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Patient satisfaction with point-of-care laboratory testing: Report of a quality improvement program in an ambulatory practice of an academic medical center

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ABSTRACT

Background: Point-of-care laboratory testing (POCT) offers reduced turnaround time and may facilitate medical decision-making and improve clinical operations. However, there is very little published data concerning the impact of POCT on patient satisfaction.
Methods: We implemented POCT for hemoglobin A1c, lipid panel and comprehensive metabolic panel in a primary care practice and monitored patient satisfaction with on-site testing using an anonymous survey.
Results: A total of 97 surveys (65% response rate) were reviewed. On a scale of 1 (poor) to 4 (excellent) the mean response to the question "Compared with your past experiences of physician office visits that did not have on-site testing please rank your overall level of satisfaction with today's office visit" was 3.96. In 34 surveys a free text comment was included which was uniformly very positive.
Conclusions: Our study strongly indicates a high level of patient satisfaction with on-site POCT in a primary care setting.

1. Introduction

Near patient point-of-care laboratory testing (POCT) offers reduced test turnaround time and can facilitate more efficient medical decision-making and clinical operations. In the primary care setting, many office visits result in the need for laboratory testing to complete the assessment of the patient. Three approaches to this task are commonly employed. During the visit the physician determines what laboratory tests are required and the patient is then sent to a central facility or a phlebotomy lab to obtain blood for testing. This approach imposes an extra laboratory visit on the patient and the test results are not available at the time of the visit, prompting follow-up phone calls, letters and, in some cases, a second visit. Prior to the visit the physician anticipates what tests will be required and instructs the patient to have blood drawn in advance of the appointment. In this scenario the test results are available at the time of the visit but the patient faces inconvenience by having to make a separate visit to the laboratory. This approach does not offer the opportunity to order unanticipated tests, which would require additional phlebotomy or lab visit after the appointment. POCT is performed in the clinical practice at the time of the office visit. This approach permits the tests to be determined and performed at the time of the visit and the results immediately reviewed with the patient.

A number of studies have reported improved outcomes following the implementation of POCT in a variety of inpatient and outpatient settings [1]. Outcomes can be classified into 3 general groups: medical outcomes (e.g. improved survival or control of disease), operational outcomes (e.g., improved patient throughput or decreased length-of-stay) or financial outcomes (e.g., reduced cost or improved cost effectiveness). The majority of published POCT trials assessing outcomes have focused on the efficiency of clinical operations including reductions in length of stay or elimination of cues in complex clinical operations [2]. Less often POCT has been shown to improve medical outcomes resulting in more rapid diagnosis or better compliance with accepted clinical guidelines such as glycemic control or improved anticoagulation management [3].

Only a few published studies have reported on patient satisfaction resulting from POCT as compared to testing in a centralized laboratory

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facility [4]. Patient satisfaction can be perceived as a "soft" outcome since it is not immediately related to clinical outcomes or the efficiency of clinical operations. Nonetheless measurement of patient satisfaction has become an important quality metric in many health care organizations, and may directly impact adherence to recommended treatment [5–7]. In this article we report our experience examining patient satisfaction with POCT in a primary care practice in an academic medical center. The menu of POC tests performed included hemoglobin A1c (HgA1c), lipid panel and comprehensive metabolic panel.

2. Methods

After institutional review board (IRB) approval, we performed the study in the Ambulatory Practice of the Future (APF) at the Massachusetts General Hospital (MGH) in Boston, MA. The APF is an adult primary care practice providing care to employees of the MGH and their spouses/domestic partners. The practice was launched in 2010, in part, as an innovative collaborative research site to develop new models for providing team-based primary care. The APF is presently staffed with three part-time (1.5 FTE) internal medicine staff physicians, 2 internal medicine residents, 2 part time (1.5 FTE) nurse practitioners, 3 medical assistants and other support staff. In 2012 we implemented on-site POCT for HbA1c using the Siemens DCA analyzer (Siemens Healthcare, Norwood, MA) and lipid panel and comprehensive metabolic panel using the Abaxis Piccolo analyzer (Abaxis, Union City, CA). All patients who required A1C, fasting lipid or metabolic testing, for either screening or disease monitoring as deemed appropriate by their provider, were eligible to receive point of care testing if they could stay for discussion of their results. A total of 150 patients who received POCT were given an anonymous patient satisfaction survey at the end of their clinic visit as shown in Fig. 1. Satisfaction scores were rated 1 to 4 (4 being the most satisfied). The surveys identified the tests that were performed and asked for additional comments. Completed surveys were deposited in an anonymous collection site.

3. Results

A total of 97 patients (65%) returned the completed surveys to the anonymous collection site. Overall the mean satisfaction score on a scale of 1 (poor) to 4 (excellent) was 3.96. Only 2 of 97 patients gave a score less than 4 (one 3 and one 1) and without comment. One patient who received POCT could not stay for results reporting and discussion.

