

**EFFECT OF CLINICAL PATHWAY IMPLEMENTATION ON OUTPATIENT WAIT  
TIME TO URGENT SPECIALTY APPOINTMENT**

by

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## Abstract

Untoward wait time between a primary care referral and initial urgent specialty care appointment was identified during a root cause analysis at the project facility. Ambiguous role responsibilities and unclear referral processes were reported as contributors to the extended wait time. Care coordination policy has outlined key elements for patient safety improvement during outpatient referral processes. Process standardization and decreased wait times have been reported through pathway utilization in other healthcare settings. A facility-specific pathway was developed utilizing care coordination and clinical pathway principles. The purpose of the quality improvement project was implementation of a clinical pathway to decrease wait time between primary care referral and urgent outpatient specialty care appointment. The project process has been structured with a Plan-Do-Study-Act framework. The effect of pathway implementation on wait time was evaluated by quantitative data. Staff experience with pathway implementation was evaluated by qualitative data. The mean wait time improvement pre-pathway (34.11 days) to post-pathway (28.96 days) was not statistically significant. Yet, further evaluation of same-specialty categories revealed third quartile wait times improved in three out of four subspecialties categories. Development in staff education, primary-specialty relationships, referral order menus, and incorporation of informatics for data monitoring are recommended next-step actions. The project has provided clinically relevant data not previously examined at the project facility.

*Key words: Care coordination, outpatient referral, pathway*

Clinical Pathway Implementation as a Quality Improvement Project to Decrease Wait Time  
between Outpatient Primary Care Referral and Urgent Initial Specialty Appointment

Wait times for urgent outpatient specialty appointments unavailable at the project facility have exceeded clinically requested urgency. Minimal specialty services are available at the project facility thus specialty referrals have been frequent. Extended wait time between primary care referral and urgent outpatient specialty appointment have increased potential for patient harm. Unscheduled clinic visits, emergency room visits, and hospitalizations have been documented when wait time exceeds the requested urgency between specialty care referral and initial specialty appointment. Patients requiring emergency room visits while awaiting specialty care have been shown to experience poor health outcomes (Douglas-Moore, Hounsome, Verne, & Kockelbergh, 2017). Increased risk of patient harm has been a significant revelation leading to development and implementation of the referral pathway improvement project.

The aim of the quality improvement project has been decreased patient wait time between primary care referral and specialty care evaluation in the outpatient setting. More specifically, the PICOT focus has been implementation of care coordination elements in a clinical pathway as the method to decrease wait time. Pathway implementation in other outpatient specialty referrals has been shown to demonstrate improvement in wait time to initial appointments (Redaniel et al., 2015). A clinical pathway was developed and implemented during the first cycle of the Plan-Do-Study-Act (PDSA) process. The clinical pathway incorporates each department and staff member role within the project facility involved in coordinating patient care activities between an initial specialty referral and the outpatient specialty care appointment.

The project leader has been a facility nurse committed to patient safety and health outcome improvement. Coordination of patient care activities, inclusive of referrals, are recommended within both primary care and nursing practice guidelines (American Nurses Association [ANA], 2012; Wagner, Sandhu, Coleman, Phillips, & Sugarman, 2014). The clinical pathway quality improvement project has relevance to nursing and health administration improvement practices.

Registered nurses have been identified as optimal patient advocates during care coordination activities (ANA, 2012). The project, led and implemented by an advanced practice registered nurse, demonstrates nursing leadership in healthcare improvement. The Institute for Healthcare Improvement (2017) recommends concurrent consideration of patient satisfaction and care quality; population health; and reducing per capita health care costs when planning improvements of health system performance. This project addresses care quality, patient and staff experience, improvement of health outcomes, and indirectly affects health care costs through wait time improvement between primary care referral and specialty care appointment.

Extended wait time has been shown to affect patient morbidity thus increasing healthcare costs (Berry, Rock, Houskamp, Brueggeman, & Tucker, 2013). The quality improvement project promotes the triple aim of improved patient experience, patient safety, and diminished unplanned healthcare expenses during primary to urgent specialty care transitions through standardization of the referral process and clarification of staff roles. Outpatient specialty referral coordination impacts health care outcomes and patient safety.

### **Project Description**

Care coordination principles have been applied in a clinical pathway to standardize and clarify staff member roles and responsibilities at the project facility. These activities have been

implemented to improve wait time between primary care referral and urgently needed outpatient specialty care evaluation. Subject matter experts in care coordination policy recommend coordination of patient referral activities be managed at the primary care site (ANA, 2012; Institute of Medicine, 2011; MacColl Institute for Healthcare Innovation, 2013). Referral process improvement at the project facility was identified when root cause analysis revealed process barriers contributed to extended wait time between primary care referral and urgent outpatient specialty evaluation. Facility barriers have included inconsistent referral processes, limited inter-department referral communication, unclear referral guidelines, and ambiguity of facility staff roles. Healthcare process improvements within the project facility have been needed at the system level to improve patient safety during referral management. The initial phase of health care coordination improvement has been through pathway application as an evidence-based solution at the project facility.

Limited coordination, risk for duplication of services, and high non-completion rates suggest urgent outpatient specialty referral to be a patient safety risk factor. Insufficiently coordinated healthcare processes have resulted in higher per capita cost and specialty utilization when compared to better coordinated care (Owens, 2010). Inadequate care coordination has been reported for 28% of an older patient population yet the same population sample accounted for 52% of total healthcare costs (ANA, 2012; Owens, 2010). Meanwhile, less than half of specialty referrals for patients over 60 have been attended (Weiner, Perkins, & Callahan, 2012). To further complicate matters, older patients have been noted to receive treatment from four or more providers concurrently (Owens, 2010). Furthermore, patients awaiting specialty care report absenteeism, wage loss, and diminished quality of life (Peterson et al., 2010). Care coordination activities have potential to improve both patient experience and health outcomes.

Facility issues leading to care coordination concerns have included the type of coordination data collected, referral menu changes, and the amount of collaboration needed to facilitate specialty appointments off-site. Data had been collected on administrative referral activities. One such example was the requirement that referrals were appointed with a specialty care provider within 30 days of the referral; however, the appointment date was not required to be within 30 days. There has been an absence of guidelines for the actual appointment date regardless of clinical need or requested urgency. Confusion surrounding the facility 30-day requirement has contributed to a misperception that the patient appointment occurred within the required time frame.

Changes in the referral order menu had occurred. The specialty referral order menu underwent two significant changes over the previous year. One change was the removal of options which identified urgency as stat, within 72 hours, one week, one month, or routine. The categories have been replaced with stat or routine. The second menu item changed was the clinically indicated date (CID) calendar. The calendar default has been changed to have a preset one-day urgency unless corrected by the ordering provider to reflect an alternative urgency. Menu changes have intensified confusion surrounding identification of urgency and thus referral related activities.

Referral activities have required collaboration between three facility departments for organization of off-site specialty care appointments. The collaborative departments at the project facility include primary care, community care, and health information management. Limited collaboration of the referral as a continuum of care process between primary and specialty care has existed. Each department has focused on single segments within the referral process. As

such, optimization of referral processes and communication across department boundaries has been limited.

The clinical pathway was chosen as a means to facilitate process standardization. A clinical pathway, utilizing a care coordination model, has been implemented at the project facility. Care coordination principles of teamwork, communication, networking, coaching, collaboration, patient advocacy and education have been utilized (ANA, 2012; Haas & Swan, 2014; MacColl Institute for Healthcare Innovation, 2013). The pathway provides structure for the sequential, standardized, facility-level care plan. The structure outlines necessary referral actions and stakeholder roles.

The project has not provided statistically significant mean or median wait time improvement. However, third quartile data and interquartile range data demonstrate wait time improvement post-pathway implementation. Increased wait time for radiology specialty care requests had been an unanticipated result finding. Further work has been planned to continue additional practice improvements such as revision of the order menu, further exploration of radiology specialty referral processes, improvement of informatics utilization, and primary-specialty relationship development.

### **Available Knowledge**

A systematic literature review was conducted to identify evidence-based and policy expert recommendations. Database searches included Cumulative Index to Nursing and Allied Health Literature (CINAHL) and ProQuest. An electronic search of the contents of the International Journal of Care Coordination (2009 – 2015) was also performed through SAGE Publication website. Headings and keywords for the searches comprised four main constructs: *(coordinate OR manage OR transition) AND (specialty referral OR referral OR primary to*

*specialty*) AND (*pathway OR algorithm OR process*) AND (*organization and administration*).

