THE IMPACT OF A CLINICAL DOCUMENTATION IMPROVEMENT PROGRAM

Lena Nichelle Wilson

Submitted to the faculty of the School of Informatics
in partial fulfillment of the requirements
for the degree of
Master of Science in Health Informatics,
Indiana University

August 2009

Accepted by the Faculty of Indiana University,
in partial fulfillment of the requirements for the degree of Master of Science
in Health Informatics

Master's Thesis
Committee

_____

Anna McDaniel, DNS, RN, FAAN
Professor & Assistant Dean for Research
Indiana University School of Nursing

_____

Kathy Silvey, RN, MSN
Clinical Documentation Liaison
Clarian Health

_____

Ruth Walker, MIS, RHIA, CPHQ
Professional Practice Coordinator
Health Information Administration Program
Indiana University School of Informatics

Dedicated to my parents, loving daughter and in memory of my grandmother, Helen.

TABLE OF CONTENTS

Page

LIST OF FIGURES

ACKNOWLEDGEMENTS

Thank you to everyone who has supported me along the way with all of my educational pursuits. To my parents, for always being there for me even when I thought I didn't need it. To my wonderful daughter, Madison Anabelle, always reach for the stars and know that any dream is achievable once you just put your mind to it. To Rachel, for your continued encouragement, you are a great friend that has been there for me through this journey. This would not have been possible without all of you. I am extremely grateful.

ABSTRACT

Lena Nichelle Wilson

THE IMPACT OF A CLINICAL DOCUMENTATION IMPROVEMENT PROGRAM

The purpose of this study is to determine if the implementation of a Clinical Documentation Improvement Program will provide an impact to the patient's acuity scores in a healthcare organization. These acuity scores, in combination with other metrics, are utilized in public reporting of healthcare institutions. By portraying the most accurate clinical picture possible, healthcare organizations have the potential to increase their Case Mix Index which could also bring in more revenue.

At this time there is limited documentation available providing results benchmarking of Clinical Documentation Improvement Programs. The majority, if not all, of the literature explains the need to implement a program and how to structure and organize the efforts surrounding it. This study will look at the outcomes experienced at one facility to determine if their implementation provided improvements.

Upon completion of this study, it was determined that the implementation of Clinical Documentation Improvement Program provided an impact to the facility in terms of their acuity scores. There was also an increase realized in their overall Case Mix Index. Therefore, as evidenced in this study, Clinical Documentation Improvement Programs are an important initiative to implement at any healthcare institution.

CHAPTER ONE: INTRODUCTION & BACKGROUND

INTENDED PROJECT

The purpose of the project was to evaluate the outcomes of a Clinical Documentation Improvement Program. The specific focus included tracking the trends of the Severity of Illness (SOI) and Risk of Mortality (ROM) scores. These scores can range from a one (Minor) to a four (Extreme). The higher the SOI and ROM scores, the more complex the patient's disease processes are.

The Case Mix Index (CMI) will provide the facility with an index value to further describe the population of patients that they care for. There are changes in the CMI that can simply be accounted for in the natural variation of the patient mix through cyclical medical events; such as trauma and pneumonia. Other changes can be attributed to the shifting in patient volumes.

CMI shifting can occur when the patient volumes fluctuate. These can either be a decrease in the higher weighted DRGs or a drastic decrease in the volumes of lower weighted DRGs. Since there can be many factors that influence the CMI, for the purposes of the study, the CMI will be control charted but will not be used as the only factor to determine the overall success of the program.

INTRODUCTION OF SUBJECT

The importance of utilizing a Clinical Documentation Improvement Program is to ensure that the data being provided to internal and external sources are an accurate as possible. The data being submitted are derived from the International Classification of Diseases (ICD) code sets authored by the World Health Organization (WHO). The WHO implemented these diagnostic code sets to comparatively track disease pathogenesis

across the globe. For example, the same diagnosis code that would be applied in United States for Diabetes Mellitus would be utilized in Australia and England (World Health Organization). The diagnosis codes also assist in the tracking of the important events that occur during human life, or vital statistics.

REGULATORY COMPLIANCE

The clinical data detail captured is also utilized for Quality Improvement and Regulatory Compliance. At the Federal and State levels, this type of reporting is being utilized more frequently. Regulators require facilities to report any conditions that a patient may acquire while they are receiving care at their facility.

In February 2006, President George W. Bush signed the Deficit Reduction Act of 2005 (DRA). In the DRA, major changes were outlined to overhaul the Medicare and Medicaid programs which would equate to a major cost savings benefit from 2006 to 2015 (Anonymous, 2006). Some of the provisions included in the DRA encompass Hospital Acquired Conditions (HAC), Present of Admission (POA) indicator, and the development of an approach to Value-Based Purchasing (VBP) (Darling, 2007).

Centers for Medicare and Medicaid Services (CMS) currently follow 12 Hospital Acquired Conditions (HACs) that meet their criteria for high cost, high volume, or both (Centers for Medicare & Medicaid [CMS], 2007). CMS is now withholding payments to healthcare facilities on any conditions that they deem as hospital acquired. They are also looking at other diagnostic conditions for inclusion on the HAC list.

At the state level, Indiana annually reports out several HACs by healthcare facility to the general public. By reviewing this information closely, government officials

are able to establish legislation to hold hospitals, physician offices, and clinics to a higher standard of care that is being provided to their patients.

To further denote whether a diagnosis was hospital acquired, the DRA also outlined the Present on Admission (POA) indicator that will be assigned to each diagnosis code that is applied to an inpatient encounter (Centers for Medicare & Medicaid [CMS], 2007). There are 5 indicators that can be utilized by the inpatient coding staff. They include: 'Yes' (Y), 'No' (N), 'Unknown' (U), 'Clinically Unable to Determine' (W), and 'Exempt' from reporting (1 or E). The 'yes' and 'no' indicators are the most commonly seen as these diagnoses were either present ('yes' indicator applied) or hospital acquired ('no' indicator applied).

