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# Reducing Delays in Follow-up Care through Process Optimization

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Reducing Delays in Follow-up Care through Process Optimization

Liam Malpass

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### Abstract

Primary care follow-up after an emergency department (ED) visit is an important component of comprehensive healthcare, contributing to both improved patient outcomes and reduced readmissions to emergency care. In alignment with the Clinical Nurse Leader (CNL) roles of risk anticipator and lateral integrator of care, this project aimed to support improvement in care continuity for patients at a large primary care clinic in London. At this clinic, a team of physicians, nurses, and support staff care for a diverse population of adult and pediatric patients who account for nearly 3,000 ED visits annually. Assessment of the clinical review process used to coordinate post-emergency follow-up revealed that less than 22% of patients receive timely care and the process to initiate care takes an average 15 days to complete. To address this gap in quality and efficiency, an interprofessional team utilized root-cause analyses, process optimization, and small tests of change to develop an optimized clinical review process for post-emergency department follow-up care. Implementation of the process resulted in an 81.3% decrease in clinical review time and a 34.5% increase in on-time follow-up care. Process optimization is an effective framework through which rapid improvements in care processes can be implemented to enhance care quality and efficiency.

*Keywords:* care delays, clinical process efficiency, primary care follow-up after emergency department, process optimization

### Reducing Delays in Follow-up Care through Process Optimization

Emergency department (ED) visits are an expensive component of healthcare services, costing the United Kingdom's National Health Service (NHS) \$3.6 million annually (Department of Health, 2016). Research suggests that as many as 40% of visits to NHS emergency departments could be considered inappropriate use, meaning these visits are for care needs that could be met or prevented in primary care (Ismali & Gibbons, 2013). Timely primary care follow-up after ED care is associated with both improved health outcomes and reduced readmissions to the ED (Carmel et al., 2017; Moskovitz & Ginsberg, 2015).

Many aspects of this problem can be seen first-hand at a large primary care practice, located in North Central London. This practice, which serves more than 17,000 registered patients, provides a range of care services to both promote health and manage acute and chronic illness. The population served by this clinic is comprised mostly of adults of working age. Frequent reasons for seeking care at the clinic include minor acute illness, such as upper respiratory infections, and chronic conditions, such as diabetes and hypertension. More than 17% of registered patients were seen at least once in the ED between June of 2016 and June of 2017, with readmissions (i.e., return visits to the ED within 30 days of the initial visit for the same diagnosis) occurring among more than 16% of those patients. As part of the NHS general practice gatekeeping model, these patients rely upon primary care providers for access to all levels of planned care (Greenfield, 2016).

The focus of this CNL project is to improve the timeliness of primary care follow-up by focusing on the microsystem process that coordinates such care. Through conducting process optimization to reduce current inefficiencies and the time required to identify follow-up care

needs, this project aims to improve the rate of on-time follow-up care and reduce readmissions to the ED.

### **Clinical Leadership Theme**

The improvement theme of this project is the promotion of timely, efficient, and safe continuity of care for patients recently seen in the ED. The project aims to improve the timeliness of follow-up care for patients at this London primary care clinic. The targeted care process begins with the receipt of ED attendance letters by the clinic and ends with the delivery of recommended follow-up care to patients. Through making such improvements, the project expects to simplify and optimize the care process, decrease current delays in follow-up care, and reduce preventable readmissions to the ED. Both risks to patient safety and national initiatives that call for improved care integration and reduced ED utilization make this project a priority (Department of Health, 2015; NHS, 2016).

As an expert in both risk anticipation and lateral integration of care, the Clinical Nurse Leader (CNL) is well-prepared to lead this work (American Association of Colleges of Nursing [AACN], 2013). As a risk anticipator, the CNL's role in this project is to recognize the risks for clinical deterioration posed by delayed follow-up after emergency care and to support the optimization of the proactive clinical review process to reduce such risks. As a lateral integrator, the CNL's role in this project is to advocate for the improved use of the current electronic health record (EHR) system to support the clinical review process and incorporate ED-related care needs into patients' overall plans of care.

### **Statement of the Problem**

At this London primary care clinic, the current ED attendance letter review process exists to support continuing care for patients who recently received emergency care services.

Frequently, ED providers include further care recommendations (e.g., reevaluation of a respiratory infection after starting antibiotic treatment) for patients with acute care needs that do not require hospitalization. Primary care providers are expected to review and facilitate this additional care. At this clinic, ED attendance letters are received and processed along with thousands of other care documents.

Recently, practice leadership members were made aware of problems associated with this review process. Independent clinical inquiries generated for several hospitalized patients registered with the clinic concluded that these patients did not receive recommended post-ED follow-up care, which likely contributed to their need for inpatient care. To further examine the state of the process, document workflow data was extracted from the EHR system to determine the length of time elapsed between receipt and clinical review of ED attendance letters (i.e., turnaround time). The average turnaround time for ED attendance letters between January and July 2017 was 15 days. While no universal standard for optimal ED attendance letter turnaround times exists, a review of a random sample of ED attendance letters at this practice suggests that the most common follow-up time frame recommended for patients is seven to ten days after discharge from the ED. This implies that the clinic's ED attendance letter review process takes at least five days too long to ensure patients are cared for within the recommended timeframe.

In addition to examining the average ED attendance letter turnaround time, EHR data was analyzed to assess both the rate of patients who received on-time follow-up care after an ED visit and the rate of patients readmitted to the ED within 30 days of their initial visit for the same diagnosis. From January to July 2017, the on-time follow-up rate was only 21.7% and the ED readmissions rate was just over 16%. This data illustrates the downstream effects of lengthy clinical review times for ED attendance letters, as this clinical review process precedes the

coordination and delivery of follow-up care and patients with unresolved symptoms who do not receive timely care are likely to return to the ED (Moskovitz and Ginsberg, 2015).

The primary problem to be addressed by this project is the gap between current ED attendance letter turnaround times and the most commonly recommended follow-up timeframe. It is anticipated that by targeting this problem, improvements will also be made to the on-time ED follow-up care rate and ED readmissions rate.

### **Project Overview**

The aim of this project is to reduce the average turnaround time for ED attendance letter clinical review. A process mapping and optimization approach will be used to assess the current ED attendance letter review process and identify opportunities to reduce or eliminate waste and inefficiencies, resulting in a redesigned process that supports optimal clinical review of ED attendance letters.

The project will start by forming an interprofessional improvement team composed of process stakeholders (e.g., physicians, nurses, administrators, and receptionists). This team will be briefed on the need for the project and tasked with contributing to the understanding of the current process and redesign of an optimized process. Process documentation including flow maps and job aids will be developed to reflect and support the standardization of the process. These resources will be used to aid the training of all staff involved in the process. The redesigned process will then be tested for a period of two weeks to determine its impacts on ED attendance letter clinical review turnaround times. Should the new process not meet the target reduction in turnaround time, the improvement team will be tasked to further analyze and adjust the process to achieve efficiency. Once testing demonstrates turnaround times that meet the

project target, the process will be transitioned to be sustained over the long-term, with monitoring and feedback reassigned to the clinic leadership team.