The constructs contained the following MeSH terms *organization and administration, referral and consultation*.

Professional websites were searched for related policy recommendations, tools, and standards. The sites included Cochrane Library, Agency for Healthcare Research and Quality, American Nurses Association, Institute for Healthcare Improvement, Institute of Medicine currently known as The National Academy of Medicine, and National Quality Forum. Cochrane Library was searched under the topic *effective practice and health systems*. Agency for Healthcare Research was searched within the topic *patient centered medical home*. American Nurses Association was searched within the topics *nursing practice* and *care coordination*. Institute for Healthcare Improvement was searched within *white papers*. The National Academy of Medicine was searched for terms *nursing* and *care coordination*. National Quality Forum was searched within *effective communication* and *care coordination*.

Reference lists of pertinent articles were also searched. Limitations applied to all searches included report-type (academic journal, scholarly review, full-text) and publication language (English). The date range was 2010-2016, except reference lists, which included years 2008-2016.

Inclusion criteria consisted of socialized medicine, managed care organizations and expert opinion papers. Exclusion criteria were pediatric settings and pediatric to adult transitions, acute care and long-term care settings and transitions, annual meeting abstracts, poster presentations, telehealth, and electronic (non-visit) consultation. The search resulted in 588 articles selected by title. From these articles, 57 abstracts were reviewed. Of those articles, 23 publications were selected for project inclusion.

The specialty referral and care-coordination literature has largely focused on hospital to outpatient transitions or on a specified disease process. Literature specific to referral improvement between outpatient primary to specialty care has been limited. The literature retained for project inclusion contains relevant evidence-based practice improvements or recommendations related to timely, coordinated care processes.

Various supportive elements identified in the retained literature have been documentation requirements, tracking, quality assurance, pathway utilization, patient engagement, communication, and networking. Registered nurse involvement and leadership roles have also been identified in retained articles. Nurse-patient interactions, education, facilitation, and problem solving have been positive findings in retained articles.

Key findings from professional healthcare organization statements and policy papers recommend increasing patient safety vigilance whenever provider or care setting changes occur (ANA, 2012; Institute of Medicine, 2011; Institute for Healthcare Improvement [IHI], 2017; Haas & Swan, 2014). Interventions related to the actual referral order or referral practice improvements have been directed toward the primary care provider role. The recommended staff member for coordination of referrals has been registered nurses while the most common outcome goals have been timeliness and completion (ANA, 2012; Institute of Medicine, 2011; IHI, 2017; Haas & Swan, 2014).

Patient safety and satisfaction have been correlated with referral completion rates. Patient nonattendance at specialty appointments occurs more often when patient engagement was absent or limited during referral submission, information or documentation was missing, or poor communication between primary and specialty care sites exist (Esquivel, Sittig, Murphy, & Singh, 2012; Weiner, Perkins, & Callahan, 2012). Barriers experienced by patients, such as

limited social support, comorbid conditions, and transportation difficulties contribute to referral failures (Weiner et al., 2012). Coordination errors have been noted to increase specialty access wait times (Hysong et al., 2011). Specifically, breakdowns in referral processes have been attributed to limited communication, role ambiguity, and insufficient standardization and policy (Hysong et al., 2011). Referral requests have lacked sufficient health information or diagnostic data needed for timely completion.

System processes and access to equipment impact information and data sharing. Standardized referral-order templates, shared electronic health records (EHR), and referral guidelines have improved consult completion rates when compared to non-standardized cases (Esquivel et al., 2012). Although it can be said that most specialty referral requests from the primary care provider have been considered appropriate for the overall patient condition (Aller, 2015). The ordering provider improves consult outcomes through detailed completion of referral-order templates, clear identification of urgency, and attendance at specialty subject-matter educational programs (Baxter, Blandk, Wods, Rimmer, & Goyder, 2014; Blank et al., 2014; Flink, Ohlen, Hansagi, Barach, & Olsson, 2012; Jaakkimainen et al., 2014). Patient specialty access has also improved when more frequent inter-professional interactions occur.

Patient access improves when close proximity to and positive relationships between primary and specialty care providers exist. Improvement of relationships between care providers, physical co-location of providers, and adequate access to specialty care have improved referral outcomes (Benzer, Cramer, Mohr, Sullivan, & Charns, 2015; Kim et al., 2015; McDonald et al., 2014; Mehrotra, Forrest, & Lin, 2011; Sampson, Cooper, Barbour, Polson, & Wilson, 2015). Jointly attended referral- and specialty-team meetings or workshops have demonstrated improved professional relationships and patient experiences (Ball, Greenhalgh, &

Martin, 2016). Primary and specialty collaboration on referral guidelines result in increased specialty referral acceptance (Esquivel et al., 2012). Additionally, specialist referral review, availability for telephone consultation, or asynchronous EHR review positively impact timeliness of patient appointment attainment (Mehrotra et al., 2011; Sampalli et al., 2015). Improved relationships between provider groups have increased patient specialty access, yet coordination across the continuum of outpatient care processes has remained necessary.

Transition related improvements have been categorized into two general groups identified as care coordination and referral management. Nurse facilitation of referral coordination is endorsed. Expert opinion panels propose registered nurse (RN) utilization during coordination and transitional care episodes (Haas & Swan, 2014; Haas, Swan, & Haynes, 2015). The Institute of Medicine (2011) supports nurse care coordination for patient safety improvement. Nurse coordination management has been noted to decrease healthcare costs, duplication of services, and referral wait times while improving patient treatment plan adherence, (ANA, 2012; Rosstad, Garaasen, Steinsbekk, Sletvold, & Grimsmo, 2013). The referral process has been facilitated by enhanced communication, patient involvement, nurse-led coordination and implementation of clinical pathways (AHRQ, 2011; 2013; 2014; Benzer et al., 2015; Haas, Swan, & Haynes, 2015; McDonald et al., 2014; Mehrotra et al., 2011; Radwin, Castonguay, Keenan, & Hermann, 2015; Rosstad et al., 2013; Taylor et al., 2011; Wagner, Sandhu, Coleman, Phillips, & Sugarman, 2014). As much as individual staff effort decrease wait times, referral management departments have improved timeliness of consult completion (Ball et al., 2016). Both nurse care coordination and referral department development increase successful consult transition.

Organizational support of referral management is necessary for implementation of large-scale referral changes and authorization of financial incentive payments. As an example,

outpatient wait time has been improved for high risk patients referred to gastroenterology following implementation of a clinical pathway between referring and specialty providers (Redaniel et al., 2015). Adequate staffing for referral workload management has succeeded in coordination and wait time improvements (Blank et al., 2014). Although untested, financial rewards have also been suggested as incentives for coordination improvement within expert opinion papers and specialty group reports (AHRQ, 2011; ANA, 2015; Mehrotra et al., 2011; Taylor, Lake, Nysenbaum, & Meyers, 2011). At the project facility, organizational support has been necessary in referral management for policy development, increased staffing, and implementation of nurse coordination. Care coordination implemented in a clinical pathway has been selected to positively impact patient safety at the project facility. Referral coordination implemented as a pathway promotes an overview of the process from a system perspective.

### **Rationale**

Conceptualization of role standardization and process flow through a clinical pathway provides focus for initial improvement activities. The project provides methodology for identification and inclusion of patient safety elements while utilizing current system templates and existing staff. Implementation of care coordination attributes nestled into clinical pathway flow was the initial action to improve outpatient referral wait time. The independent variable was pathway implementation, whereas the dependent variable was wait time from primary care referral to the initial specialty care appointment.

Care coordination activities clarify accountability, communication requirements, and monitoring at the facility level. Several professional healthcare organizations have developed expert opinion policy on care coordination recommendations. Key domains such as communication, accountability, patient involvement, monitoring, and transition management

have been recommended by AHRQ (2014), ANA (2012, 2013), MacColl Institute for Healthcare Innovation (2010), and National Quality Forum (2010). The clinical pathway has been implemented as the standardized care plan for primary care patients who required an urgent specialty appointment unavailable at the project facility. The pathway, specific to the project facility, identifies tasks, activity sequencing, and team member responsibilities (Campbell, Hotchkiss, Bradshaw, & Porteous, 1998). Communication, education and community networking have been nursing strengths utilized (Haas & Swan, 2014; Haas, Swan, & Haynes, 2015). Registered nurse practices which involve integrity, critical thinking, outcome orientation, networking, and health promotion have been successful in other healthcare activities (Oregon Nurses on Boards, 2017).