The 'unknown' (U) indicator is applied when there is an insufficient amount of documentation listed in the medical record to determine the onset of particular diagnoses. The 'clinically unable to determine' (W) indicator is applied when the documentation specifies that the provider was unable to determine if those particular diagnoses were present prior to the admission or if the onset occurred after admission into the healthcare facility. The 'exempt' POA indicator (1 or E) is applied to codes that describe historical conditions that are not currently receiving treatment but could potentially impact the physicians clinical decision making process (Centers for Medicare & Medicaid [CMS], 2007). Some examples include history of resolved malignancy, history of heart valve surgery or history of a transplanted organ.

RISING HEALTHCARE COSTS & VALUE BASED PURCHASING

In 2008, according to the National Coalition on Health Care (NCHC), the healthcare spending in the United States would exceed $2.4 Trillion dollars. The

projected increase in 2017 is approximately $4.3 Trillion dollars. Currently the United States is spending eighteen (18) percent of the Gross Domestic Product (GDP) on healthcare (National Coalition on Health Care, 2008). And, according to the McKinsey Global Institute, the United States has an excess in healthcare spending each year of approximately $480 billion. This is mainly attributed to the excess administrative costs and poor quality of care (McKinsey Global Institute, 2007).

One of the ways in which the costs and quality of care are addressed is with the third aspect of the Deficit Reduction Act of 2005. This pertains to the Value-Based Purchasing (VBP) or Hospital Quality Incentive Demonstration (HQID). The program is a reward based program for those physicians who are providing the 'best practice' care and also penalize those physicians who are unable to achieve the best practice standard set forth by their peers. Medicare is not the only payor who has chosen to take this approach with incentivizing the physicians to provide the highest quality of care possible. Many other payors are now joining this movement that will benefit them, as well as, the patients.

In the Tax Relief and Health Care Act of 2006, the implementation of the Physician Quality Reporting Initiative (PQRI) took effect. This was an extension of the efforts of the VBP or HQID projects. This allows physicians to report on up to 119 measures. These measures were published in the Physician Fee Schedules in 2008. There were upwards of 100,000 eligible physicians participating with at least one data submission to the Centers for Medicare and Medicaid Services (CMS). By participating in this initiative, physicians are able to receive up to 1.5 percent of their covered charges,

during the specified reporting period, back (Centers for Medicare and Medicaid Services, 2008).

By participating the physicians not only receive the incentive payments, but also are providing a higher quality of care to their patients. The PQRI initiative was an attempt by then President George W. Bush to address the problems in the health care sector. These areas include reduction of preventable errors and uneven quality of care. With continued awareness of the quality initiatives, the highest quality of care is received (Centers for Medicare and Medicaid Services, 2008).

A financial impact for facilities can also be seen with improved accuracy in the clinical documentation. Currently, some insurance providers reimburse at a higher rate to those facilities which demonstrate a lower complication rate. Payors are also beginning to reimburse more at the physician level, for those physicians who have a lower complication rate and are providing a higher quality of care to their patients. On the converse, the insurance companies are paying the lower quality physicians less, for the same services that are being provided as their higher quality counterparts.

HEALTHCARE CONSUMERS

Outcomes of healthcare institutions are in the spotlight more now than they were several years ago. Inaccurate diagnosis and procedure codes on a patient account could have a drastic impact on a healthcare facility with this inaccurate information published by various agencies and healthcare consumer focused web-sites (Gold, 2007). This detail could then skew a healthcare consumer's opinion of a facility, either for the positive or negative.

The patients, or healthcare consumers, are also becoming more educated on their illnesses and potential treatments. Healthcare consumers are also using the consumer focused websites, and various other resources, to 'shop around' on where to receive care for themselves or a loved one. One of the most well-known websites that assists with providing this type of feedback is HealthGrades (www.healthgrades.com).

HealthGrades will rank a facility by giving them a one, three, or five star rating. They achieve these rankings by utilizing a risk-adjusted model, developed with Dr. Susan DesHarnais, to take into consideration the variations in the patient's illnesses and the risks associated with their conditions. The rankings are an index and look at the actual performance (observed) over the predicted performance (expected) (HealthGrades, 2009).

The one and five star rankings are achieved when the index is statistically significant. If the index is not statistically significant, the hospital will receive a three star ranking. The index is calculated on a ninety percent confidence interval after the actual and predicted values are obtained. As the volume of cases increases, the confidence interval decreases. This then makes it more challenging for healthcare facilities to obtain the three star ranking, while increasing the likelihood of obtaining a one or five star ranking (HealthGrades, 2009).

Healthcare institutions will use the ratings, that they receive from HealthGrades, in marketing campaigns to entice more healthcare consumers to their facilities. Even if the patient is not fully aware of what the rating entails, the fact that a facility has a five star rating will make it more appealing over the various competitive healthcare facilities.

A Clinical Documentation Improvement Program can provide a tremendous benefit to a healthcare facility. By reviewing the medical records early in the patient's

stay, the staff has the ability to identify areas of improvement through increased communication with the direct care providers. Not only does this activity support the continuing education of the direct care providers, but also the health information, decision support and administrative professional staff.

With the assistance of a Clinical Documentation Improvement Program (CDIP) a healthcare facility can document the accurate severity by encouraging complete documentation throughout the patient's stay. This will ensure that the most accurate picture is being represented to the Federal and State governmental agencies. It also ensures that the hospital and physicians are being reimbursed accurately and appropriately for the patient's acuity. And, finally, the healthcare consumers researching facilities will be making their decisions based off of the most accurate data possible.

