

Research Article

Improving Efficiency in Patient Throughput in the Health Department Setting: A Quality Improvement Initiative

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Abstract

Background: This project focused on a health district comprised of 12 county health departments in the southeastern region of the United States. At the time of this project, this district was currently working on its accreditation process to become a nationally certified and recognized body for the quality of care provided in the communities served, by the Public Health Accreditation Board. Quality improvement projects are important within public health and ongoing evaluation is necessary to improve processes.

Methods: A time study with a pre and post-implementation of a streamlined electronic consent form was conducted, as well as a survey distributed to staff members pre and post-implementation to determine demographics, staff attitudes, knowledge, and perceptions.

Results: Results from this quality improvement project demonstrated a reduction in time at one participating county to complete general consents with the customer service representatives by 91 seconds from pre to post. Respondents in the pre-implementation staff survey (n=31) tallied that 0.00% strongly agreed that patient intake process times are adequate while 54.84% disagreed that patient intake process times are adequate. In post-implementation of the same statement, respondents (n=16) tallied that 31.25% strongly agreed or agreed that patient intake process times were adequate.

Conclusions: The project provided valuable data within the three participating counties. Effective methods to increase throughput, decrease waiting times, and improve overall staff and patient satisfaction within the departments is instrumental to success.

Keywords: Fishbone diagram; Patient throughput; PDSA cycle; Public health; Quality improvement

Introduction

Patient throughput is a metric normally evaluated within the hospital setting as a standard requiring adherence for benchmark goals. It is a process whereby patients are moved seamlessly through various departments in an efficient manner in order to better assist in overall patient care [1]. In terms of organizational or business acumen, it can also be defined as the rate at which a number of patients or products can be served in a unit of time [2]. Aside from hospitals, it can also be applied to the realm of public health and county health departments, in order to better meet the health care needs of patients.

There are numerous studies examining the concept of patient throughput as it relates to various medical facilities: emergency departments, outpatient primary care clinics, and specialty facilities. Barriers to effective patient throughput may include extended waiting times, which can ultimately affect patient satisfaction with

services and impact decision to receive future care at a facility. Additionally, employees may experience workflow inefficiency, which has the ability to lead to job strain, undue occupational stress, depression, career burnout, and resigning from one's job [3]. The use of quality improvement initiatives therefore can be feasible and result in workflow improvements within organizations.

The purpose of this quality improvement initiative focused on the implementation and evaluation of a method to improve patient throughput times in three county health departments in the state of Georgia. Specific objectives included: decrease time frames in intake process by creating an electronic intake form which is measurable by a time productivity study and increase staff satisfaction by implementation of an electronic intake form which is measurable by a pre-test/post-test questionnaire.

Materials and Methods

This quality improvement project took place at three different health departments within the health district and sites were selected due to participant experience with quality

improvement and flexibility to participate. The project took place where a part-time Family Nurse Practitioner (FNP) and Master in Public Health (MPH) candidate works, where the county nurse manager has participated in several quality improvement projects and is available to assist with this project, and where this quality improvement project was initially suggested at.

This public health district encourages that all employees be active participants in continuous quality improvement. The organization urges any and all suggestions for improving workflow, patient and employee satisfaction, and overall processes be submitted to the accreditation and quality improvement coordinator. A designated Quality Improvement (QI) team that includes various members throughout the organization meet quarterly to select QI projects to take on. It was suggested that the part-time FNP and MPH candidate attend the QI meeting and lead this project. A QI council was developed, consisting of the MPH candidate, the individual who suggested this project to the QI council, as she used to work in a separate public health district where this project was successful and is a front-end customer service representative, the county nurse manager who has worked on previous QI projects, and the site supervisor. A briefing of the project was discussed in detail with key stakeholders within the health departments.