Project planning and implementation have involved four assumptions related to participation, access, and regulation. The assumptions include

- facility staff and management willingness to cooperate during project implementation;
- availability of sufficient access to specialty care;
- specialty care referral is appropriate for diagnosis; and
- staff adherence to facility rules and regulations.

Plan-Do-Study-Act (PDSA) has been identified as the appropriate framework for planning and review of the quality improvement project. Plan-Do-Study-Act is a recommended framework for quality improvement projects (AHRQ, 2013; Institute for Healthcare Improvement, 2016). The PDSA cycle has been an excellent framework for the quality improvement project through organized change planning, review of the project findings,

evaluation and reflection of the process change, and decision making for future stages of continued process improvement. This document reports initial PDSA cycle data.

### **Specific Aim**

The aim of the quality improvement project has been patient safety improvement by decreasing wait times between primary care referral and urgent specialty care appointment. The study goal of decreased wait time was developed through the PICOT problem statement “[In the outpatient clinic setting], ...how does the implementation of a specialty care referral-for-care-pathway utilizing a care coordination model affect time of access to the initial consultation appointment for individuals with an urgent need within three months?” The focus of the initial PDSA was implementation of a clinical pathway utilizing care coordination elements to decrease wait time between an urgent primary care referral and the outpatient specialty care appointment unavailable at the project facility.

Application of care coordination elements into a clinical pathway standardized the process of urgent health care referral activities across an outpatient setting. It was anticipated the project would require review, reflection, and reiterations thus making PDSA the optimal choice for framework application. Quantitative wait time data was compared pre- and post-pathway implementation to determine the pathway effect on wait time. Qualitative data was collected from pathway users to identify what worked well or required improvement in order to make revisions during subsequent PDSA cycles.

### **Methods**

#### **Context**

The project facility had limited specialty care available on site; therefore, most specialty services were provided off campus either in the community or within government funded

facilities. The facility consisted of a primary campus and two outreach clinics serving approximately 16,000 patients annually. A large portion of the facility service area met criteria for medical shortage designation (U. S. Department of Health and Human Services, 2017). Fourteen teams at the project facility provided primary care to adult patients in a four-county region of the Pacific Northwest. Primary care was provided through frameworks known as patient aligned care teams (PACT). The teams consisted of a provider, RN, health technician or licensed practical nurse (LPN), and an administrative support person.

Specialty services were available at several off-site locations. Specialty appointments were scheduled within the local community or at distances up to 275 miles dependent on specialty availability. This quality improvement project was limited to specialty care requests with a clinical indication date (CID) of seven or fewer days documented on the order template.

Specialty care requested in the community had increased steadily since implementation of Veterans Access, Choice, and Accountability Act of 2014 (Choice Act). Prior to the law change, most requested specialty care referrals had been scheduled within government funded agencies. The Choice Act allowed the project facility to utilize community resources when federal agency specialty wait times exceeded 30 days. As such, there remained limited community specialists that accepted referrals paid for through Choice Act funding.

The project facility assigned nursing staff to the community care department to facilitate referral authorization requests to the community. Nursing staff identified extended wait times during referral processes. Urgent referral requests were selected for quality improvement activities due to the elevated risk for patient harm related to extended wait times.

Organizational dynamics created challenges for project implementation. Organizational dynamics, leadership, and culture were in flux. Project facility leadership team members were

new within the previous two years. Facility staff had participated in several improvement projects over the past 18 months with varied results. Staff vacancies were consistently present in primary care, health information management, and community care departments. Leadership implemented change through a hierarchical, top-down, structure with limited input from ground level employees. The facility also outlined clear expectations of positive patient outcomes, same day clinic access, and high patient satisfaction measurements. The nurse executive and interdepartmental nurse colleagues were identified as early supporters of the quality improvement project.

Increased stakeholder support was developed during educational sessions with staff. Facility guidelines prohibited financial resource support, additional staff, or unauthorized changes to workload. The Nurse Executive continued to be the strongest advocate for project implementation at facility leadership level along with the Business Office Service Chief at the department level. Department managers provided limited support with one department manager declining staff involvement for initial project input, development, or education. This barrier was creatively addressed through the service line chief who provided those staff alternate opportunities for participation during previously scheduled facility activities. Patient safety was maintained as the driving force and most significant desired benefit during project implementation. Patient and organizational satisfaction were identified as a secondary benefit of the project.

### **Intervention**

Three departments within the project facility were involved in pathway implementation. Primary care, community care, and health information management departments participated. The primary care teams were responsible for initiating the referral process and managing patient

needs until the specialty appointment. The community care staff processed the referral requests, contacted patients and specialty sites, and obtained appointment information. Health information management staff assisted transfer of radiology imaging and protected medical records. Stakeholders impacted by pathway utilization were patients, staff, primary care providers, and off-site specialty providers.

A clinical pathway was implemented to improve patient safety with the goal of decreasing outpatient wait time between a primary care referral and the urgent specialty appointment date. The project focus was limited to urgent requests deemed necessary within seven days by the provider ordering care. Volunteer representatives of each pathway role provided input into pathway development. No pathway modifications were made during the initial 12-week implementation phase. The pathway defined staff responsibilities during the referral care continuum within the project facility.

The project leader was an advanced practice registered nurse employed at the project facility. The project leader met with nurse colleagues, identified the problem and developed the PICOT statement. The literature review was performed and shared with the team. Pathway planning included discussions with staff performing each role within the specialty consultation referral process. A draft pathway was developed utilizing assigned roles and activities needed to coordinate and monitor care such as education, networking, advocating, and tracking. The draft pathway was presented to staff, department managers, service line chiefs, and facility leadership through ad hoc meetings and presentations by the project leader.

Implementation of the pathway began after group consensus was reached on pathway revisions. Pathway implementation education occurred at staff meetings and private educational sessions by the project leader. The staff meetings were regularly scheduled monthly staff

meetings. Educational meetings were held at each of the facility campuses. Newly hired staff were educated on a one-to-one basis within three weeks of start date.

Pre- and post-pathway medical record review was performed and compared by the project leader. Fifty pre-pathway medical records were reviewed monitoring date of order, urgency requested, specialty requested, and date of initial specialty appointment. These results were compared to 120 medical records reviewed 12 weeks post-pathway implementation. Post-pathway data also included recording additional primary care team interventions, visits, phone calls or hospitalizations for the same diagnosis of the specialty care request when time exceeded seven days wait. Pathway utilization was monitored by the project leader weekly on the first 10 urgent consults beginning every Wednesday and continued for 12 weeks. All data was collected by the project leader.

Project inclusion criteria was a clinical indication date of seven or fewer days on the specialty referral order. Exclusion criteria were same-day consult urgency, referrals to emergency departments, direct hospital admissions, hospital to hospital transfers, and mental health care. Specialty care referrals for on-site care were also excluded. Consults cancelled, discontinued, or patient non-attendance at appointments were excluded from results.

An easily identifiable red folder was provided to each team and included materials specific to the pathway. Educational sessions covered information present within the folder. Additional copies of the folders were available to staff as desired or requested. A total of 30 folders were distributed. Each folder contained the project purpose, background, plan, and pathway with roles and responsibilities described. Stakeholder roles were patient, primary care team, medical support assistant, RN, financial examiner, medical record release of information

(ROI) team, and documentation team. The pathway flow chart (Figure 1) was included in each folder.

The folders contained other documents necessary during referral activities. Office of Community Care staff, titles, and contact information were provided. Specialty-specific examination and diagnostic testing guideline suggestions were provided as a handout to improve knowledge of requirements for specialty referral. Imaging request forms, insurance forms, and ROI forms were also furnished.

### **Study of the Intervention**

Comparison of pre- and post-pathway implementation wait time was performed to determine impact of the referral pathway. Independent sample *t* test was utilized to compare the mean between pre- and post-pathway implementation. Descriptive statistics were used to compare the four most commonly ordered specialty care wait times in box-plot format. Medical record review was performed on 50 records pre-pathway and 120 records post-pathway implementation. Patient age, gender, specialty care requested, urgency requested, date of original order, and date of scheduled specialty appointment were recorded. Referral pathway terms were defined as follows: *Urgency* was counted in days between one and seven based on the clinical indicated date selected on the order menu. *Date of original referral order* was the date the primary care provider entered an order into the medical chart. The *date of scheduled specialty appointment* was the date the patient was scheduled to complete diagnostic testing or be examined by the consulting specialist. *Wait time* was counted in days between the order date and the appointment date.