SEVERITY ADJUSTED RATES/INDICES

Severity-Adjusted Indices take into account all of the diagnoses and procedure codes that are applied to the encounter by the inpatient coding staff. The Clinical Documentation Improvement Program will have an impact on the denominator by clarifying the documentation with the physicians and ancillary healthcare providers ensuring that the most accurate description of the complexity of the patient's condition in located in the medical record. The more accurate the depiction of the expected (denominator), the lower the ratio has the potential to be (Gold, 2004)..

If the documentation reflects the true severity of illness that the patient has, the severity adjusted denominator will increase. Even if the level of care that the patient is receiving does not change, and the observed mortality does not increase, the increase in

the denominator could have a dramatic outcome on the healthcare facilities ranking in HealthGrades and other benchmarking agencies.

The average healthcare facility's index will be close to one (1), meaning that they are as good as the rest of the facilities. The facilities whose index is higher than one (1) could potentially be causing more harm than good to their patients. The goal for any Severity-Adjusted Index is to be less than one (1) with being as low as possible to zero (0).

BACKGROUND

CDIP Facility Perspective – Program Overview

The facility chosen for this study is part of a multi-hospital system located in Indiana. This facility previously implemented a Clinical Documentation Management Program (CDMP). The prior program's sole purpose was to generate revenue for the facility. The system decided that during the second implementation of a Clinical Documentation Improvement Program, they would rather focus on the quality of the documentation and improving the overall outcomes of the facility rather than the financial aspect. They assumed that with this increased specificity of the documentation, that a natural increase to the reimbursement would be realized.

The facility chose a concurrent review approach for their program. This allowed the medical record reviews to occur in real-time while the patient's were still on the nursing units. This approach also means that the medical record may have to be reviewed multiple times throughout the patient's stay in the hospital.

The Clinical Documentation Liaisons (CDLs) were able to facilitate conversations with physicians or ancillary healthcare providers while they were on the units providing

direct care to the patient. The details of the cases are easier to retrieve for them since they are still actively

The audience for the education included three (3) main groups. These groups were the physicians and other ancillary healthcare providers, the Clinical Documentation Liaisons (CDLs), and the inpatient coding staff. The initial education to all three groups was provided by individual body system. The physicians received more clinical concepts in their education with the inpatient coding staff were provided with any corresponding coding rules. The CDLs received a combination of both the clinical concepts and the coding rules.

Ongoing education was provided to the physicians and ancillary healthcare providers, as well as, the inpatient coding staff and the CDIP team. Since new codes are introduced each year, the education is on-going and ever evolving. A close relationship was formed with not only the physicians but also the inpatient coding staff. The inpatient coding staff can identify other potential areas that documentation improvement may be needed and then communicate this to the CDIP team.

The impact provided by the education is almost immediate, as the physicians were able to implement their newly learned documentation improvement concepts in the next medical record that they touch. The inpatient coding staff members were able to review the charts post discharge to determine if there are any opportunities for further clarification. The CDLs utilized their knowledge during their current review process to determine if they would need to clarify any of the physician's documentation to increase the diagnostic or procedural specificity.

CDIP – Team Composition

It was determined that the composition of this facility's Clinical Documentation Improvement Program's (CDIP) team would include Registered Health Information Administrators (RHIAs) and Registered Nurses (RNs). The knowledge that these two groups of individuals possess provided a compliment to one another. The RHIA credentialed staff have a background in coding making them able to assist the RNs with the coding knowledge; while the RNs can provide assistance with the in depth clinical aspects of the medical diagnoses and treatments.

The facility also utilized the assistance of an in house physician liaison. The physician liaison is a staff physician who promotes the program to other physicians and ancillary healthcare providers. They received the education provided to the CDIP team during the initial implementation of the program. They also serve as educators for the CDIP content. The physician liaison intervenes with the resistant physicians to reiterate the overall mission, vision, and concept of CDIP.

CDIP Facility Perspective – RFP Process

After research was performed to determine the approach that the healthcare system was interested in implementing, the specific facility decided that they would like to employ an outside vendor to assist in this implementation to achieve a greater compliance from the physicians. In July 2005, several vendors were selected to receive Request for Proposal (RFPs) from this multi-hospital system. The selection for onsite demonstrations was then narrowed down to three companies from many RFP's received.

The company that was ultimately chosen to assist in the documentation improvement program implementation was physician led. They provided education to

both the physicians and the inpatient coding staff, in tandem with the CDIP team. This company also employed coding professionals who assisted in the education to the physicians and coding staff. The utilization of physicians and coding professionals as educators ensured the facility that there were no gaps in the information being provided to the physicians and the coding professionals.

The physicians are more receptive and attentive to a speaker who relates clinical scenarios by addressing abnormal lab values and providing medical feedback on the proposed treatments. As for the inpatient coding staff, if the speaker is a physician with a coding background or they are a coding professional with years of experience with clinical knowledge, as long as they are knowledgeable in the rules and nuances of inpatient coding, the staff would be receptive to them.

CDIP Materials and Instruments

The materials and instruments used in the Clinical Documentation Improvement Program included both people and various communication tools. The educational content was initially provided by the outside vendor and has since been expanded upon, as needed, by the CDIP team. Since there are new diagnostic and procedural codes released each year and the AHA Coding Clinics are released quarterly, the presentations need to be revised several times throughout the year. PowerPoint presentations, question and answer sessions and copies of the presentation were distributed to the audience. On a monthly basis, the Clinical Documentation Liaisons (CDLs) provide education to various groups of residents and medical students.