The project aims specifically to reduce delays in follow-up care for patients recently seen in the ED by reducing the clinical review turnaround time for ED attendance letters by 50% on or before September 30, 2017. To further monitor and support the desired effects of the clinical review process, the project also seeks to improve the percentage of on-time ED follow-up care by at least 20% by December 30, 2017 and to reduce the ED readmission rate to 5% or less by March 30, 2018. These specific aims drive efficiency of the clinical review process and evaluation the process's effect on patient outcomes, supporting the global aim of timely, safe, and effective care.

### **Rationale**

The data supporting the need for this project was collected from several sources, including anecdotal reports, EHR reporting, and team-led investigations. Initially, the concern for care delays was raised among practice leadership when independent care inquiries identified omission of post-ED follow-up care as a contributing factor to subsequent hospitalization for several patients registered with the clinic. From this discussion, an in-depth analysis of the process was made. Data from the EHR system describing current workflow turnaround times for ED attendance letter clinical review, on-time follow-up care rates, and ED readmission rates were extracted. Following this, two root-cause analyses were performed to understand factors causing low rates in on-time follow-up care and long turnaround times for ED attendance letter clinical reviews (see Appendix A). The first analysis, which was conducted to understand low on-time follow-up rates, identified the ED attendance letter clinical review process as a bottleneck in coordinating timely follow-up care. The second analysis, which was conducted to



understand why the ED attendance letter clinical review process required an average of 15 days to complete, identified several process-related components that impeded efficient clinical review: lack of role clarity and standardization, unbalanced distribution of work among staff, inability to distinguish and prioritize ED attendance letters, and unnecessary redundancies and rework. A flow map of the current review process supported these findings (see Appendix B).

Two additional analyses were conducted to assess the clinic's readiness for change and the role of key staff in the improvement process. First, a SWOT analysis was conducted to identify existing factors, both internal and external, that could benefit or impede the success of the project (see Appendix C). Key benefits identified included existing technology to assist process optimization, support from practice leadership, and momentum from national initiatives with similar goals. Significant potential barriers included staff resistance to change, risks for over-complicated processes, and lack of control over the flow of documents into the clinic from external organizations. Next, a stakeholder analysis was completed to increase understanding of various staff involvement within the process (see Appendix D). Key findings included the need to closely work with practice physicians while keeping other staff both satisfied and informed.

### **Cost Analysis**

To further develop support for the project, a cost analysis was completed (see Appendix E). Because the project applies process optimization to existing resources, the only direct costs of the project are staff time. Total expenses in the first year are \$939. This includes both staff training time on the newly optimized process and staff time for improvement team meetings. Staff training encompasses a one-time, one-hour session for all 29 staff at the practice. The improvement team is an interprofessional group composed of one physician, one nurse, and three administrative/receptionist staff, who meet for several structured project meetings. These costs

are isolated to the first year of the process as further training will be incorporated into new staff induction and process monitoring absorbed into existing leadership work.

The potential for cost-savings from this project is immense. The current ED readmission rate for patients at this practice is 16.1%, with 469 readmission visits annually. This project aims to reduce that rate to just 5%, or 146 annual readmission visits. The average cost of an ED visit in London is \$180 (Department of Health, 2016). Assuming the target reduction in readmission visits is achieved, the estimated gross cost-savings is \$58,140. It is important to note that the target reduction in ED readmission visits is a stretch goal and may not be initially met. However, the project needs only to prevent a minimum of six ED readmission visits in order to more than cover its costs. The benefit-to-cost ratio of this project is 60.92, meaning that for every dollar spent on the project, a savings of \$60.92 could be achieved.

In addition to the monetary benefits of this project, there are also several nonmonetary benefits. These include improved quality of life for patients resulting from decreased complications, enhanced provider-patient relationships in primary care, and decreased wait times in EDs (Broadwater-Hollifield et al., 2015; Carmel et al., 2017; Moskovitz & Ginsberg, 2015). Given the great potential for significant benefits and the low-cost investment required, this project should be implemented.

### **Methodology**

The objective of this project is to reduce the average turnaround time for clinical review of ED attendance letters, subsequently improving on-time follow-up care and reducing readmissions to the ED. Process optimization has been selected as the primary intervention to achieve this objective. Implemented as a small test of change, the optimized process, designed to expedite the clinical review process while eliminating current inefficiencies, will be used to drive

improvement without requiring additional staff or capital. The design and implementation of this project is supported by two key methodologies.

### **Process Optimization**

The first methodology is process optimization theory, described by Wiler and colleagues (2017) as the understanding that systems and processes of care delivery are frequently wasteful and inefficient, contributing to high costs and poor outcomes. The authors further explain that through process optimization, waste and inefficiencies can be reduced or eliminated and processes redesigned to maximize potential towards meeting targeted outcomes. The effectiveness of this method is supported by several examples of its use in healthcare quality improvement efforts (see *Evidence to Support Process Mapping and Optimization to Improve Care Processes & Outcomes*). In this project, process optimization is used to map the current ED attendance letter clinical review process, identify opportunities to eliminate unnecessary or wasteful components, and redesign the process to achieve maximum efficiency.

### **Change Management**

The second methodology is Kotter's Model of Change, which uses eight fundamental components necessary to lead and sustain change (Kotter, 1996). Central to this model is the need to create urgency, form a staff coalition, create and communicate a vision for change, and support staff to succeed in adapting to the change. Kotter's model is ideal to guide the implementation of this project for several reasons. First, the model is action-driven and is easily integrated into an implementation plan. Second, the model is effective for managing varying levels of staff response to change, which addresses a weakness identified in the completed SWOT analysis. Finally, the model focuses on sustaining change over time, which is necessary to prevent relapse to the pre-optimization process. Using Kotter's model, the following action

plan has been developed. Key components of the model are incorporated into three phases: planning, implementation, and evaluation.

In the planning phase, several actions are taken to promote engagement. A sense of urgency will be created by presenting data that describes current clinical review turnaround times along with anecdotal examples of the clinical consequences of delayed care. Additionally, the risks of maintaining the status quo will be explained and the benefits of implementing the change will be promoted. Next, an interprofessional improvement project team will be formed from volunteers and specifically-selected stakeholders within the process to guide the project's development and implementation. This team will be charged with ensuring the new process meets the core needs of stakeholders. Then, the improvement project team will be tasked with establishing a vision for the project, including the development of goals and targets. This step is important in order to emphasize the requirements necessary in design of the new process and create measurements against which the project outcomes can be evaluated.

In the implementation phase, the work of the improvement team is set in-motion. The team's vision will be communicated to all practice staff. Traditional means of communication including e-mail and meetings will be used to give an overview of the project and make available details of its components and timelines, while face-to-face conversations and a status board will be used to both engage and keep staff informed during implementation of the optimized process. Additionally, the improvement team will be engaged in identifying potential barriers to success. This list will be used to establish countermeasures to reduce the impact of these barriers. During the testing process, staff feedback will be used to further identify and mitigate barriers. Throughout the process redesign and testing, deliberate efforts to make and recognize short-term successes will be made. These will include recognizing staff for identification of inefficiencies in

the current process, development of a new process, successful testing of the new process, and improvements in turnaround times.