Evidence of pathway utilization was monitored throughout the intervention period. Pathway utilization was confirmed through documentation recorded in medical and

administrative patient records. Pathway adaptation was reviewed by role and tasks defined on the pathway. Adaptation was reported as confirmed if all roles performed all tasks. Partial adaptation of pathway utilization was documented in all medical records reviewed. Complete documentation of all roles was present in 91 out of 120 medical records reviewed over 12 weeks post implementation (Figure 2). Overall pathway compliance was 75.8%. The lowest adherence rates were week nine at 50% and week 10 at 20% adherence. The second and twelfth week reached 100% compliance. The project leader remained available to staff for process clarification throughout the project. Statistical wait time outcomes were most likely related to pathway adaptation based on the overall rate of pathway compliance.

An important outcome of the pathway project was its impact on facility staff. The project improved communication between interdepartmental staff coordinating urgent outpatient specialty care referral. The education provided during project implementation improved baseline knowledge of specialty referral guidelines and requirements. An increased understanding of the importance of each pathway step for successful completion of an urgent outpatient specialty referral was reported by staff.

The pathway impacted wait time for the cases previously having longer wait times. Therefore, the project partially met the intended goal of wait time improvement. The lack of change in the mean wait time pre- and post-pathway suggested referral processes at the facility require a minimum number of days to work through each step, there were limitations in specialty access, and/or urgency designation was incorrect.

Because of the lack of statistical significant difference in mean wait time, median wait time and interquartile range were also reviewed. The median wait time was equal pre-and post-pathway implementation. Wait times in the third and fourth quartile improved post pathway

implementation. Improvement of Q3 data suggested pathway standardization occurred; however, the lack of median wait time improvement suggested the pathway, and thus facility process changes, were not the complete answer for wait time improvement. Other factors specific to the project facility included medically underserved designation and high specialty demand. High consult demand and limited specialty provider access prevented timely access except for the most critically ill patients.

Inaccuracy of identified clinical urgency was noted during medical record review. Utilization of the default one-day urgency was the only standardized method within the consult order menu. The majority of primary care providers did not document urgency aside from the CID calendar default. An unintended consequence of the decision was that the majority of consults were considered urgent by default, thus data represented both urgent and non-urgent referral wait time. The lack of alternatives to urgency identification was identified as a problem for future PDSA planning. The combination of lack of statistical significant change in mean and median wait time, geographic designation as medically underserved population, and high specialty demand suggested saturation of specialty services for the project population.

The findings also led to consideration of inaccuracy in urgency identification within the subject population. Unintended consequences of the project related to patient experience were increased referral wait times in radiology. Pathway complexity may have been a contributor to increased radiology wait time. Radiology specialty requests were straightforward and required minimal additional record exchange or coordination. The increase in mean wait time during pathway implementation suggested against value-added change specific to the radiology specialty category.

## **Measures**

Wait time comparison was completed using independent *t* test analysis. Wait times were collected pre-pathway and post-pathway implementation using a data collection tool developed for the project (Figure 3). The pre-pathway data was obtained from 50 medical records containing urgent specialty referral requests completed within six months of the pre-pathway project implementation. A data report containing all consults meeting the pre-pathway date range was reviewed beginning with consults ordered closest to the implementation date and working toward later dates was used to identify medical records that met consult criteria for evaluation. Each consult was reviewed for project inclusion criteria until data from 50 medical records meeting criteria had been collected.

Post-pathway implementation data was obtained from 120 medical records meeting project inclusion criteria until the consult was completed, cancelled, or discontinued. Mean wait time data was compared between the two groups. Reliability and validity of the data collection tool was confirmed after five records were reviewed. Face validity confirmed data obtained reflected desired data. Reliability was obtained by allowing only one person perform data collection. The tool was determined to be reliable as data collection was clearly defined, options were specific to the topic, and a single staff member performed the data collection. The tool was valid for measurement identifying the wait time in days.

Qualitative data collection opportunities were scheduled to collect pathway implementation feedback. Feedback in the form of written submission was also provided to allow for anonymous pathway related feedback. Combination use of qualitative and quantitative data review was supported within PDSA improvement cycle planning (AHRQ, 2013).

Comparison of changes in mean wait time were assessed using independent sample *t* test, with a *p* value of .05 representing statistical significance post-implementation of the referral

pathway. Data was collected and recorded by a sole nurse practitioner staff member. Qualitative data was reviewed for themes representing barriers or facilitators of pathway utilization based on two questions about what worked well and what needed improvement related to use of the pathway. Pathway utilization was monitored through medical record review post-implementation. Utilization of the pathway was considered positive when each role documented all steps necessary for implementation.

### **Analysis**

Quantitative and qualitative data were analyzed. Interval level data was collected for comparison by independent *t* test to determine statistical significance of changes in the dependent variable of wait time. The mean wait time from the medical records pre-pathway implementation were compared to the mean wait time from medical records reviewed post-pathway implementation. The primary nominal data collected during the project indicated the type of specialty care requested. The nominal data was used to categorize wait time pre-and post-pathway implementation by specialty group requested within the original referral order. Additional nominal data was collected on age and gender of the patient population which was used to confirm similarities between the patient and sample populations.

Qualitative data was collected and reviewed for common themes related to utilization of the pathway. Qualitative feedback was planned as an additional method for identification of problems that were possibly not known at project initiation or recognized through review of wait time measurements. The data was categorized into themes reporting what did or did not work well during pathway utilization.

### **Ethical Consideration**

The project, reviewed by University and project facility representation, met criteria for completion as a quality improvement activity. Institutional Review Board oversight was not required. Patient privacy and health information were carefully protected during project implementation, medical record review, and data collection. Data collection was performed on completed medical records. Data logs were kept in a locked drawer within a locked cabinet until de-identified information was loaded into statistical programs. Identifiable data was then destroyed according to facility regulation. Analysis, measurement, and distribution of data was only through de-identified aggregate data information.

### **Results**

Aggregate and specialty focused means were compared pre- and post-pathway implementation. A total of 170 medical records were reviewed with data recorded from 156 records. The sample population was mostly male. The mean age of the pre-intervention group was 67.08 years and the post-implementation group was 66.42 years. This was representative of subject population demographics. The most frequently ordered urgent outpatient care in both pre- and post-pathway groups were radiology, cardiology, orthopedics, and dermatology.

Data from combined specialty categories revealed a mean wait time of 34.11 days pre-pathway and 28.96 days post-pathway implementation. The mean wait time improved numerically; however, the improvement was not statistically significant  $t(156) = .415, p > .05$  (Table 1).

Further exploration of wait time through evaluation of median and interquartile range data were performed to determine other areas of wait time change post-pathway implementation. Wait time improvements were noted in the quartile data in the pathway implementation group. The interquartile range (*IQR*) of the pre-pathway implementation group ( $Q3 = 55; Q1 = 15$ ) was

40 and the *IQR* of the post-pathway implementation group ( $Q3 = 35$ ;  $Q1 = 15$ ) decreased to 20 (Figure 4).

The difference indicated the middle range of values in the pathway group was more compact. Improvement in third quartile ( $Q3$ ) data also showed improvement with 75% of the post-pathway implementation group obtaining a specialty appointment by day 35 as compared to day 55 in the pre-implementation group. Therefore, less dispersion of wait time existed in the post-pathway group. Meanwhile, the median wait time was 25 days for both pre-and post-pathway implementation subspecialty groups (Figure 4). Excluded from the quartile data table visualization were extreme outliers pre- and post-pathway present in cardiology ( $n = 2$ ), neurosurgery ( $n = 2$ ), oculoplastics ( $n = 1$ ) and otolaryngology ( $n = 1$ ) with wait times over 120 days.

The reason for the extended wait times were unclear, although clinical review of the cases identified a lack of urgent health care needs based on diagnosis, office visit notes, or diagnostic testing results. For example the otolaryngology diagnosis was cerumen impaction which is not an urgent health care issue. The data is included in statistical results; however, not in the visual display limited to maximum 80-day display.

Comparison of pathway implementation between pre- and post-pathway implementation covered sixteen specialty categories. Closer review of the data demonstrated highest utilization pre- and post-pathway in cardiology, radiology, dermatology, and orthopedic specialties. A more focused comparison was performed on the subgroup of four most requested specialty categories. The subgroup comparison also demonstrated a lack of statistical significance to mean wait time difference,  $t(87) = .643, p > .05$ .