Overall, 60 HbA1c tests, 54 lipid panels and 59 comprehensive metabolic panels were tested. Many patients received more than one test (46.9%: one test, 16.7%: two tests, 36.4%: three tests). Because satisfaction scores were so high, there was no significant difference in the mean score for patients that received any one POCT compared with multiple tests. A total of 34 surveys (35%) included additional comments beyond the satisfaction score. These were tabulated according to the tests received as shown in Table 1. Some comments were paraphrased to eliminate reference to specific employees or physicians and to eliminate spelling errors. The comments were uniformly positive with no negative comments. In many cases the patients commented directly about the testing (e.g., "Wonderful to have the results and directions for medications while I was here. It made the plan clear. Also a true time saver — not only a lab visit but follow-up phone calls"). In other cases the comments were positive but did not specifically mention laboratory testing (e.g., "Excellent").

Patient Satisfaction Study Questionnaire

We are conducting a patient satisfaction survey and would like your opinion. As part of your visit today you received laboratory blood testing for

_____ on site as opposed to going to a central laboratory facility for blood drawing. The availability of on-site testing at the time of your office visit may have effected your overall satisfaction. Please give us your opinion to the question below. Your responses will be kept totally anonymous:

Compared with your past experiences of physician office visits that did not have on-site testing please rank your overall level of satisfaction with today's office visit:

Circle one:

1= poor (today was less satisfactory)

2= acceptable (today was about the same)

3= good (today was generally better

4= excellent (today was a much better experience)

Other comments:

Fig. 1. Patient Satisfaction survey. Patient satisfaction study questionnaire.

Table 1
Comments provided by patients who received point-of-care testing at the time of their office visit.

Comprehensive metabolic panel only
• Excellent
• Wonderful to have the results and directions for medications while I was here. It made the plan clear. Also a true time saver — not only a lab visit but follow-up phone calls
• Great experience. Thank you.
• I am a tough stick and they got my blood the first try.
• It is so much easier to do it at the office while I am here.
• They listen when I tell them I am a hard stick and never give me trouble about using a smaller needle.
• Very pleased with the care.
• I had to leave — was unable to stay for the results.
Lipid panel only
• It was great to be able to consult immediately with the doctor having the results in front of us.
• The practice assistant was terrific. The practice accommodated me drawing my blood earlier than my appointment so that the doctor would have the results faster.
• The staff is excellent. Keep up the good work.
• Through, sensitive, I feel well cared for.
Hemoglobin A1c Only
• I think it is good to get the results while still talking to the doctor.
• Thorough, sensitive, I feel well cared for.
• Very convenient to get the results right away.
• Great job.
• Fantastic.
• Very helpful and appreciated.
Multiple Tests
• Nice to have blood work results before end of visit. I appreciate the time to talk about my life.
• I felt totally comfortable. My blood pressure even went down.
• Excellent care.
• It was great to have it done at the same visit. Great experience. Good to get results during visit with feedback.
• Great model. Very pleasant experience.
• The nurse who drew my blood was fantastic. I loved quick results. Keep it up.
• This is wonderful. I am really amazed how things have been done today. It's so wonderful seemed like in my home I received all the best from what I expected. 100/100 satisfied about everything. Well done job, I will definitely keep coming to get well.
• Wonderful to have results on the day of the visit. It would have been nice to have them drawn prior to the visit and review during the visit (would not have to wait for the results and meet again with the provider).
• Keep blood testing here. One less office visit.
• Great to get instant results.
• The doctor and all of the staff are excellent. Thank you for everything.
• Extremely convenient
• My overall experience was better today than any other primary care visit in the past.
• Cannot be happier. Staff is great. Glad I switched
• Wonderful. The entire experience.
• Very convenient to get results immediately without the worry of waiting.

Specific types of comments included convenience, avoiding extra visits to the laboratory, avoiding follow-up visits and phone calls and the benefits of having results available to discuss with the physician at the time of the visit.

4. Discussion

Patient satisfaction surveys are becoming increasingly used by both hospitals and individual clinics as an important measure of the standard and quality of care. Even consumers (patients) themselves now look to these tools to help distinguish important aspects of care and service among their choice of hospitals and clinics. Examples include the Consumer Assessment of Healthcare Providers and Systems (CAHPS: http://cahps.ahrq.gov/) and Press Ganey (www.pressganey.com). While meaningful in its own way, demonstrating and maintaining a high level of patient satisfaction may improve the competitive position of healthcare organizations. Depending on the indication/reason for the test, the test result itself, and the opportunity for the patient and provider to discuss the results at the time of the visit, the experience of laboratory testing (including blood collection) may contribute significantly to a patient's overall impression of the clinical experience, and may have important influence on adherence to recommended treatment.

Our results with a POCT patient satisfaction survey for HbA1c, lipid panel and comprehensive metabolic panel were uniformly positive with a mean satisfaction score of 3.96 (scale 1: poor, 4: excellent). Only 2 of 97 patients gave a score less than 4 (one 3, and one 1). Neither of these two responses included additional comments. Thirty-four percent (34%) of the returned surveys provided additional comments, which were uniformly positive.