During the evaluation phase, action is taken to both enhance and solidify the change. The optimized process will be built upon by using staff feedback to identify opportunities to make further improvements. A web-based feedback form will be used to collect this information and the improvement team will be charged with prioritization and implementation of these recommendations. The change will be anchored for sustainment at the practice by completing a report out to demonstrate the effectiveness of the new process, transitioning process monitoring to the leadership team, and establishing a framework for continuous process feedback and improvements. To evaluate the effectiveness of the project, three core metrics will be used (see Appendix F). These metrics include two measures of process performance (i.e., *Average ED Attendance Letter Turnaround Time* and *On-time Follow-up Care rate*) and one measure of outcome (i.e., *ED Readmission Rate*). The actual values of the above metrics will be compared with the targets established by the team after implementation and testing of the project. If the outcomes meet or exceed the targets, the project will have reached its goal. If not, further planning and adjustment will be necessary in order to improve the performance of the process.

### **Literature Review**

The studies in this literature review describe both the role of primary care after ED visits and the use of process mapping and optimization to reduce delays in care. The literature search was conducted in two parts. In the first search, the PICO strategy was used to search the University of San Francisco's Fusion database. Search terms included *emergency care services*, *primary care follow-up*, and *readmissions*. In the second part, the same database was searched using the terms *process improvement*, *process optimization*, *patient outcomes*, and *care delays*.

For both searches, results were filtered to include only articles that were published during or after 2012. Eleven studies in total were selected and summarized. These studies contribute to evidence supporting both the need for primary care follow-up after emergency care and the use of process mapping and optimization interventions to reduce delays in care.

### **Evidence to Support Primary Care Review and Follow-up After Emergency Care**

Broadwater-Hollifield and colleagues (2015) conducted a prospective observational study to examine associations between patient characteristics and adherence to ED follow-up recommendations. Using multivariate analysis to evaluate survey results among a sample of 422 patients, the researchers found the most positive predicative factor in adherence to ED follow-up instructions was having an established primary care provider (PCP). The authors suggest having a PCP is an important factor in ensuring patients are able to receive follow-up care. This research contributes to the evidence supporting the role of the PCP in meeting patient needs after ED care.

In a retrospective cohort study, Carmel et al. (2017) evaluated the impact of rapid primary care follow-up after ED visit on subsequent admissions to inpatient care. The researchers hypothesized that intentional access and diversion to primary care would reduce avoidable hospital admissions. Using t-test analysis, the authors compared admission rates among patients who were referred to rapid primary care follow-up after an ED visit to those who received the normal course of care. A 16% reduction in avoidable admissions was noted for the rapid follow-up group. The authors propose that rapid access to primary care following ED episodes may reduce hospital admissions. This research contributes to the evidence supporting timely follow-up care in primary care after ED visits.

Chen and Singer (2016) used a convenience-sample observational study to compare follow-up care recommendations of pediatric emergency medicine physicians with those of

primary care pediatricians. The authors surveyed a sample 150 physicians in both ED and primary care settings to collect follow-up recommendations for 12 common diagnoses and used stratification and distributional equality analysis to compare responses. Chen and Singer found ED physicians recommend closer follow-up care than desired by PCPs for more than 90% of diagnoses. The authors recommend that ED physicians and PCPs collaborate to standardize follow-up care recommendations and that PCPs review ED discharge summaries to establish primary care needs. This research contributes to the evidence supporting the need for review of ED attendance letters by PCPs in order to recommend the most appropriate follow-up care.

In a prospective cross-sectional observational study, Moskovitz and Ginsberg (2015) aimed to determine patient factors associated with bouncebacks (i.e., readmission within 30 days of initial visit) to the ED. The authors collected survey data from 1,084 patients and conducted multivariate analysis to establish correlations to bouncebacks. The authors found a significant factor associated with ED bouncebacks was a patient's confidence in their PCP's ability to manage their care needs. The researchers assert PCPs should specifically address plans for follow-up in primary care to reduce the impact of this factor in contributing to ED bouncebacks. This research adds to the evidence supporting the need for timely review of ED visits by PCPs in order to reduce ED readmission rates.

Ramasubbu, Yap, El-gammal, and Kennedy (2014) completed a retrospective case-control study to evaluate the effects of standardized, electronic ED discharge summaries on transitions of care to PCPs. Using a random sample of 100 ED visit discharge summaries, the authors use chi-squared hypothesis testing to analyze the inclusion of critical components (e.g., diagnosis, key investigations, prescriptions, and follow-up care instructions) on discharge summaries both prior to and after implementation of a standardized electronic discharge

summary form. The authors found after implementation of the electronic summaries, 100% of critical components were included on all documents. The researchers affirm these discharge summaries provide PCPs with necessary information to coordinate needed follow-up care after ED visits. This research contributes to evidence supporting the need for PCP review of ED attendance letters in order to provide continuity of care. The practice in this project receives mostly standardized electronic ED attendance letters, but fails to timely and effectively use them to plan patient care.

### **Evidence to Support Process Mapping and Optimization to Improve Care Processes & Outcomes**

Almassi, Klein, Stephenson, and Krishnamurthi (2016) conducted a retrospective observational study to evaluate the impact of process mapping on identification of delays in care for newly-diagnosed invasive bladder cancer patients. The authors mapped care paths for a sample of 176 patients from diagnosis to cystectomy, noting durations between key steps (i.e., urology appointment, transurethral resection of bladder tumor, oncology appointment, chemotherapy, and completion of cystectomy). The authors analyzed durations of time elapsed between steps to identify areas of delay, which were then targeted for optimization. The study concluded that process mapping was an effective tool for identifying specific factors contributing to care delays. This research contributes to the evidence supporting the process optimization methodology proposed in this project as a means to reduce care delays.

In a prospective quality-improvement study, Bowen, Prater, Safdar, Dehkharghani, and Fountain (2016) aimed to determine if process mapping could improve stroke event notification (i.e., door-to-needle) times for patients presenting with suspected stroke. Process mapping was used to identify steps in the existing notification process that contributed to delays, which led to



the discovery that faulty communication equipment was a key factor causing delays. Repairs and adjustments to equipment and an optimized notification process was designed and implemented. The researchers examined the notification times for a sample of 45 patients prior to the process mapping intervention and 86 patients after implementation. The researchers found a maximum 87.2% reduction in notification errors, leading to improved stroke event notification times. The authors suggest process mapping is a critical tool in discovering factors adding to delays in care. This research contributes to the evidence supporting process mapping as an effective intervention in reducing care delays.

Ha and colleagues (2016) used a prospective quality-improvement study to determine if process optimization methodology could reduce lead-times for large group vaccination events in a navy hospital. The authors analyzed total event durations and lead-times for a sample of 49 participants during a previous vaccination event and the most recent vaccination event, for which the process was optimized. Ha et al. achieved a 79% reduction in vaccination lead-times and a 10% reduction in needed staff using process optimization. The authors recommend the use of process optimization methodology to improve the efficiency of care processes. This research contributes to the evidence supporting the use of process optimization to increase care efficiency.