Inconsistent wait time improvement was demonstrated between the specialty categories of radiology, cardiology, orthopedics, and dermatology. Wait time improved in orthopedics, dermatology, and cardiology data, while wait time increased in radiology data. Wait time improvement was significant in dermatology and orthopedic specialty wait times.

Dermatology wait time decreased from a mean of 49 days pre-pathway ( $n = 5$ ) to a mean of 27 days post-pathway ( $n = 8$ ; Figure 5). Orthopedics demonstrated the largest decrease in wait time from 47 days pre-pathway ( $n = 5$ ) to 22 days post-pathway ( $n = 4$ ; Figure 5). However, the small sample size limited statistical inference as individual subcategories.

Quartile data provided a broader perspective on inter-specialty pathway data results. Radiology wait time increased in interquartile range pre-pathway ( $IQR = 7$ ) to post-pathway ( $IQR = 15$ ), and median time pre-pathway ( $M = 13$ ) to post-pathway ( $M = 24$ ; Figure 6). Cardiology median wait time was equal pre- and post-pathway ( $M = 30$ ) while Q3 wait time improved from 61 to 39 days post-pathway (Figure 6). Orthopedics median and Q3 wait times improved from pre-pathway ( $M = 56$ ;  $Q3 = 60$ ) to post-pathway ( $M = 24$ ;  $Q3 = 36$ ; Figure 6). Dermatology median and third quartile range wait times also improved from pre-pathway ( $M = 50$ ;  $Q3 = 61$ ) to post-pathway ( $M = 24$ ;  $Q3 = 42$ ; Figure 6).

Data collected regarding potential consequences for patients waiting for specialty care over seven days included the presence of additional office visits, telephone calls, or hospitalizations documented within the medical record. Data was collected post-pathway implementation only. Medical record documentation specific to the same diagnosis of the urgent specialty referral included additional telephone calls ( $n = 8$ ), office visits ( $n = 3$ ), and hospitalizations ( $n = 2$ ) when specialty care appointments exceeded 7 days post urgency requested. No deaths were documented.

Qualitative data was collected on answers to two questions, what worked well and what did not work well with pathway utilization. One staff member submitted written information, all other feedback was obtained by direct communication with staff. Staff provided comments on fifty-four consults which were categorized into themes. Positive pathway themes were active communication ( $n = 11$ ), improved process ( $n = 6$ ), timeliness ( $n = 6$ ), teamwork ( $n = 5$ ), and improved knowledge ( $n = 2$ ). Barrier related themes were more diverse. Difficulty determining clinical urgency ( $n = 13$ ), locating pertinent medical record data ( $n = 10$ ), imaging data transfer gaps ( $n = 7$ ), limited pre-work completion ( $n = 5$ ), lack of staffing ( $n = 5$ ), and lack of timeliness ( $n = 4$ ) were reported.

Mean wait time improvement was lacking post-pathway implementation. However, overall improvements were noted when evaluated using Q3 data that was not noted pre-pathway. Therefore, consideration of other factors affecting wait time must be considered. Prolongation of wait time during radiology referral was an unintended consequence of pathway implementation. One would consider the time needed for completion of pathway steps may not be needed for specialty radiology examination. A deeper review of this topic would be needed to clarify the cause for prolonged waits post-pathway implementation.

Group staff education was difficult to complete. Provider level pathway education was the most difficult. Although pathway implementation education was planned during mandatory staff meetings, provider attendance was poor. Furthermore, department managers allotted minimal time during meetings for education due to other competing priorities. Individual educational sessions were more effective and improved staff engagement. This may be attributed to the relationship building that occurred during individual educational sessions.

As a result of the quality improvement project findings, one would recommend additional review of a single category of specialty care per PDSA cycle. Although the data obtained provided breadth of information, focus on a single urgent specialty category may have increased information regarding more specific barriers related to wait time improvement. Lack of timely urgent access, would lead one to reconsider the assumption of adequate urgent specialty care access during future revisions. Access may not have been adequate to meet demand. This finding also suggested the necessity for evaluation of specialty access for the facility patient population.

A significant finding during the project was confusion expressed around urgency and the lack of standardized urgency identification. The selection of the default criteria of *one-day* urgency caused true clinical urgencies to be overlooked due to over exposure of one-day specialty request indications. Future revision of the consult order menu was recommended. Additionally, peer review of de-identified consult examples indicated as urgent were suggested for use as learning cases.

Pathway adaptation during the project cycle decreased during weeks nine and ten. The cause was unclear. Ongoing coaching and feedback from the project leader was necessary when decreased pathway adaptation was noted. Further monitoring of pathway adaptation was suggested even though adaptation improved again during weeks 11 and 12. Establishment of a clear measure indicating successful adaptation was suggested for future projects. Additionally, deeper studies into the barriers experienced within each role was suggested for future projects within each specific department.

Facilitators to meeting project outcomes were the project leader, community care nursing staff, facility nurse executive, and department service chief. Barriers to project success were

educational time limitations and staff availability. There were no immediate plans to support continued monitoring the project at the same level; however, further specified improvements were recommended based on the project. Changes to the referral order menu were initiated post-project. Recommendations for future work included additional staff education on high demand-low supply specialty topics such as neurosurgery. Education focused toward evaluation and management of lumbar radiculopathy and identification of surgical case prioritization were recommended. Equally important recommendations made were to improve relationships between the facility and community specialty providers and develop stronger referral partnerships. As previously noted primary care provider education could be the purpose to bring primary care and specialty care teams together. Additional review of informatics available to the project facility was performed with the recommendation to incorporate more clinically pertinent data objects into reports. Diagnosis related to referral, initial referral date, and specialty appointment date were recommended for inclusion in weekly data reports. Finally, increased use of RN's performing coordination rather than utilization review was recommended to facilitate patient care access. The pathway project was a positive initial step toward improvement of wait time between primary care referral and urgent outpatient specialty care appointment.

### **Discussion**

#### **Summary**

The project improved wait time within third quartile data; however, mean and median wait time lacked improvement. The rationale of care coordination established through clinical pathway application, allowed simultaneous evaluation of multiple areas of the process. Several important elements surfaced during the clinical pathway wait time improvement project. The pathway provided a mechanism to approach improvement along a patient care continuum that

crossed department boundaries. Staff reported improved communication, knowledge, and sense of teamwork during implementation. Staff also reported new understanding of their individual responsibility as part of a whole process. The project provided a new set of data not previously evaluated at the facility. Wait time data between the referral order and the specialty appointment had not been examined prior to project identification, development, and implementation.

Third quartile and median wait time data improved in three of the four most frequently ordered specialty categories post-pathway. The finding suggested that more patients were getting care sooner post-pathway implementation compared to pre-pathway. On the other hand, radiology wait time increased post-pathway. The cause was unknown although completing each pathway step may have increased the time needed to process the radiology referral order as increases were noted in median wait time, *IQR*, and *Q3* data.

Pathway areas which needed further improvement paralleled those identified in the literature. Examples included completion of the referral order menu, clarification of clinical urgency, and improvements in medical record document sharing. Identification of additional facility gaps were uncovered during medical record review performed for data collection purposes. Facility gaps included need for ongoing education on specialty referral guidelines, improved communication between primary and specialty providers, and ongoing clinically relevant data collection methods and reports. Clinical urgency determination required further clarification and development of an alternative mechanism to document urgency in the order menu. Lastly, identification of appropriate medical record inclusion for record transfer required nursing intervention for accuracy optimization.

The PDSA framework was ideal for this quality improvement project. Several areas, as identified above, were uncovered and recommended for future cycle focus. Ongoing

improvement planning and additional review were needed following the first PDSA cycle completion. Care coordination in a pathway model allowed several roles to be evaluated during the referral care process. The method encouraged staff engagement and improvement potential at a system level. Several new relationships were built through the improvement project process.

### **Interpretation**

The referral pathway project did not meet the outcome of statistically significant mean wait time improvement, yet wait time gains were made in third quartile results. A small number of pathway implementation projects reported in the literature noted wait time improvement. These projects were focused pathways for single diagnosis or clinic site focus. Nevertheless, facility education has been performed, key data obtained, and further improvement activities planned. The overall findings of the project mirror other documented findings reported in similar referral coordination projects. These include barriers related to order menu completion, medical record exchange, and tracking.

The referral pathway project has positively impacted the facility through increased staff education, problem identification, referral resource development, and quality improvement initiative. Stakeholders report positive feedback to education provided and greater comprehension of actions necessary to complete referral processes and thus improve patient safety. The project has introduced facility staff to evidence-based practice quality improvement activities initiated from ground level staff.