There are relatively few published studies in peer-reviewed journals that report on patient satisfaction following implementation of POCT [4]. In one meta-analysis only two trials were identified [4]. In one randomized controlled trial in an Australian general practice patient satisfaction relative to a control group was reported for patients managed by general practitioners for diabetes, hyperlipidemia and/or anticoagulation [5]. Among those patients receiving POCT there was a statistically significant improvement in satisfaction with the collection process, confidence in the test process and in the belief that the test strengthened the relationship with their physician. In another study 86% of patients stated that they were very satisfied or satisfied with a prothrombin-international normalized ratio (PT-INR) POCT managed with a registered nurse [6]. Finally, Shiach et al. evaluated patient satisfaction with POCT PT-INR testing in a community clinic compared to a central hospital facility and found a high level of patient satisfaction [7].

The relative paucity of published literature has made it difficult to assess patient satisfaction with POCT in different clinical settings, and not all studies of patient satisfaction following POCT have shown positive results. For instance, Stone et al. reported no improvement in patient satisfaction following implementation of POCT in a primary care setting but also noted that the baseline satisfaction with the usual approach (standard laboratory testing) was also high thus preventing the ability to detect improvement [8].

Evaluating patient satisfaction with POCT is challenging for at least three reasons. First, satisfaction measurement, by definition, is based on subjective responses. While there are validated scoring systems for overall patient care experience satisfaction surveys (for example, CAHPS, Press Ganey mentioned above), there are no specific validated systems for POCT satisfaction. Second, because of the subjective nature of responses, obtaining a separate matched control group may be difficult to validate. Finally, the assessment must attempt to separate satisfaction with POCT per se from satisfaction with the overall episode of care. Our study did not compare our data to a control group who did not receive POCT. Therefore it is not possible to perform a statistical analysis of the data. Further, the study has a potential for survey bias as our patient satisfaction questionnaire was performed at only one primary care practice with a selected patient population (hospital employees and their family members). In an attempt to address these concerns, our satisfaction survey asked patients specifically "*Compared with your past experiences* of physician office visits *that did not have on-site testing* please rank your overall level of satisfaction with today's office visit". When patients were presented with the survey form they were also verbally instructed that the survey is related only to the POC testing. Finally, the survey was anonymous and therefore the patients knew that their responses could not be identified with them as a patient. Many patient comments clearly indicate that they understood that we were asking about satisfaction specifically with the POCT testing and not with their physician or the episode of care (e.g. "Wonderful to have the results and directions for medications while I was here. It made the plan clear. Also a true time saver — not only a lab visit but follow-up phone calls"). Yet some comments clearly reflected an evaluation of the larger clinical experience, and were not limited to just the POCT (e.g. "The doctor and all of the staff are excellent. Thank you for everything.").

The cumulative overall satisfaction score of 3.96 and the mix of textual comments were impressive, and our data probably reflects the most positive response in patient satisfaction with POCT yet reported in the literature. However, we remain mindful that our survey collection rate was only 65%, and we cannot presume to know the opinions of the 35% of patients who did not respond to the survey.

Cumulatively, our results add important information to the currently scant available literature on patient satisfaction with POCT in the ambulatory setting. Further studies using a range of commonly performed tests will help us better understand the impact of POCT on patient satisfaction outcomes in the outpatient setting.

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References

[1] Lee-Lewandrowski E, Lewandrowski K. Perspectives on cost and outcomes for point-of-care testing. Clin Lab Med 2009;29:479–89.
[2] Lee-Lewandrowski E, Gregory K, Lewandrowski K. Point-of-care testing in a large urban academic medical center: evolving menu and clinical applications. Clin Chem Acta 2010;411:1799–805.
[3] Lee-Lewandrowski E, Lewandrowski K. Implementing point-of-care testing to improve outcomes.J Heathcare Management 2013 (in press).
[4] Gialamas A, St John A, Laurence C, Bubner T. Point-of-care testing for patients with diabetes, hyperlipidaemia or coagulation disorders in the general practice setting: a systemic review. Fam Pract 2010;27:17–24.
[5] Martin LR, Williams SL, Haskard KB, DiMatteo MR. The challenge of patient adherence. Ther Clin Risk Manag 2005;1:189–99.
[6] Martin LR, DiMatteo MR, Lepper HS. Facilitation of patient involvement in care: development and validation of a scale. Behav Med 2001;27:111–20.
[7] Martin LR, Jahng KH, Golin CE, et al. Physician facilitation of patient involvement in care: correspondence between patient and observer reports. Behav Med 2003;28:159–64.
[8] Laurence CO, Gialamas A, Bubner T, et al. Patient satisfaction with point-of-care testing in general practice. Br J Gen Practice 2010;60(572):e98-104.