017. A convenience sample of participants was recruited in the waiting areas of both practices and were included if they were scheduled to see a physician or nurse practitioner for a routine visit and spoke English or Spanish. Both practices serve only adults, ages 18 years and older. The research assistants obtained informed consent prior to the patients' visit with their clinician then conducted an interview immediately following the visit. Interviews were conducted in English or Spanish. During interviews, the research assistants asked patients to refer to the AVS they received at the conclusion of their visit that day. If the patient did not have an AVS, the research assistant printed it from a workstation in the nursing area of each practice. A second interview was conducted by telephone 1 week after the visit. The same protocol was followed for recruitment and interviewing in the treatment period.

We recruited providers in-person and via email correspondence. For in-person recruitment, research assistants (RA) approached the clinicians during staff and faculty meetings and provided them an information sheet describing the study and a brief paper-based questionnaire. Interested participants completed the self-administered anonymous questionnaire, which took approximately 5 min to complete. Clinicians who did not complete a survey or were not in attendance at the faculty meetings where recruitment occurred received an email from the practice medical directors with the information sheet and a weblink to the electronic version of the questionnaire.

2.3. Intervention

We designed a revised AVS based on the preferred content, content ordering, and formatting of the AVS described by patients during qualitative interviews conducted in a diverse set of clinical practices in New York City, Long Island, NY, and Chicago, IL [34]. We also applied evidence-based communication principles for print materials, with a special focus on health literacy [36]. The revised AVS was pilot tested among patients in one of the primary care practices and revised iteratively until no new modifications

were recommended by patients. Because of restrictions in the systems architecture of the Epic AVS, we were unable to implement a revised AVS that closely fit all the features of our prototype. Multiple discussions were held with the vendor to ensure that we had exhausted all options. In brief, the new AVS closely followed the content and content order of the prototype but failed to achieve the desired formatting and terminology changes we sought in order to create a clean appearing, easy to read and understand document. A detailed discussion of the process by which the AVS was developed and the barriers to meeting the design objectives are described elsewhere [34]. Samples of the AVS used in the pre-treatment and treatment periods are shown in Appendix A.

Prior to the first wave of data collection (pre-treatment period), study physicians made a brief presentation to clinical faculty on effective strategies for communicating with patients at faculty meetings and to residents during resident meetings. The presentation touched on strategies such as teach back and teach-to-goal for improving communication with low literacy patients, then highlighted the AVS as a potential tool for enhancing communication. The presenter talked about the value of providing a printed record to the patient to assist recall of key information, including medications. The presentation was made during the week prior to the beginning of patient recruitment in the first wave of data collection and again 1 week before the collection of data in wave 2 (treatment period). A four-week washout period separated the end of data collection in wave 1 and the beginning of data collection in wave 2. The revised AVS was activated in the intervention practice but not in the control practice.

2.4. Measures

Based on qualitative data from a prior study in which we asked patients to identify the features and content of the AVS they value most highly [34], we developed a series of questions to enable patients to rate the value of the AVS they received during their encounter. The items covered four domains: content (relevant medical information), formatting (length of document), ease of understanding (medications and other content), and utility (reminder for medication taking and upcoming appointments). All items were presented as statements with 4 response options: strongly agree, agree, disagree, and strongly disagree. These items were examined individually and as a summary measure of satisfaction with the AVS. For the summary measure, responses were assigned a value of 1 (strongly disagree) to 4 (strongly agree), with the exception of two items that were reverse coded, and values were summed for all items. These measures were dichotomized as agree or strongly agree vs. other for all analyses.

We also collected data on measures that may affect individual's understanding, interpretation, or appreciation of the AVS [4,37,38]. Aside from basic demographic factors (age, gender, race and ethnicity, insurance status), the data included level of educational attainment, health literacy, and general health. Health literacy was measured using a single item, validated screening question that assesses an individual's confidence completing medical forms [37,39]. Because we sought to keep the interview as brief as possible, we asked patients only one question pertaining to health, the general health rating, which correlates strongly with morbidity and health outcomes [40].

We asked physicians how often (what proportion of visits) they print the AVS, provide a copy to patients, and review it with patients. Response options ranged from never to always on a 5-point scale and were dichotomized as always or usually vs. other. We also asked them to provide an overall rating of the AVS, from very poor to exceptional on a 7-point scale. The latter outcome was dichotomized for analysis as very good to exceptional vs. other.

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