Referral pathway folders have facilitated education. Ideally, this information would have also been online and updated regularly. Folder information has been reported to be helpful by staff utilizing the information. Staff report improved ability to educate patients on the referral processes as a direct result of pathway process education.

Referral pathway implementation encompassed several categories of specialty care. Looking at urgent specialty care requests as a single group has been found to increase the incidence of uncontrolled variables that may have influenced outcome measures. For example, neurosurgery specialty services were limited both in government funded and community based resources. Therefore, only emergent surgical cases were scheduled. Whereas, review of individual specialty categories could have included evaluation of wait time comparison by location or provider. As such, the broad category of urgent specialty referral provided an overview of the state of care during initial phase project implementation.

One weakness in project design was use of the calendar within the order menu as the clinical indication of urgency. The default urgency of one-day occurs when no specific date was selected. This has resulted in false levels of urgency for diagnosis or requests that were not clinically urgent, such as cerumen impaction requested for care within one day. Staff have reported the default urgency status resulted in urgency fatigue and lack of meaningful urgency. The default highlights an absence of other facility methods to identify CID. Order menu template revision has been recommended for future urgency identification.

Medical record transmission errors and barriers were present. For example, one oncology case had pathology uploaded; however, it was dermatology pathology rather than the colon pathology which was the cancer diagnosis reported in the referral consult for oncology care. Transmission errors require staff re-work and document re-submission following error notifications from specialty sites. Inability for off-site specialists to view facility radiology images delays scheduling until image transfer occurs. Orthopedics, neurosurgery, and interventional radiology or surgical biopsy requests have experienced delays related to the imaging problems. Review of role assignment and focused education have been suggested to

impact future medical record transmission. Nursing oversight on medical record selection is needed.

Clinical tracking was identified for reexamination in future pathway revisions. Uncoordinated tracking practices and purposes were identified post-pathway implementation. Financial staff within the community care department were tracking for administrative details related to billing. This has been determined to be different in purpose from clinical tracking. Clinical tracking is needed to identify scheduling delays. Yet, primary care team staff reported difficulty identifying the scheduled appointment date within the medical chart. Further work on clinical tracking has been identified for future PDSA cycles.

Tracking and coordination of pending test results were identified as gaps during the project. Concurrent requests for diagnostic testing and specialty care had frequently occurred. An example was a patient with angina who had cardiac imaging and cardiology specialty ordered simultaneously. Although cardiac testing was then completed the abnormal results were not sent to the appointed cardiologist. Subsequently, because cardiology testing was not completed prior to the consult request, the specialty appointment was not scheduled as urgently as it would have been with completed testing. Unintended consequences included one patient admitted urgently through the emergency room the same date as the cardiology appointment. However, had the abnormal test result been sent to the cardiologist the appointment may have been rescheduled. Pending and recently completed test result coordination have been recommended for future PDSA cycles.

Time allotted for staff training and provider engagement were difficulties not anticipated during project planning and implementation. The majority of group education attendees were RN, licensed practical nurse (LPN), and administrative staff. Few providers attended group

educational opportunities. The trade-off between staff comprehension and time allotted for education was difficult. The project leader attempted stakeholder engagement for real-time education when gaps have been noted during record review. Limited training opportunities were likely to have missed key staff members. In order to honor staff time limitations recommendations have been made to shorten educational sessions, focus on specific topics, and provide frequent opportunities for attendance as strategies to increase provider involvement during change activities. Further exploration of this topic is needed.

Staffing shortages may have influenced wait time for the facility. Staff shortages and frequent introduction of new staff have been common. Review of medical records consistently demonstrates staff documentation on days and times not identified as normal work shifts. Thus, one must consider staffing has effected the project in this context. Increased RN, medical support assistant, medical record, and voucher examiner staffing have been recommended.

Coordination between the initial primary care specialty request and urgent outpatient appointment present a continuum of care process. Insufficient staff may have represented a barrier to sustained and ongoing improvement activities for patient wait times. Limitations of staffing and staff education time are significant risk factors in patient safety related to wait time. Although additional facility costs are incurred to increase staff numbers, patient safety is compromised when medical record transmission errors or delays sending diagnostic testing results to appropriate providers occurs.

The majority of specialty clinics review referral request documentation for urgency defined within their individual clinics. Referral requests for surgery or procedures have been scheduled more easily than requests for treatment management. This observation was not predicted during pathway development. Specialty access for some specialties, such as

neurosurgery and pulmonology, have been minimal. Primary-specialty educational need on these topics have been identified and proposed. Education on telephone consultation options or other non-visit consultation methods have been suggested to improve advice-only consultation use.

Utilization of non-visit specialty referral options potentially decrease appointment demand thus increasing urgent appointment availability and improved timeliness. Non-visit specialty referrals can be formal such as electronic consultation within organizations or informal such as a telephone call or impromptu discussion. These require less face-to-face time between patient and provider and can be utilized to improve evaluation or early treatment interventions. The drawback is that non face-to-face referrals increase primary care team workload to complete recommendations. Workload increases have been noted as barriers to already stretched staff members.

### **Limitations**

The referral pathway was specific to the project facility, patient population, and referral resource availability. Identified pathway roles and responsibilities were unique to those at the project site and developed for facility use. These factors limit pathway adaptation at other locations. However, the care coordination pathway concept could be adapted for other departments at the project facility or for similarly designed locations.

The project leader was employed at the project facility. The potential for limited internal validity of the project was present. However, the project structure and process were reviewed with facility leaders with consensus obtained on pathway application and data measurement to minimize limitations and bias.

### **Conclusions**

The urgent pathway quality improvement project provides opportunity for in-depth review of a multidisciplinary processes within the project facility. Clinically relevant data, not previously examined, has been collected and evaluated. A new employee training manual and reference resource contain consult related information specific to the facility.

The pathway project, although not producing statistically significant mean wait time improvement, demonstrates third quartile and interquartile range improvement for sub-specialty categories. At the same time pathway application identifies other referral process areas requiring improvement in future PDSA cycles. Sustainable quality improvement cycles are planned for ongoing sustainability of the project. The project leader plans ongoing improvement with the consult order menu.

Dissemination has been planned through ongoing presentations to stakeholder groups and professional organizations as additional outcome measures and results become available through ongoing PDSA cycles. Future continued improvement has been planned in many areas such as referral menu change, ongoing data collection, primary-specialty relationships, nursing input, and access evaluation. In particular, a method of accurate urgency identification development in the order menu is necessary to distinguish real urgency from the default category of one-day urgency. Revised methods for referral urgency identification is recommended as a priority action.

Practice implications include application of data collection methods to monitor clinically relevant data including wait time. Additionally, further identification of areas requiring nursing input during urgent specialty referral are identified such as assisting non-clinical staff in the identification of pertinent medical records to be transmitted to specialty care teams.

Further review of radiology specialty referral processes has been recommended for additional review to determine if the pathway had contributed to increased wait times. Lastly, specialty care availability within the geographic referral area requires additional evaluation. Limited access may have been a contributor to extended wait times. Nurses developing relationships with referral sites have been recommended to improve specialty-care specific networks.

The next steps for the project include further PDSA cycles. Many areas have been identified for additional work: Planning brief educational updates, developing an online referral resource, clarification of urgency, assigning clinical tracking, increasing nurse involvement in identification of pertinent medical record documentation for record transmission and development of specialty group networks.