The physicians were taught that the words used to represent certain disease processes, such as respiratory insufficiency, do not equate to respiratory failure in the

coding language. The physicians were also educated with the pertinent coding guidelines and taught that they need to document the etiology of their disease processes to ensure that all of the clinical links are made. As the Federal and State governments are making more strides to ensure that patients receive the highest quality of care possible, the CDIP staff has begun education with the physicians and ancillary healthcare providers on the importance of Hospital Acquired Conditions (HACs) and Present on Admission Indicators (POA) and their associated criteria.

Physicians were also provided with pocket cards that list out the most commonly seen diagnoses in both the adult and pediatric specialties. The pocket cards are arranged by body systems so the desired information can be easily located. To expand further on that concept, a tabbed chart divider was created to eliminate the need for the service line specific pocket cards. The dividers were made with for both the adult and pediatric specific detail. Then the divider was placed in all of the medical records throughout the multi-hospital system.

The clarification form is the main communication tool that is utilized by the CDIP staff. The Clinical Documentation Liaisons (CDLs) will leave clarification forms in the medical record to have the physicians clarify their documentation. The clarification form not only provides an avenue for the staff to communicate with those that are actively participating in the current care of the patient, but also with the inpatient coding staff who are reviewing the case post discharge. It also serves as a standardized data collection tool to aide in monitoring the progress and success of the program.

The CDIP staff intervenes by leaving a clarification form in the medical record for the physicians to further clarify their documentation. The CDIP staff can also

intervene by speaking directly with the physician, if time allows, and have them address their documentation improvement concerns. This allows the physicians and ancillary healthcare staff to feel comfortable with the CDLs and to establish a strong rapport with them. The physicians and ancillary healthcare staff may then approach the CDLs at a future time for proactive assistance as they are documenting on medical records.

An internally developed and supported relational SQL database with a Microsoft Access overlay was built to house all of the detail related to the (CDIP). The database resides on a 2005 sequel server and utilizes several of the main hospital's information systems applications for the main data collection and analysis which are performed. A batch schedule produces the extract and processes the data load into the CDIP database. The batch schedule produces the daily worklist that includes information such as the patient's name, medical record number, account number, attending physician, nursing unit and bed, and the chief complaint.

The Admission Discharge Transfer (ADT) transaction detail is included within the scheduled data load process for the CDIP database. This detail provides all of the Protected Health Information (PHI) to the database. It includes the patient's name, payor information detail, patient demographic detail, dates of the patient's stay, unit and bed locations within the healthcare facility and corresponding physician detail.

The data is transferred between the various hospital information systems via a Health Level 7 (HL7) interface. The HL7 interface (Health Level 7, 2009) provides standards for the transfer of healthcare related data across multiple applications. Not only are HL7 interfaces utilized in the United States, but the HL7 group is creating International Affiliate organizations to ensure that the standards for healthcare related

data transmissions are seamless across the world. They also work with various national and international sanctioning organizations to establish these standards from the healthcare and informational standpoints.

CDIP Daily Review Process

The Clinical Documentation Liaisons (CDLs) receive a daily worklist that is generated from the CDIP database. It identifies the Medicare inpatient population to be reviewed for the day. The CDLs round on their assigned nursing units reviewing medical records. They identify any areas for improved documentation and intervene by leaving clarification forms as necessary.

The worklist also provides a mechanism for the CDLs to perform consistent and detailed data collection that aides in the data entry of findings into the Access database collection tool. By providing consistent data collection, this ensures that all of the abstracted fields within the database are completed. Some of the information that is abstracted by the CDLs includes the date in which the account was reviewed, the initial and potential DRGs, the CDLs name.

They also assign a review status and clarification reason(s) to the account. The review status is used to identify the state of the review. Some of the most common review statuses that are utilized are the following: not enough information, chart not available, and clarification form left on chart. Not enough information is used when the clinical picture is still in its infancy stages and the physicians and other ancillary healthcare providers are in the process of determining their next steps.

The CDLs utilize the paper medical record, as well as, any scanned or electronic medical record documentation in their determination if clarifications, or interventions, are

warranted. They also review all relevant lab values and pathology results. The clarification form is then placed on the medical record and the CDLs will continue to review the chart and wait for a response from the physician. If no response is received, the CDL will then move the clarification form within the medical record to bring the form to the physician's attention again.

KNOWLEDGE GAP

The implementation of a Clinical Documentation Improvement Program provides a benefit to a healthcare facility by bridging the gap between the verbiage that the physicians utilize in the medical record with the verbiage that the inpatient coding staff need to have in order to code the inpatient encounters. According to Dr. Robert Gold, "the goal of a true documentation improvement program is to teach providers of health the elements of documentation that will permit the assignment of precise and accurate codes from the medical record and the accurate reflection of the true severity of illness of the patients under your care" (Gold, 2005).

These types of programs need to be implemented to ensure that the quality of care and complexity of medical decision making is evidenced in the pages of the medical record. Only then will the facility fully realize the true Case Mix Index and acuity scores that are the most accurate reflection of their patients.

CHAPTER TWO: LITERATURE REVIEW

RELATED RESEARCH

A limiting factor to this study is that currently the published literature of the impact of the Clinical Documentation Improvement Programs (CDIP) is minimal. Since these programs are fairly new, with respect to impacting quality of a healthcare facility, it

was expected that there would be little to no literature providing outcomes of the programs.

Web searches were completed for journal and web based articles describing and providing results of CDI Programs. The literature returned from these searches only showed steps and approaches necessary to implementing and structuring a documentation improvement program. After multiple attempts to find additional documentation for inclusion no benchmarking results were able to be identified.

A descriptive article located in the *Journal of AHIMA (Dimick, 2008)* highlighted three successful HIM-lead (Health Information Management or Medical Records Department) Clinical Documentation Improvement Programs. This is a good article to provide a facility with background on how to structure and implement a program. No results from these programs were published in this article.