Due to this project being performed as a quality improvement initiative for the district, a specific approach to the problem was conducted. In order to highlight the current throughput process, a fishbone diagram of the current patient intake process was developed for the health department housing the part-time FNP. Fishbone diagrams are beneficial because they allow team members to brainstorm main causes of quality of care outcomes and visually display root causes for analysis [4]. See Figure 1 in Appendix for overview of patient intake process via fishbone diagram. It was suggested that barriers to efficiency included a manual data entry, a cumbersome process, lack of 100% electronic intake, computer speed, different levels of efficiency mastery amongst participants, communication amongst staff members, increased workload versus being short staffed, and noise level within the department. In addition, a Plan, Do, Study, Act (PDSA) cycle was constructed to methodically approach all components of the project. Coury and colleagues highlight that a PDSA cycle utilizes a small test of change in order to optimize a process within a discipline [5]. This follows a fishbone diagram well because root causes of the problem are identified and then a small test of change is applied. See Figure 2 in Appendix for overview of PDSA cycle for initiative.

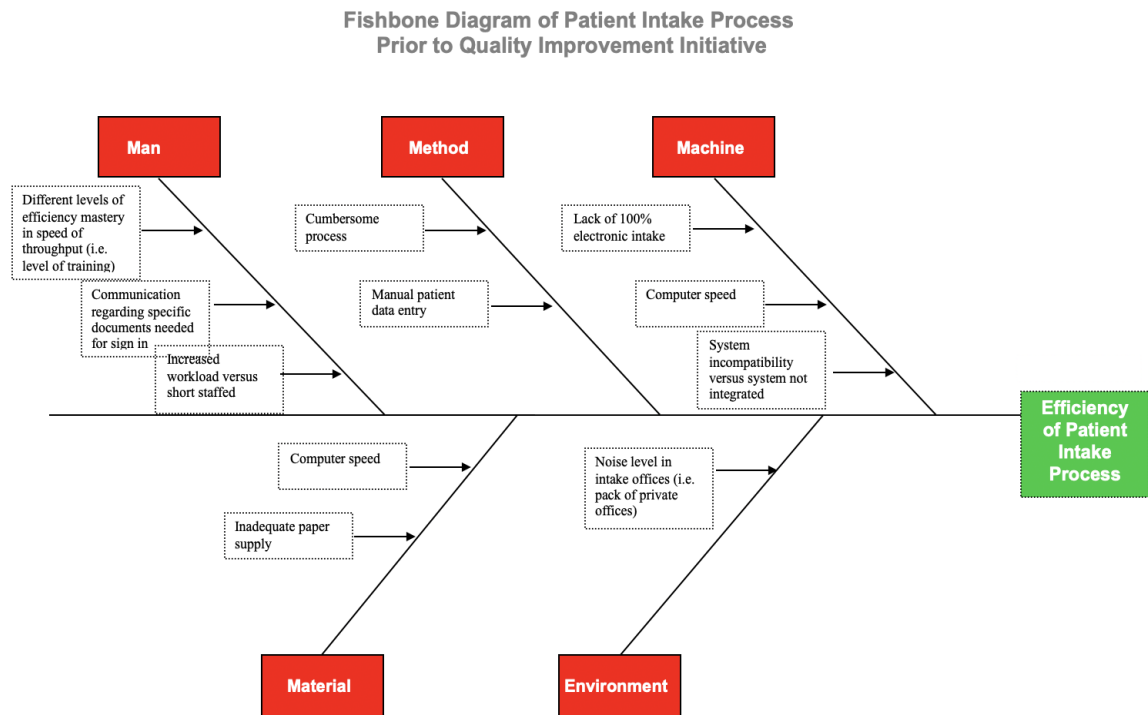


Figure 1: Fishbone Diagram.

There were a total of two objectives to complete for this project. The first objective was to improve throughput times throughout the health department by focusing on the front end/intake staff with a streamlined electronic intake form, which would improve time frames for patient sign in and allow the department to become more efficient and productive, whilst having the potential to increase patient satisfaction. Pre and post time studies were conducted by front end staff at the three county health departments during the months of October 2018 and November 2018. The second objective was to increase satisfaction with the new electronic intake form by staff members by distributing a pre and post-test survey that mirrors timeframes when the time studies were conducted through Survey Monkey. Surveys were inclusive of information that emphasized demographics, current work position, and feelings toward adequacy of the intake process.