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## Tables and Figures

Table 1

*Data Comparison Pre- and Post-Pathway*

Measure	Pre-pathway	Post-pathway
<i>N</i>	47	109
Mean age in years	67	66
Mean wait in days	34.11	28.96
Minimum wait in days	4	4
Maximum wait in days	75	94
Standard deviation	20.96	16.96

*Note.* Comparison of descriptive data pre- and post-pathway implementation. The difference in mean wait time was not statistically significant.  $t(156) = .415, p > .05$

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Patient	Primary Care Team	Community Care MSA	Community Care nurse	Financial Examiner	Health Information (ROI)	Specialty
<p>[Start here]</p> <p>Identifies health care need.</p> <p>Notifies primary care team.</p> <p>[Go to top of column 2 and work down]</p>	<p>Assessment, examination, and plan care with patient.</p> <p>Educate patient and manage care issue</p> <p>Complete prerequisites and orders consult for specialty care.</p> <p>Identify urgency.</p> <p>Obtain off-site records.</p> <p>Track care through care management tool.</p> <p>Contact community care office for highly urgent care needed less than 72 hours via TC or messenger.</p> <p>Places social work order for transportation barriers.</p> <p>[Go to top of column 3]</p> <hr/> <hr/> <p>Post specialty</p>	<p>Contact patient to inform consult processes and patient actions needed.</p> <p>Communicate with community care nurse of pending urgent care consult via alert.</p> <p>[Go to top of column 4]</p> <hr/> <hr/> <p>Post specialty appt: Inputs medical record results into patient medical record.</p> <p>Alerts ordering team of availability of results.</p>	<p>Evaluates completed order for necessary requirements</p> <ul style="list-style-type: none"> <li>-Specialty</li> <li>-Clarity</li> <li>-Urgency</li> <li>-Completed prerequisites</li> <li>-Special circumstances</li> </ul> <p>Evaluates access locations and determines most timely route to send referral.</p> <p>Documents review and authorization including pre-approved bundle of healthcare services allowed OR Documents denial and reason with notification to ordering team.</p> <p>Liaison with specialty sites and primary care teams for additional information, problem solving, critical abnormal findings.</p> <p>Liaison with</p>	<p>Prepares financial authorization document.</p> <p>Compiles and submits documents to specialty.</p> <p>Requests imaging discs from ROI department for mailing to specialist.</p> <p>Requests completion of special ROI when protected PHI must be transmitted.</p> <p>Tracks consult timeline for scheduling and return of completed specialty records.</p> <p>[Go to top of column 7]</p>	<p>Transmits patient discs to appropriate specialty provider.</p> <p>Obtains and transmits protected patient health information after obtaining specialized consent.</p> <p>[Go to top of column 7]</p>	<p>(Included but not controlled by facility processes.)</p> <p>Reviews submitted medical records and determines urgency and scheduling availability.</p> <p>Evaluates and treats patient.</p> <p>Communicates critical findings back to ordering provider.</p> <p>Submits medical visit information back to facility.</p>

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
	appt: Updates plan of care with patient based on findings from specialty consultation.		patient for barriers with specialty consult appointment, location, questions.  Identification of required medical records documents needed for complex specialty.  Completes any necessary non-electronic paperwork needed by specialty site.  [Go to top of column 5 and 6]			

*Figure 1.* Clinical pathway for outpatient primary care to urgent specialty care appointment. Each column represents a role function and activities required for completion. The pathway functions are sequential and standardized to the project facility.

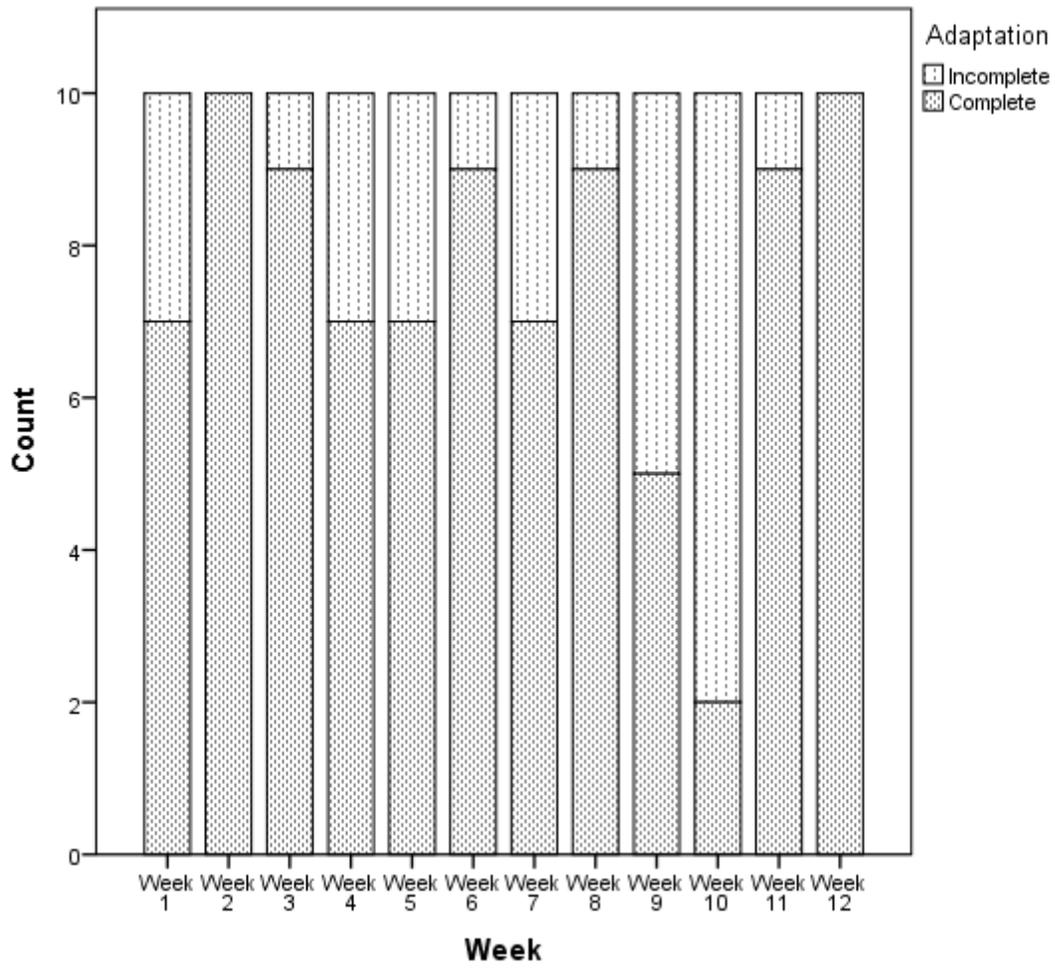


Figure 2. Post implementation compliance to pathway over 12 week implementation period.

Age	Gender	Consult Order Date	Specialty Appointment Date or Cancellation or Discontinuation	Urgency Requested	Wait Time in Days	Specialty Type

Figure 3. Data collection tool.