The article included programs at the University of Arkansas for Medial Sciences Medical Center (UAMS), Eastern Maine Medical Center (EMCC) and the University of Michigan Hospitals and Health System (U of M). The overall purpose of the programs in the article is the same but the initial implementation and the composition of the Clinical Documentation Liaisons (CDLs) vary.

University of Arkansas for Medial Sciences Medical Center (UAMS) developed their Clinical Documentation Improvement Program (CDIP) internally. Their concurrent inpatient coding staff was transitioned into the CDLs. They review almost all of the facilities services lines. During the initial implementation phases of their program, UAMS focused on one service line at a time and slowly brought on other service lines. The physician education was accomplished in both the one-on-one and groups settings.

At Eastern Maine Medical Center (EMCC) the program is run by the Health Information Management Department. Their opinion was that the inpatient coders should be responsible for the coding of the accounts and the CDLs would be responsible for the documentation improvement portion. Even though the coders and CDLs perform independent functions, they meet together on a weekly basis to knowledge share. Only five service lines are being reviewed at EMCC. These areas were chosen since they needed the most documentation improvement assistance. The physician education began with twenty (20) training sessions during staff meetings to introduce them to the program. The sessions were led by physicians to establish a stronger internal reputation.

At University of Michigan Hospitals and Health System (U of M) there are six (6) CDLs, which transitioned from inpatient coding roles. They are responsible for reviewing four service lines. Their focus was to increase the CC (complication and co-morbidity) capture rate on the MS-DRGs to decrease the volume of post discharge clarifications. The six CDLs join physicians who are in their particular services lines and engage in patient rounding once a week. This allows the CDL opportunity to provide real-time feedback to the physicians on what they can do to improve their documentation. This also provides the CDL physician contact to glean more clinical information. U of M hired an outside consultant to develop their program. After the consultant provided the initial foundation, the U of M staff then took the reins and tweaked the program to best suit their facility's needs (Dimick, 2008).

Each facility started their programs for various reasons; some more focused on the financial needs of their facilities and others strictly to better reflect the severity of illness of their patients. The impetus for starting the programs hinged on the belief that an

increase reimbursement will follow the improved documentation in the medical records, and hospital resources that are used on the patients will be better justified.

The use of a consultant is also another factor that differed in these three facilities. U of M hired a consultant to construct the framework of their program, and then the U of M staff refined the program to meet their overall facility's vision. EMCC hired a consultant who performed a risk assessment on their service lines. The assessment yielded only five (5) services lines that would need the assistance of the documentation improvement program. UAMS felt that they would not need consultant assistance with their program since they had the capability to build a CDIP program internally (Dimick, 2008).

CHAPTER THREE: METHODOLOGY

MATERIALS AND INSTRUMENTS

The analysis utilized for this study will be a secondary data analysis. The data that was obtained has already been reviewed during the normal processes of impact reviews for the Clinical Documentation Improvement Program (CDIP). Even though there was only one reviewer, performing this job function during the time frames utilized for this study, there is still a possibility of issues with intra-relater reliability. As the program progressed, the reviewer's data collection practices evolved. They have become savvier in the data collection and identification of accounts needed for a secondary data analysis.

CDIP Data Analysis/Measurement

SHOULD THIS BE MOVED TO ANALYSIS CHAPTER??

There are several methods in which the impact of a Clinical Documentation Improvement Program can be measured. The healthcare facility chosen for this study measures their success based on the impact to their overall quality scores. They review the overall distribution of their Severity of Illness (SOI) and Risk of Mortality (ROM) scores and also the percentage of cases designated with a level four score in each category.

SOI and ROM scores range from one (1) to four (4). The higher the individual SOI and ROM score, the case would be considered as more complex. They are classified as the following: Level 1 – Minor, Level 2 – Moderate, Level 3 – Major, and Level 4 – Extreme.

The principle diagnosis and principle procedure codes along with all other secondary diagnosis and procedures codes from each patient encounter is placed into a computer software application. This particular facility utilizes the 3MHIS Encoder. A Diagnostic Related Group (DRG) is calculated along with its respective DRG weight. Also with each DRG, the SOI and ROM scores are assigned. The higher the SOI and ROM score the higher the severity and/or mortality on the account.

The DRGs also take into account any complications and comorbid conditions (CCs). These are conditions that may need to be addressed during the clinical decision-making process of the physicians and other healthcare providers. They have the potential to increase the complexity of the care being provided to the patient. Some of these conditions include: Acute Respiratory Failure, Chronic Respiratory Failure, Acute Renal Failure, and End Stage Renal Disease.

The DRG weight is used for two purposes. The first is to provide a baseline for the financial reimbursement. Healthcare facilities are paid a base rate for a DRG weight of one (1.0000). If the DRG weight is higher or lower than one (1.0000) the base payment is adjusted accordingly.

Another purpose of the DRG weight is to further describe the complexity of the patient and the overall population. When viewing the DRG weight for this purpose it is called the Case Mix Index (CMI). The CMI scores range from 0.1000 to 23.1117. As the complexity of the overall patient population increases, the overall CMI for the healthcare facility will also increase. There is a potential for the DRG weights to change every year as the new coding updates are released.

The facility currently reviews all encounters where a clarification was left by the Clinical Documentation Liaisons (CDLs). The accounts are reviewed to validate the clarification reason(s) that were posed by the CDLs. The next step is a validation of the physician's documentation. Once the documentation is either noted as present, or absent, in the medical record; the coding is then analyzed to ensure that the inpatient coding staff has applied the appropriate diagnosis and/or procedure codes to the encounters.

After the physician response and inpatient coding are validated on the account, the actual evaluation to determine if an impact has been made by the CDLs is performed. The final (post inpatient coding) DRG, DRG weight, SOI and ROM scores are noted as the post-clarification detail. Any diagnosis or procedure codes that may have been added to the encounter based solely by the CDIP team's clarification(s) are then removed from the account to determine a baseline on the encounter. This would be what the account would have looked like without any intervention, clarification form, left by the CDLs.