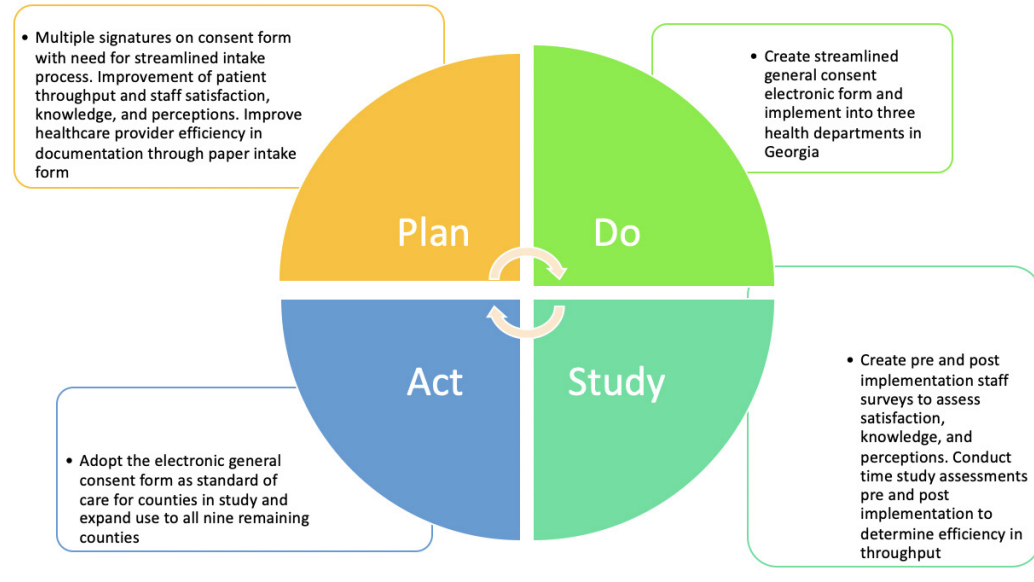


Figure 2: PDSA Cycle.

The projected timeline for this project, as it coincided with an MPH Practicum course, was September 2018 to December 2018, a total of 4 months. A proposal for this project was submitted to the Human Research Protection Office at University of Massachusetts at Amherst and it was declared that this project did not meet the definition of human subject research under federal regulations and submission to University of Massachusetts at Amherst Institutional Review Board (IRB) was not required. A letter from this public health district’s accreditation and quality improvement coordinator was submitted to University of Massachusetts at Amherst stating that this project falls under quality improvement and was voted on by the QI council, and that any identifying data would remain internal through this health district.

Results

Pre-implementation time study data was collected on Tuesday, 10/23/2018, Wednesday, 10/24/2018, and Thursday 10/25/2018 within the three county health departments. To clarify, pre-implementation is in relation to having patients sign a total of five times on different intake forms. County #1 had the most efficient average time in completing the general consents at 7 minutes and 10 seconds, while County #2 had the slowest average time of completion at 9 minutes and 43 seconds. The most efficient day of the week by average time was Wednesday. Table 1 provides an overview of the pre-implementation data.

Average Time_Total	0:08:07	Max Time_Total	0:46:31	Min Time_Total	0:00:25
Average_ By County		Max_ By County		Min_ By County	
	0:09:43		0:26:30		0:00:26

	0:07:32		0:38:57		0:00:32
	0:07:10		0:46:31		0:00:25
Average_ By Day of the Week (DOW)		Max_ By Day of the Week (DOW)		Min_ By Day of the Week (DOW)	
	0:10:02		0:46:31		0:00:26
	0:05:32		0:21:25		0:00:29
	0:08:01		0:38:57		0:00:25

Table 1: Pre-Implementation Times.