In a qualitative research study, Johnson et al. (2012) aimed to determine if process mapping could be used to identify barriers to communication in transition of care between settings. Using focus group interviews with clinical teams at six academic health centers in North America and Europe, the authors collected participant data and translated it into process maps which were subsequently validated by participants. The participants were then led in the identification of barriers to transition of care between hospitals (including ED) and primary care settings. The authors found each group was able to identify several barriers to transition that

were actionable for improvement. Johnson and colleagues assert that process mapping is a powerful tool in improving care integration between acute care services and primary care. This research contributes to the evidence supporting the use of process mapping to improve care integration.

Wiler and colleagues (2017) conducted a process-improvement methodology quality improvement study to determine if a health systems-oriented rapid process improvement model could improve multiple aspects of care process performance in ED settings. Using a multi-pillared approach, the authors implemented the improvement model in two ED settings. A total of 42,795 visits pre-implementation and 59,444 visits post-implementation were compared for differences in several aspects including length of stay, door-to-physician time, and left without being seen rates. The study demonstrated decreases in all aspects, suggesting improved care efficiency. The authors assert process optimization methodology is effective in improving care efficiency. This research contributes to the evidence supporting the process optimization method used in this project.

In a prospective quality-improvement study, Williams et al. (2015) sought to determine the effect of process mapping on improving patient wait times for ambulatory care visits. Through their process map, the authors identified a single bottleneck contributing to long wait times. A plan to eliminate this bottleneck was developed and incorporated into a redesigned process. Williams and colleagues found that the redesigned process reduced patient wait times by 30%. The authors suggest process mapping and optimization is an effective tool to reduce patient wait times. This research contributes to the evidence supporting process mapping and optimization as an intervention to improve care efficiency.

### **Project Timeline**

The execution of the core project occurs in three phases, spanning over 38 days (see Appendix G). These phases align directly with the change management theory proposed. The first phase, planning, begins with retrieval and analysis of current process data from the EHR system. This data is then used to generate leadership support for the project, through communicating the urgency of the project need to the practice manager. Once this support is secured, recruitment of key stakeholders to the improvement project team is initiated. This team is then brought together for a project kickoff meeting, during which a shared vision as well as project goals and targets are established. Additionally, SWOT and stakeholder analyses are completed during this meeting. Next, process walks with each staff role included in the improvement project team occurs. This task generates the data necessary to develop a current state process map. Following this, the improvement project team reconvenes to review and validate the completed process map, conduct root cause analyses, and complete the process redesign. From this session, documentation of the newly optimized process is completed.

In the next phase, implementation, staff training materials are developed from the optimized process documentation. Additionally, technical testing of the new process within the EHR system is conducted to ensure system capabilities are functional. In preparation for staff testing of the process, e-mail and face-to-face communication occurs with all practice staff to inform them of the overall project vision and goals and imminent training of the new process. Improvement project team members are also responsible for updating and communicating project plans with their direct colleagues. Next, all practice staff attend a one-hour training session to further review the project vision, learn and practice using the new process, and engage in a questions-and-answers session. Once all staff have been trained, the new process is

implemented for a two-week testing period. During this time, staff receive support from the CNL student project manager and provide process feedback using an online survey form.

In the final phase, evaluation, actual outcomes are reviewed and compared to project targets. An EHR report measuring ED attendance letter clinical review turnaround times will be used to determine the average turnaround time for the two-week testing period. Additionally, staff feedback collected during the process will be reviewed, analyzed, and used to fine-tune the process as appropriate. The results of the process testing will be communicated using a staff meeting report-out. Finally, project maintenance, ongoing evaluation, and adjustment will be transitioned to the practice leadership team.

Beyond the implementation phase of the project, evaluation of the additional two project metrics (i.e., *On-time Follow-up Rate* and *ED Readmission Rate*) will occur at three and six months after initial evaluation, respectively. The practice leadership team will also make adjustments and updates to the process as needed to match evolving clinical needs. It is important to note that this timeline does not include specific tasks and time for adjustment should the initial testing not meet project targets. However, given the relatively short-period of time during which the project is planned, additional time for adjustment can be made if needed prior to formal transition of the project to the practice leadership team.

### **Expected Results**

As a result of implementing this project, it is expected that the turnaround time for clinical review of ED attendance letters will decrease significantly. This expectation is supported by analysis of information describing the pre-optimization process, which suggests that inefficiencies in the process are the primary cause of delays. Furthermore, the redesigned optimized process incorporates three major changes that support rapid review: improvements in

the distribution of letters among staff, decreased rework of letters, and prioritization of letters above routine clinical documents (see Appendix B). Together, these factors support the expectation that ED attendance letters will be more rapidly reviewed, promoting increased on-time follow-up care after ED services and reduced readmissions to the ED.

### **Nursing Relevance**

This project has two main implications for the nursing profession. First, the project demonstrates both the need and value of process optimization within clinical practice. Nurses often have unique perspectives that allow them to recognize system and process issues more readily than others. This methodology can be used to examine and improve efficiency and outcomes in settings throughout the care delivery system. Second, the project demonstrates the importance of integrated care in preventing complications and reducing unnecessary service utilization. Nurses, as coordinators of care, should recognize opportunities to proactively anticipate patient care needs and support processes that enable them to do so.

For the CNL, this project embodies the roles of both risk anticipator and lateral integrator. The project also demonstrates the need for CNL proficiency in information management, systems analysis, team management, outcomes management, and education, as described by the AACN (2013). Furthermore, this project demonstrates the value and impact of the CNL within the primary care microsystem.

### **Summary Report**

This quality improvement project set out to improve the timeliness of primary care follow-up for patients recently seen in the ED. Specifically, the project aimed to reduce the time required for clinical review of ED attendance letters by 50% by September 30, 2017. By improving the efficiency of the process, it was anticipated that more patients would receive

follow-up care within individually appropriate timeframes and that fewer patients would be readmitted to the ED for the same care needs. These objectives support the global aim of timely, effective, and safe care.

The project was implemented at a large primary care practice in North Central London. The population included in the initial test of change closely mirrored the overall population of registered patients at the clinic, with a majority being adults between the ages of 20 and 49 years. The staff involved in this project include all 29 full-time employee positions and the interprofessional improvement project team, comprised of key stakeholders including the lead physician, one practice nurse, one administrator, and two receptionists.

Baseline data supporting the need for the project included anecdotal evidence identifying examples of clinical consequences of missed or delayed ED follow-up care and process measures demonstrating that the existing clinical review process required on average 15 days to complete (i.e., at least five days longer than the most commonly recommended follow-up time). Root causes analysis of the delay in the ED attendance letter review process indicated inefficiencies, redundancies, and variances as the most influential factors contributing to delay. To respond to these issues, two primary methodologies were utilized. First, process optimization methodology was selected as it directly addresses the issues identified in the existing clinical review process. The improvement project team participated in both mapping of the existing process and a process redesign session to develop an optimized ED attendance letter clinical review process with the aim of reducing the turnaround time necessary to initiate primary care follow-up. This approach was perceived positively as evidenced by staff verbalization of a sense of control over the design of the new process and the ability to identify opportunities to improve their work. Following staff training, the newly optimized process was implemented for a two-week testing period. During

this time, workflow performance was closely monitored using reporting functions within the EHR system.