The DRG, DRG weight, SOI and ROM scores are then noted as the pre-intervention detail. The pre and post values are then compared to determine if any type of impact was made either at the DRG weight, SOI, and/or ROM levels.

As necessary, corrections are made to the coding on the encounters to reflect the documentation that was obtained by the CDLs. Any alterations made to the coding or physician responses, and all impacts that were made on the encounters are tracked within the CDIP database.

A CDIP dashboard has also been developed internally with a web based front end using a standard asp model. It is utilized for reporting purposes both internal and external to CDIP. This allows for standardized reporting of the desired detail. The capability has been added to this dashboard to allow reporting of productivity detail of the CDLs; specifically looking at how many charts are being reviewed on a weekly basis, the volume of accounts that an intervention is needed and the volume where an intervention was not needed.

Another detail that is also represented on the dashboard relates to the physicians response rates to the clarification forms and also the top 15 clarification reasons or individual questions (in volume). The SOI and ROM percentage breakdown by individual scores and CMI are also available to review and distribute. The dashboard can also be utilized to identify particular groups of physicians or service areas that may need to receive targeted education and follow-up.

There were several instruments utilized in the study to determine whether or not there has been a change in the SOI and ROM scores and overall CMI due to CDIP intervention. These include, but are not limited to, the 3M Coding and Clinical

Abstracting software package, CDIP impact review detail, benchmarking SOI/ROM detail, and control charting software.

The 3MHIS software package includes the Encoder, which is an application utilized by this facility as its coding and clinical abstracting software. The inpatient coders input the diagnosis and procedure codes into the encoder portion and the software then computes a DRG, along with its corresponding CMI, and SOI and ROM scores. The detail is then imported into the CDIP database so the impact reviews can be performed. The outcomes of the reviews will be benchmarked against the detail that this particular facility currently utilizes.

The impact reviews were performed at the account level. The reviewer looked at the accounts to determine if there was an overall impact at the code level. If there was a code level impact, the reviewer then took a much more detailed look by reviewing the coded detail via the 3M encoder. The reviewer would then remove the code(s) that made the impact. By removing the code(s), the reviewer was provided with a baseline as to what the account's acuity was prior to the CDIP intervention. The reviewer noted if there was an increase at the overall SOI/ROM and CMI levels on the patient.

After the impact reviews were completed, the detail derived from this review was then benchmarked against the University HealthSystem Consortium detail. The UHC is only comprised of academic medical centers and their affiliated facilities. They represent almost 100% of all of the nation's non-profit academic medical centers (University HealthSystem Consortium, 2009).

Finally, Quality America control charting software was utilized to display all of the corresponding data points. A control chart is a graphical display that monitors a

process or event. They are utilized to display variations in the process or event and will assist in the identification of abnormalities.

By entering the data points into this type of software, eight (8) run tests were ran on the data. Run tests are utilized to determine if there is instability in the process or event. This would also display if there was indeed a significant impact in the hospital's acuity or if statistically significant change was made. If the change is statistically significant, it means that it is unlikely that the changes have occurred by chance. Some of the tests include: nine (9) successive points on the same side of the center line, six (6) successive points increasing or decreasing, fourteen (14) successive points alternating up and down, and four (4) out of five (5) successive points beyond one (1) sigma.

Run test violations display out of control conditions with the processes or events. This means that something has changed with respect to the process or event. This change could either have a positive or a negative impact. It could mean that the action that is being taken is either working or it is making the situation worse. It could ultimately mean that the process or event itself is unstable.

Some of the data was difficult to interpret solely in the control chart format. It was determined that a run chart with a trendline would provide a better visualization of the results. A run chart is simply a graphical display of data points over a specified period of time. The trendline is used to determine future analysis and provide a mid-point for the data points that are displayed on the chart.

SAMPLE

The sample size included historical cases from July to December of 2005. This was prior to the implementation of CDIP. The implementation of the program began in

January 2006 and cases would be selected from that point through June 2007. The total timeframe for the initial study will be two years; allowing for trending prior to the implementation of the program to determine if there was truly an impact made.

There were several inclusion criteria for this study. The first includes the patient in the overall population for the study. This means that the patient was registered as an inpatient. The second was that the primary payor on the patients is Medicare. The third inclusion criterion was that the patient was admitted to one particular facility in the healthcare system.

Another factor taken into consideration was that the account had a clarification form left by a CDL for the physicians. It would also need to have the physician respond by documenting in the chart and signing the note. Only those accounts where the physicians responded and updated the medical record were included in the sample size for this particular study.

All patient level detail will be deidentified. To deidentify a patient account, all items that could be utilized to identify that particular patient were removed from the account. Only a minimum data set was extracted to perform the analysis on this encounter. These data points included diagnosis and procedure codes, the Diagnosis Related Group (DRG) and the DRG weight. Other pertinent items needed for the study included the SOI and ROM scores.

The initial data set's time period was from July 2005 through June 2007. It was determined that after the data was reviewed that the time period should be expanded through June 2009. Both the initial and extended time periods are included to provide a comparison.

PROCEDURES

The data was extracted from the internally developed Microsoft Access database utilizing a 2005 SQL server. The detail came from the results of the impact reviews. The impact reviews assist in the identification of the accounts where an impact was made by the Clinical Documentation Improvement Program. A report was run to produce the data and an exclusion factor was place on the report so it only provided the DRG detail. This also included the DRG weight and the SOI and ROM score.

After all of the detail was gathered, the raw data points from the impacts reviews were entered into the statistical software. The data was then analyzed to produce graphical displays summarizing the findings of the study. Utilizing this information, a comparison was made between the data points from the CDIP impact detail and the National Benchmarks that have been set by the University HealthSystem Consortium (UHC).