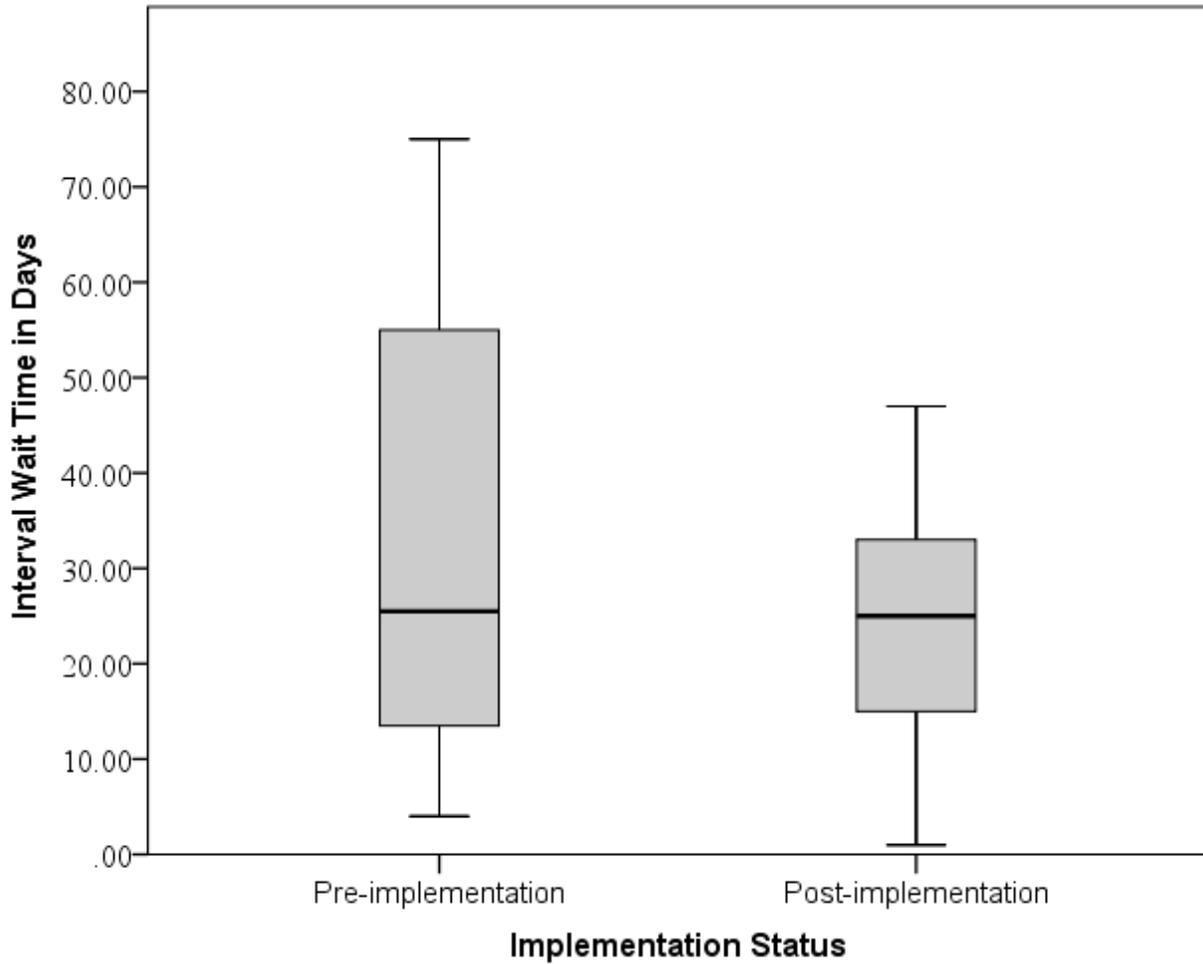


Figure 4. Boxplot diagram of pre- and post- implementation quartile data. Median wait time is equal. Interquartile range decreased from 40 to 20 days post- implementation. Third quartile wait time decreased from 55 to 35 days post-implementation.

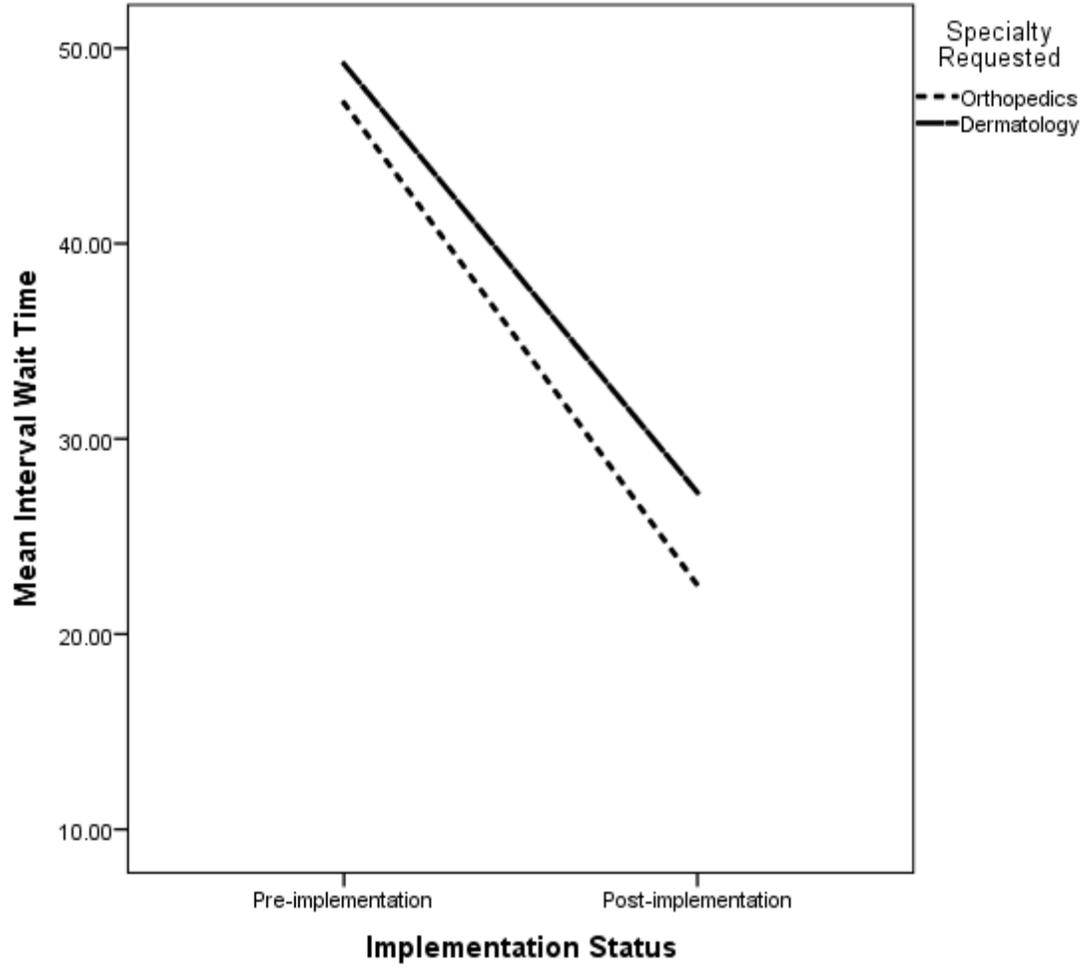


Figure 5. Dermatology and orthopedic specialty wait time improvements from pre- to post-pathway implementation.

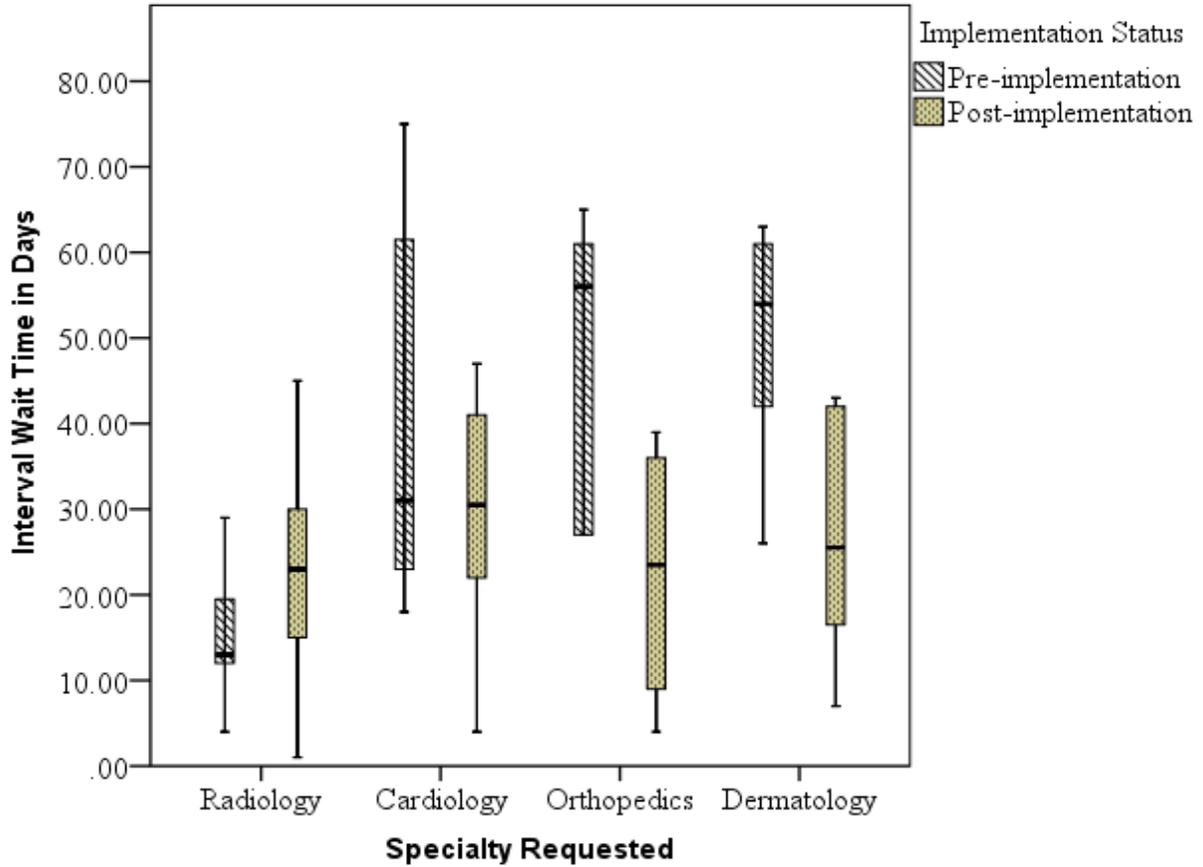


Figure 6. Wait time comparison for most frequently ordered specialty categories. Median and/or third quartile improvement were noted in cardiology, orthopedics, and dermatology. However, the mean wait time difference for most-requested specialty category cohort was not statistically significant.  $t(87) = .643, p > .05$