The second methodology used in the improvement project was Kotter's (1996) Model of Change, which served as a framework to develop a plan of implementation and sustainment over time. Each step of the model was implemented as outlined in project timeline (See Appendix G). In particular, steps to create a sense of urgency, establish team champions, and eliminate barriers to implementation proved especially helpful in engaging staff and successfully utilizing the optimized process. The actual implementation of work remained consistent with the plan outlined in the prospectus for this project.

Materials employed during the implementation of the project included summarized evidence extrapolated from the literature review, used to educate staff and the project team as well as to inform the process optimization activity. Additionally, current and future state process maps (see Appendix B), and a clinical review job aid (see Appendix H) were developed by the improvement project team to standardize the process and train staff.

Following the testing period, an evaluation of the new process was completed. Data from the EHR workflow report and an audit of ED attendance letters was collected to conduct the evaluation. This information was compared with baseline data and performance targets (see Appendix I). The average ED attendance letter clinical review turnaround time reduced from 15 days to 2.8 days, indicating an 81.33% decrease in the time needed to review and initiate clinical follow-up. The target turnaround time established in the project objectives was 7.5 days, demonstrating that the actual outcome exceeded the targeted reduction. This suggests the optimized process was significantly more efficient than the previous process. Additionally, preliminary data was collected from an audit of ED attendance letters included in the process

testing to evaluate changes in on-time follow-up. The rate of patients who received follow-up care within the clinically recommended timeframe increased from 21.7% before implementation to 56.2% after implementation of the new process. This outcome exceeded both the targeted improvement rate of 41.7% and date of December 30, 2017. This suggests the optimized process had a positive impact on improving on-time follow-up. The third outcome measure, ED readmissions rate, could not be evaluated following process testing as insufficient data was available to make calculations. The date to achieve the targeted reduction in readmission is March 30, 2018 and this outcome is planned for evaluation at that time. The data evaluated following the testing of the process suggests that the optimized process has been successful in improving the efficiency and timeliness of primary care follow-up for patients recently seen in the ED.

It is important to note limitations in the evaluation, including a short test period, limited data return, and lack of a control group. Ongoing monitoring of process metrics should continue in order to ensure that improvements in ED follow-up care are sustained. Furthermore, future evaluation of the project's impact on ED readmissions rate is necessary in order to assess desired effects. Finally, because a control group was not included in the testing phase, it is impossible to conclude that the process itself was causative in improvements; however, the absence of other known significant changes influencing these metrics and sustained improvement over time will support the case for improved outcomes associated with the optimized process.

The final component of project implementation was enacting a plan to sustain improvements beyond the initial process improvement initiative. Ongoing data-driven process monitoring has been recognized as a significant factor contributing to sustained care quality improvements and this was incorporated into several steps intended to maintain long term



stability of the process (Agency for Healthcare Research and Quality, 2012). First, a project report-out was conducted using a verbal presentation at an all-staff meeting, focusing on the process of the quality improvement project and its positive outcomes. Next, process ownership was transitioned to the clinical leadership team by adding review of process measures as a standing agenda item for regular meetings as well as designating an administrator as the process owner, responsible for monitoring and updating the process as needed. Finally, a framework for process monitoring was created in order to provide performance data for ongoing evaluation. This was achieved by creating an electronic spreadsheet (see Appendix J) to guide monitoring of data from the process, which is available to all staff for review as well as for use during clinical leadership meetings. Through taking these steps, it is expected that staff will be able to maintain, adapt, and further improve the quality improvements achieved through this project, resulting in reduced delays as well as efficient follow-up care for patients recently seen in the ED.

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Appendix A

Root Cause Analyses

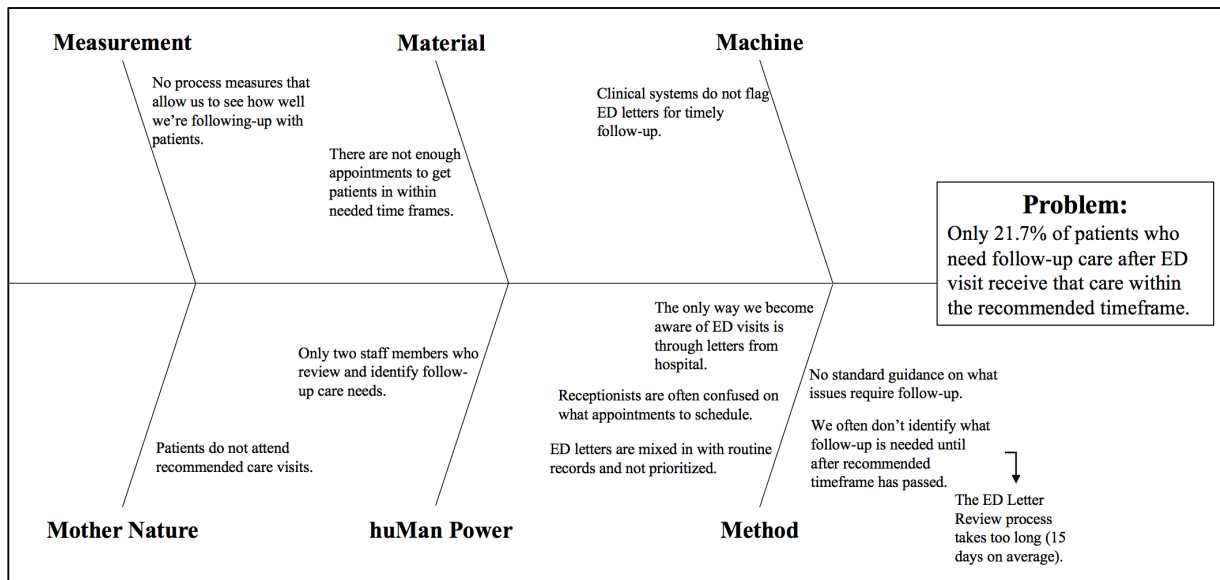


Figure 1. Root cause analysis: Low rate of on-time ED follow-up.