STATISTICAL ANALYSIS

The Severity of Illness (SOI) and Risk of Mortality (ROM) scores were put into the Quality America control charting software application. All of the standard controls charting tests were run on the data points to determine if there was an impact made. This allowed for conclusions to be drawn regarding if the data points are statistically in or out of control.

As mentioned previously, if there were several higher weighted encounters seen at the facility and the volume of those cases decreases by just one, this can have a drastic effect on the CMI that a facility experiences. If there are data points that are still present despite attempts to reduce the occurrences, further action can then be taken to research

them to determine if there is common cause or special cause variations. There may also be instances of other factors that were beyond the control of the program which influenced those data points.

EXPECTED RESULTS

The healthcare facility being researched measures the success of their program based on the increased quality scores, including the mortality index. The expected results are that there would be improved specificity in the physician and ancillary healthcare provider's documentation within the medical record. The overall impact would be that a decrease in the levels one (1) and two (2) and an uptake in the volume of levels three (3) and four (4). There is also a potential CMI impact to the facility as well.

The improved documentation that is gained through the implementation of CDIP is a direct contributor to the denominator when looking at various indices. The observed, or numerator, are those outcomes generally evidenced by direct patient care being provided to the patient. The denominator is a severity adjusted metric. The more thorough and complete the documentation, the higher this value will become. Therefore, a CDIP could assist in driving down the mortality and length of stay indices.

CHAPTER FOUR: RESULTS

INITIAL TIME PERIOD (July 2005 – June 2007) – SEVERITY OF ILLNESS

The Severity of Illness (SOI) and Risk of Mortality (ROM) scores were graphed utilizing a Radar graph. Although this is not a typical usage for this graph type, it was chosen to represent the continuum of the data points and allows the reader to visually compare the initial data point to the final data point.

Appendix A includes the legend for the timeframe which is utilized on all graphs and control charts. The initial time period includes six (6) months prior to the start of the Clinical Documentation Improvement Program. This is represented by Time Periods 1-6. The implementation month, January 2006 data point 7, is noted on each control chart. The first eighteen (18) months of the program are represented by the remaining numbers.

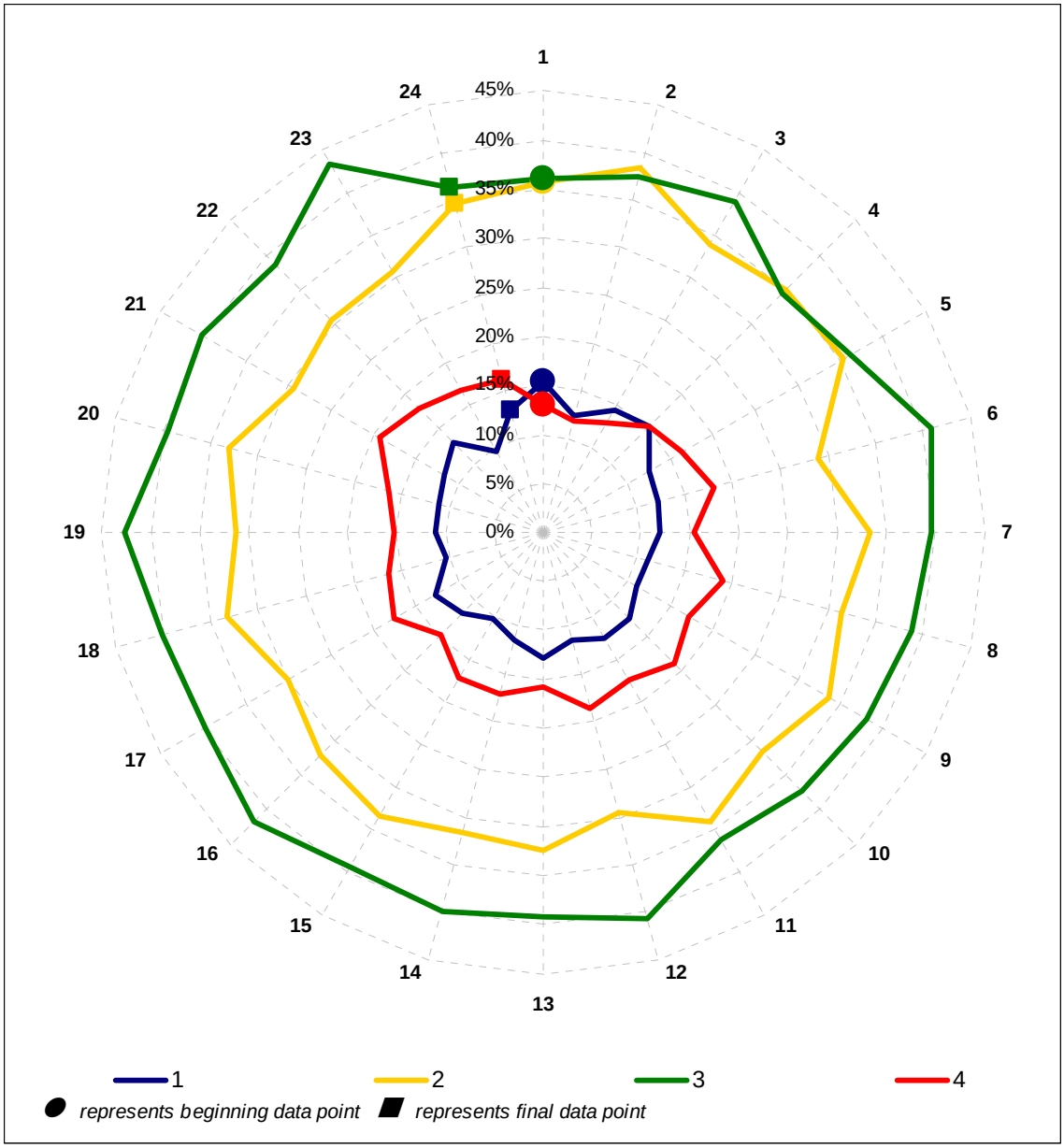

FIGURE 1.1: Severity of Illness (SOI) – Level Comparison

The radar graph, Figure 1.1, allows for another approach of data representation. As expected the volumes for levels one and two decreased. This is represented by an upward shift from the final to initial data point. Conversely, the lines for levels three and four have increased in the overall volume, there is a downward shift from the final to initial data points.