The implementation “go live” date in using the streamlined electronic intake form for the time study productivity assessment was 10/30/2018. The electronic intake form was implemented live into the three counties. Customer service representatives were instructed on the steps to find and utilize the Intake Forms tab Virtual Health Network, the health department’s electronic charting system. A laminated copy of the intake form was provided to each customer service representative that participated. The form allowed for clients to visualize all portions of the form that they would be signing for, with a single signature versus five separate signatures relating to general consent for treatment, acknowledgement of receipt of notice of privacy practice, self-pay financial responsibility, insurance financial responsibility, and laboratory services. To mimic the same days of the week as pre-implementation data, the post-implementation data was collected on Tuesday 11/13/2018, Wednesday 11/14/2018, and Thursday 11/15/2018. County #3 had the most efficient average time in completing the general consents at 6 minutes and 41 seconds, while County #1 had the slowest average time of completion at 12 minutes and 45 seconds. The most efficient day of the week by average time was Thursday. Table 2 provides an overview of the post-implementation data. County #3 was the only successful health department out of the three that decreased its average time frame to complete general consents by a total of 91 seconds. The other two counties in participation who did not improve times should be evaluated for any outstanding reasons (i.e. sick call-ins/vacation/time off, lack of motivation, forgetting the process was being evaluated, short timeframe interval for improvement). Time study data was gathered directly from the Virtual Health Network computer system and data entry was input into a Microsoft Excel spreadsheet for analysis.

Average Time_Total	0:09:48	Max Time_Total	1:34:32	Min Time_Total	0:00:25
Average_ By County		Max_ By County		Min_ By County	
County #2	0:10:30		1:01:17		0:00:25
County #3	0:06:41		0:30:30		0:00:25
County #1	0:12:45		1:34:32		0:00:34
Average_ By Day of the Week (DOW)		Max_ By Day of the Week (DOW)		Min_ By Day of the Week (DOW)	
Tuesday (3)	0:10:27		1:08:02		0:00:41
Wednesday (4)	0:10:05		1:34:32		0:00:25
Thursday (5)	0:08:31		0:33:04		0:00:25

Table 2: Post-Implementation Times.

A pre and post implementation staff survey was created through Survey Monkey and distributed via email link. Demographics related to time worked for the district, age of participant, and job title were gathered within both pre and post surveys. The links were open for a two-week period prior to implementation of the electronic consent form and following the implementation. Specific questions related to perceived barriers, communication, satisfaction with method, and future suggestions were queried. A total of 32 employees participated in the pre-implementation survey and 18 participated in the post-implementation survey. Years worked for the district ranged from less than 1 year to greater than 20 years. Nursing, customer service representatives, and environmental health employees participated in the surveys. A Likert scale ranging from strongly disagree (labeled as 1) to strongly agree (labeled as 5) was utilized for data gathering. On the survey, question #14 poses the following statement: Patient intake process times are adequate. In pre-implementation, respondents (n=31) tallied that 0.00% strongly agreed that patient intake process times are adequate while 54.84% (17 respondents) disagreed that patient intake process times are adequate. This highlights that over half of employees felt that the current intake process is effective. In post-implementation of the same statement, respondents (n=16) tallied that 31.25% (5 respondents) strongly agreed or agreed that patient intake process times were adequate. This provides some hope that with continued implementation and ongoing evaluation of the process through surveys, employees may become more comfortable with it. With the other respondents who selected the category of neither agree nor disagree for the pre and post implementation, it was unsure if these respondents had a direct hand in the electronic intake process on a daily basis. Therefore, their answers may have been subject to response bias.

Discussion

This public health district ultimately adopted this quality improvement initiative after a discussion of findings with the QI council and Executive Leadership council. The streamlined electronic intake form was expanded to include all 12 county health departments. This project ultimately has the potential to be

successful in other districts and can serve to decrease timeframes for patient throughput. Active participation and a thorough understanding of the process and its objectives is needed from all participants.

Continuous Quality Improvement (CQI) is a common process across various disciplines and organizations nationwide. For county health departments working to receive national accreditation, it is required in order to meet standards and measures of the Public Health Advisory Board. In addition, quality improvement is one of the 10 Essential Public Health Services, as it relates to evaluating effectiveness, accessibility, and quality of personal and population-based health services. The use of knowledge gained from this project can be replicated to other county health departments in order to improve current processes.

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