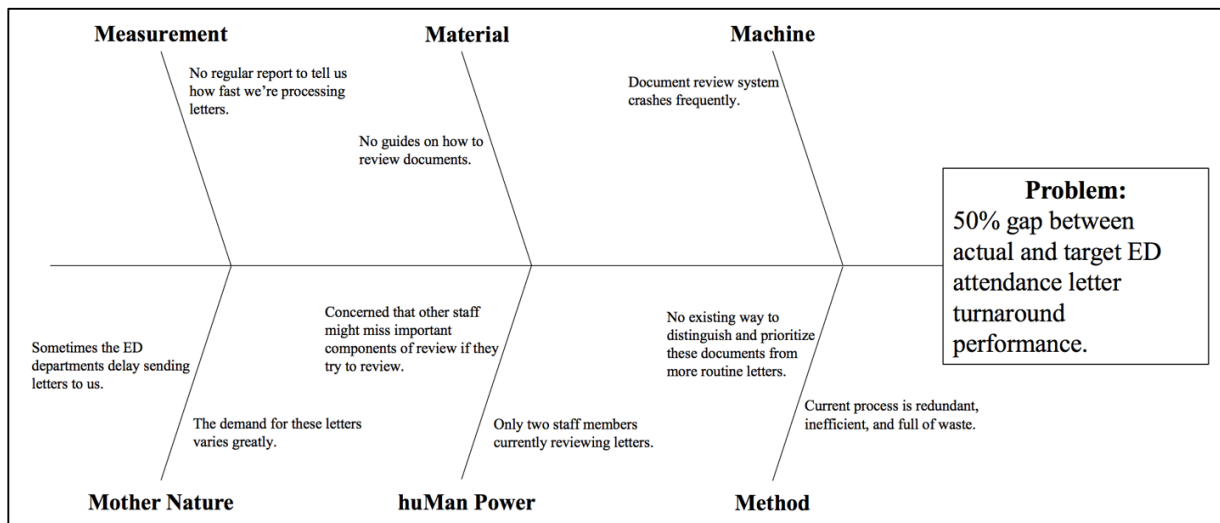


Figure 2. Root cause analysis: Long turnaround time for clinical review of ED attendance letters.

Appendix B

Current and Future State Process Maps

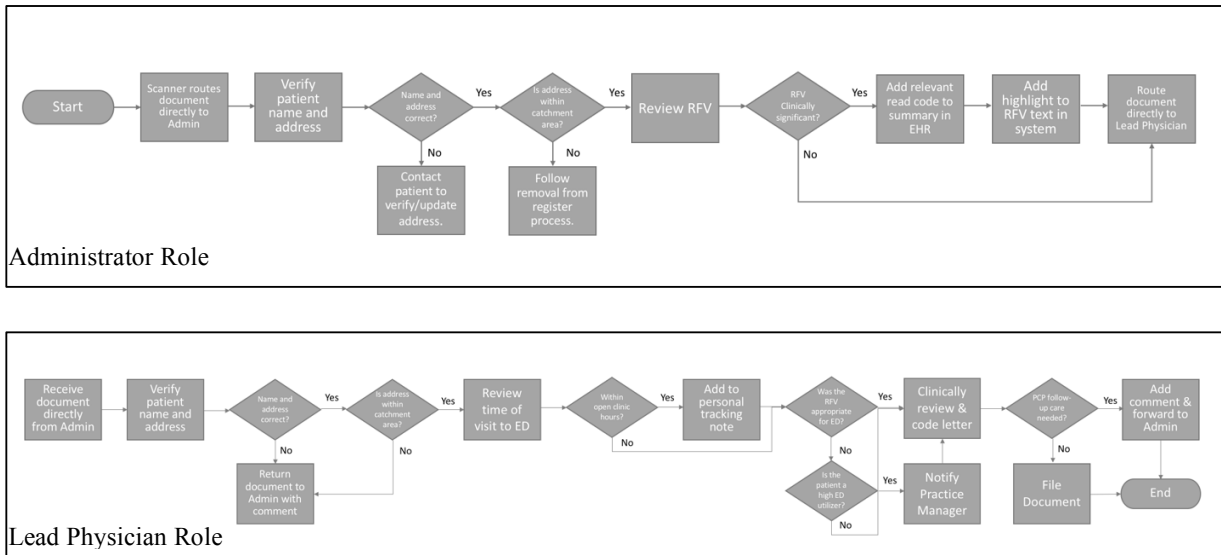


Figure 3. ED attendance letter process map: Current state.

ED Attendance Letter Process Map - Future State (Optimized Process)

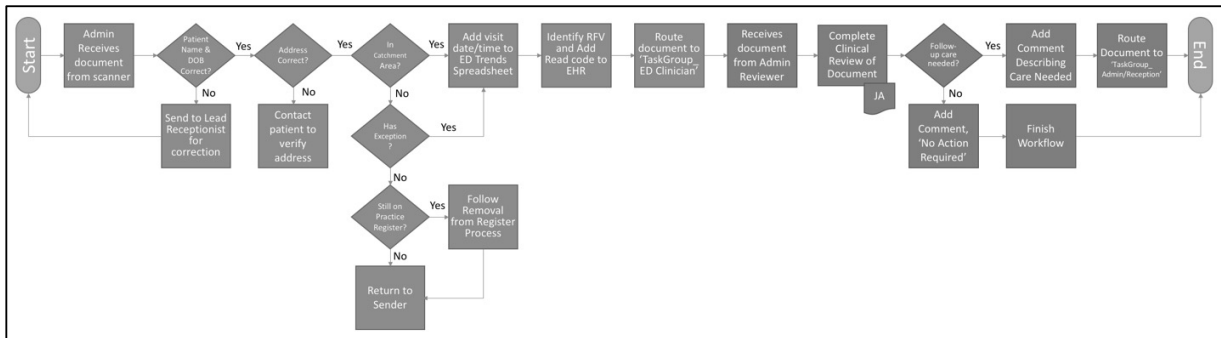


Figure 4. ED attendance letter process map: Future state, optimized process.

Appendix C

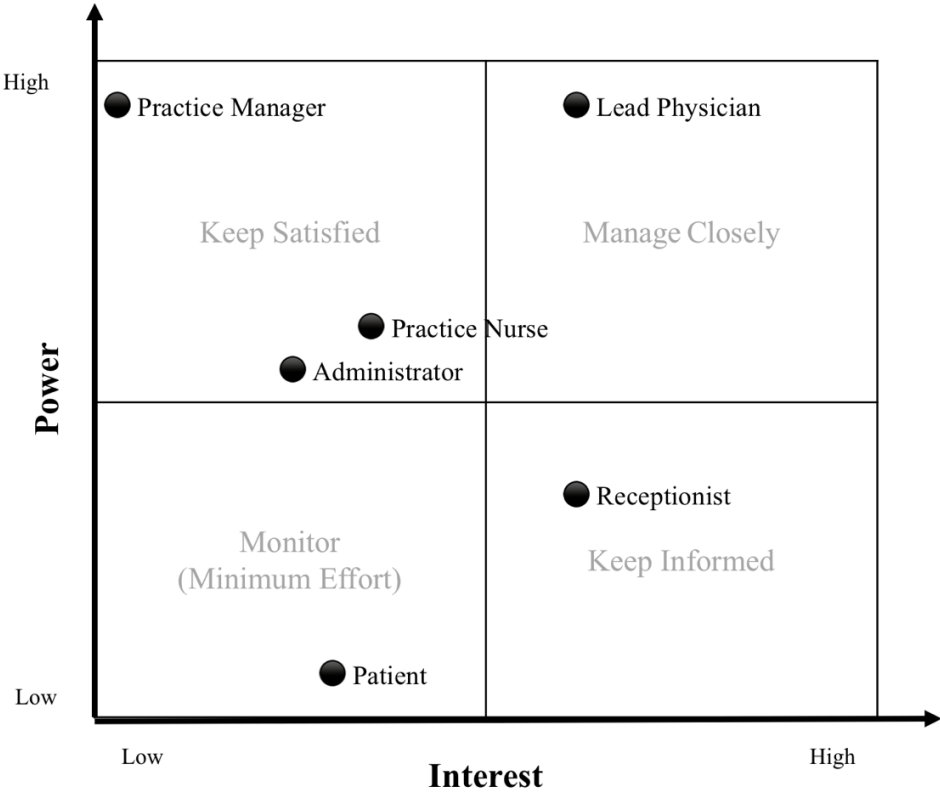
SWOT Analysis

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Existing technology solutions in EHR that can aid in optimizing workflow.</li> <li>• Support from practice leadership to address problem.</li> <li>• Existing staff who are ready and able to take part in process.</li> <li>• Project builds upon improvement work already implemented in overall clinical document efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>• Embedded habits that will be difficult to change.</li> <li>• Disagreements between staff about who should be responsible for which parts of the processes.</li> <li>• Lack of familiarity in process optimization and standardization.</li> <li>• Risk to over-complicate process in order to meet all stakeholder demands.</li> <li>• Inadequate budget to support additional staffing.</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Momentum from national initiatives to increase care integration and reduce preventable ED utilization.</li> <li>• Standardized, electronic ED attendance letters already in use by most hospitals.</li> <li>• Support from clinical governance group to test and learn from process.</li> </ul>	<ul style="list-style-type: none"> <li>• Little influence on flow of ED attendance letters to clinic.</li> <li>• Difficulty contacting patients to arrange follow-up within recommended timeframe.</li> <li>• Risk for legal repercussions if physicians fail to consider unique circumstances for each review.</li> <li>• Anticipated updates in EHR system could destabilize process if significantly affecting existing components.</li> </ul>

Appendix D

Stakeholder Analysis

<b>Table 1</b> <i>Project Stakeholders and Process-related Roles</i>	
<u>Stakeholder</u>	<u>Process Role</u>
Lead Physician	Responsible for clinical review of ED attendance letters and recommendation of care.
Practice Nurse	Responsible for coordination of follow-up nursing care as recommended by physician.
Practice Manager	Responsible for monitoring process outcomes and ensuring compliance with regulatory requirements.
Administrator	Responsible for preliminary review of ED attendance letters for non-clinical components and coordination of follow-up care as directed by physician (e.g., scheduling appointments).
Receptionist	Responsible for scanning, filing, and initiation of e-workflow of ED attendance letters.
Patient	Responsible for responding to and attending follow-up care as recommended by physician.





Appendix E

Project Cost Analysis

<b>Table 2</b>		
<i>Estimated Costs for Labor for the First and Second Years</i>		
<b>Labor</b>	<b>First Year Costs</b>	<b>Second Year Costs</b>
Staff Training Time <sup>a</sup>	\$663	\$0
Improvement Team Meeting Time <sup>a</sup>	\$276	\$0
<b>Total Expenses</b>	<b>\$939</b>	<b>\$0</b>

<sup>a</sup> Calculated using average staff salaries at practice, as obtained in aggregate from practice manager.

Estimated Cost Savings

- Cost of single ED visit: \$180 (Department of Health, 2016).
- Targeted reduction in ED readmission visits: from 16.1% (469 visits) to 5% of ED visits (146 visits), annually.
- Gross cost savings:  $(469 \times \$180) - (146 \times \$180) = \$58,140$

<b>Table 3</b>		
<i>Estimated Costs Savings for the First and Second Years</i>		
<b>Item</b>	<b>First Year</b>	<b>Second Year</b>
Total Expenses	\$939	\$0
Total Cost Savings	\$58,140	\$58,140
<b>Net Cost Savings</b>	<b>\$57,201</b>	<b>\$58,140</b>

Break-Even Analysis

- 5.22 ED readmission visits prevented = \$939.60 saved, which more than covers the cost of the project. Because partial visits cannot occur, this number is rounded to 6 visits. A minimum of 6 ED readmission visits must be prevented in order to cover the costs of the project.

Cost-Benefit Ratio

- First Year:  $\$57,201 / \$939 = 60.92$
- Second Year: Not applicable as there no direct costs exist.

Appendix F

Project Metrics

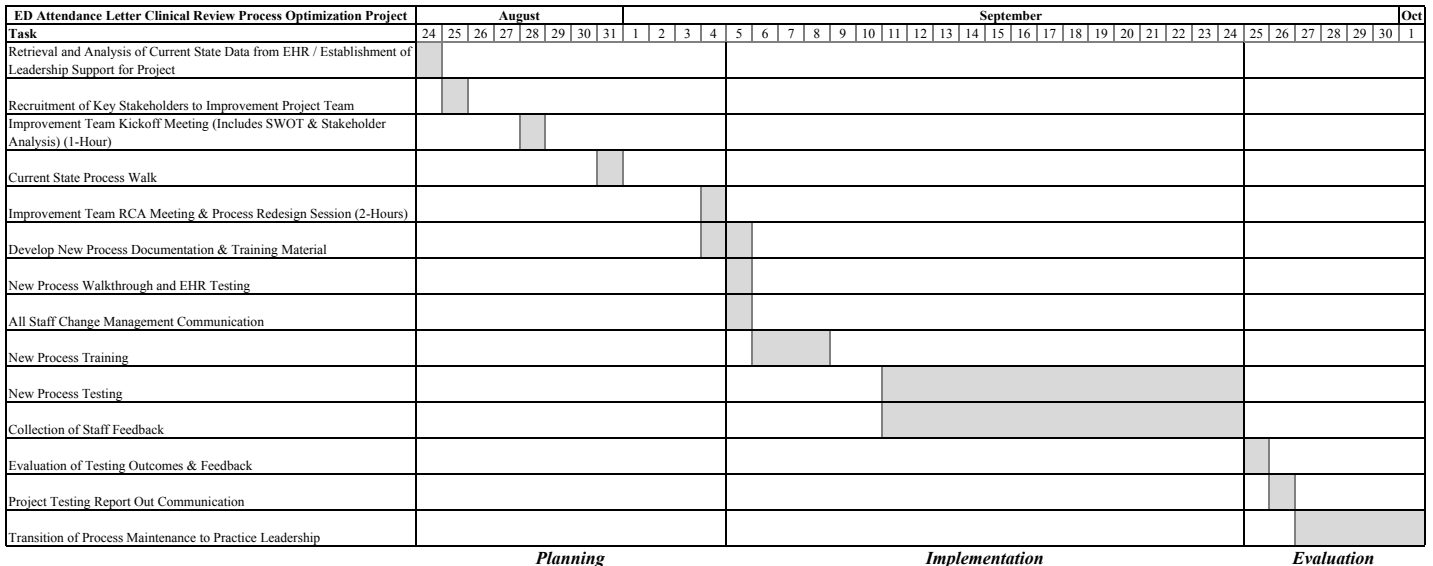
<b>Table 4</b> <i>ED Attendance Letter Clinical Review Process Optimization Metrics</i>				
<b><u>Metric</u></b>	<b><u>Description</u></b>	<b><u>Current Value</u></b>	<b><u>Target Value</u></b>	<b><u>Target Date</u></b>
Average ED Attendance Letter Turnaround (Days)	The average number of days that elapse between when an ED letter is received by the practice and when it is reviewed by a clinician.	15	7.5	30-Sep-17
On-time Follow-up Care (Percentage)	The ratio of ED follow-up encounters that occur during the timeframe recommended by physician.	21.7%	41.7%	30-Dec-17
ED Readmission Rate (Percentage)	The ratio of patients who return to the ED for the same diagnosis within 30 days of initial visit.	16.10%	5%	30-Mar-18

Appendix G

Project Tasks & Timeline

ED Attendance Letter Clinical Review Process Optimization Project		
Task	Owner	Participants
Retrieval and Analysis of Current State Data from EHR / Establishment of Leadership Support for Project	CNL Student	CNL Student, Practice Manager
Recruitment of Key Stakeholders to Improvement Project Team	CNL Student	Improvement Project Team*
Improvement Team Kickoff Meeting (Includes SWOT & Stakeholder Analysis) (1-Hour)	CNL Student	Improvement Project Team*
Current State Process Walk	CNL Student	Improvement Project Team*
Improvement Team RCA Meeting & Process Redesign Session (2-Hours)	CNL Student	Improvement Project Team*
Develop New Process Documentation & Training Material	CNL Student	CNL Student
New Process Walkthrough and EHR Testing	CNL Student	CNL Student
All Staff Change Management Communication	CNL Student / Practice Manager	All Staff
New Process Training	CNL Student	All Staff
New Process Testing	CNL Student	All Staff
Collection of Staff Feedback	CNL Student	All Staff
Evaluation of Testing Outcomes & Feedback	CNL Student	Improvement Project Team*
Project Testing Report Out Communication	CNL Student / Practice Manager	All Staff
Transition of Process Maintenance to Practice Leadership	CNL Student / Practice Manager	CNL Student, Lead Physician, Practice Manager

\*Improvement project team consists of: CNL Student Project Manager, Lead Physician, Practice Nurse, Administrator, Receptionist 1, and Receptionist 2



Important future tasks include:

- December 30, 2017: Evaluation of progress towards *On-time Follow-up Care* metric.
- March 30, 2018: Evaluation of progress towards *ED Readmission Rate* metric.

Appendix H

Job Aid - ED Attendance Letter Clinical Review Process

Purpose: To guide clinicians in the clinical review of ED Attendance letters to identify further care needs in primary care.

Audience: Clinicians who review ED Attendance Letters

*Note: This guide is not a substitute for clinical judgement and is not inclusive of all considerations that may be necessary during review of medical records.*

<b>Step</b>	<b>Rationale</b>
1. Determine if the reason for visit (RFV) was appropriate for ED. <ul style="list-style-type: none"> <li>• If yes, continue.</li> <li>• If no, determine if the patient is a frequent utilizer of ED.                             <ul style="list-style-type: none"> <li>○ If yes, notify practice manager to follow-up with patient.</li> </ul> </li> </ul>	Allows clinicians to identify patients who frequently use ED services for inappropriate reasons.
2. Is the patient a member of a vulnerable population (e.g., children, women, elderly)? <ul style="list-style-type: none"> <li>• If yes, could the RFV or Clinical Notes be suspicious for abuse? Review EHR records, protective care records, and other known history to establish clinical suspicion.                             <ul style="list-style-type: none"> <li>○ If yes, notify appropriate clinical lead for follow-up.</li> </ul> </li> </ul>	Allows clinicians to identify patients in need of protective services and to timely initiate necessary follow-up in accordance with regulatory requirements.
3. Do any components of the RFV or Clinical Notes need to be added to the patient’s medical record? (Consider new diagnoses, episodes of chronic care, diagnostic tests/scans). <ul style="list-style-type: none"> <li>• If yes, open EHR and add appropriate read code(s) to patient summary.</li> </ul>	Ensures that relevant aspects of care across the care continuum are included in the patient’s electronic health record.
4. Does the RFV or Clinical Notes require follow-up care in primary care practice? <ul style="list-style-type: none"> <li>• If yes, add a free-text comment specifying                             <ul style="list-style-type: none"> <li>○ Care Needed</li> <li>○ With Whom</li> <li>○ Timeframe</li> </ul>                             and forward document to <u>TaskGroup_ED Letter Admin</u>.                         </li> <li>• If no, add comment “No Action Required” and finish the workflow.</li> </ul>	Ensures necessary follow-up care is timely initiated by administrative/receptionist staff.

Appendix I

Evaluation of Project Outcomes

<b>Table 5</b>					
<i>ED Attendance Letter Clinical Review Process Optimization Metrics Evaluation</i>					
<b><u>Metric</u></b>	<b><u>Pre-Optimization Value</u></b>	<b><u>Post-Optimization Value</u></b>	<b><u>Target Value</u></b>	<b><u>Target Date</u></b>	<b><u>Percent Change</u></b>
Average ED Attendance Letter Turnaround (Days)	15	2.8	7.5	30-Sep-17	-81.33%
On-time Follow-up Care (Percentage)	21.7%	56.2% <sup>a</sup>	41.7%	30-Dec-17	158.98%
ED Readmission Rate (Percentage)	16.10%	N/A <sup>b</sup>	5%	30-Mar-18	N/A <sup>b</sup>

<sup>a</sup> Preliminary data

<sup>b</sup> Insufficient data

Appendix J

ED Attendance Letter Clinical Review Process Monitoring Tool

	A	B	C	D	E	F	G	H	I	M	R
	ED Attendance Letter Process Monitoring			Oct-17				Nov-17		Dec-17	
	Metric	Measurement Frequency	Target	01-Oct-17	08-Oct-17	15-Oct-17	22-Oct-17	29-Oct-17	05-Nov-17	03-Dec-17	
3	Average A&E Letter Turnaround (Days)	Every 1 Week	≤ 7.5	2.8	2.9	2.4	2.2	8.1			
4	On-time Follow-up Care (Percentage)	Every 4 Weeks	≥ 41.7%	40.2%				58.2%			
5	A&E Readmission Rate (Percentage)	Every 4 Weeks	≤ 5%	12%				4.3%			
6											
7											
8											

Figure 5. ED attendance letter clinical review process monitoring tool. This figure uses sample data to illustrate the process monitoring tool, in which green cells indicate on-target performance and red cells indicate below-target performance.

This electronic spreadsheet is centrally located on the clinic’s shared network drive and accessible to all staff. The process owner is responsible for retrieving and inputting all data for each metric’s designated frequency. The data is regularly reviewed during clinical leadership meetings. Additionally, if performance does not meet targets, the leadership team is responsible for investigating causes and developing countermeasures to improve performance.