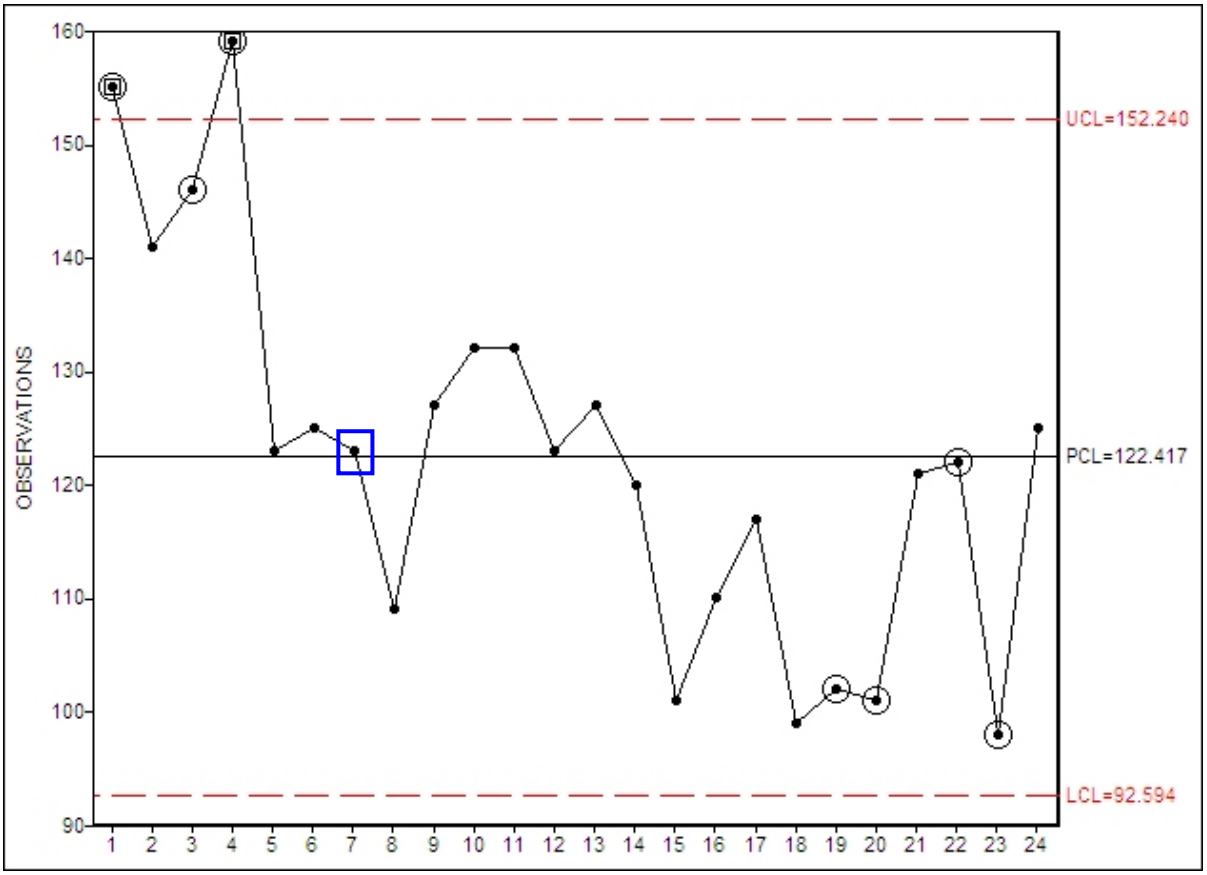

FIGURE 1.2: Severity of Illness (SOI) – Level 1 Control Chart

Figure 1.2 is a control chart of monthly totals of the SOI Level 1 score. Points one (1) through six (6) shows that the volume of SOI Level 1 were very high and began to decrease in volume from September to October 2005. Then there was another drop once the program was implemented (January to February 2006).

During this time frame the program was implemented with only three (3) service lines. They were the largest service lines, by volume, and were educated and received interventions by the Clinical Documentation Improvement Program. They included Cardiac, Respiratory and Infectious Disease. The SOI Level 1 begins to trend back up in February (data point 8) through May (data point 11). Additional service lines were implemented during this time. Then, as expected, the overall volume of SOI Level 1 dramatically decreased.

During the last 6 months of the initial time period, three different run tests were violated. January and February 2007 (data points 19 and 20) the run tests 5 and 6 were violated. Both of these run tests pertain to the data points moving beyond the 1st and 2nd sigma lines. Run test 2 was violated during the months of April and May 2007.

With the violation of this run test, the hypothesis was proven with a downward shift in the volume of SOI Level 1, as there were 9 successive data points on the same side of the center line.

The SOI Level 2 control chart, Figure 1.3, only includes 2 data points where run tests were violated. One was prior to the program's implementation during the month of August 2005 (data point 2). This test was 1 point beyond the 3 sigma line. This means that during this month there was an abnormally large volume of accounts with a SOI Level 2. Even during the remainder of 2005, the volume of SOI Level 2 has decreased.

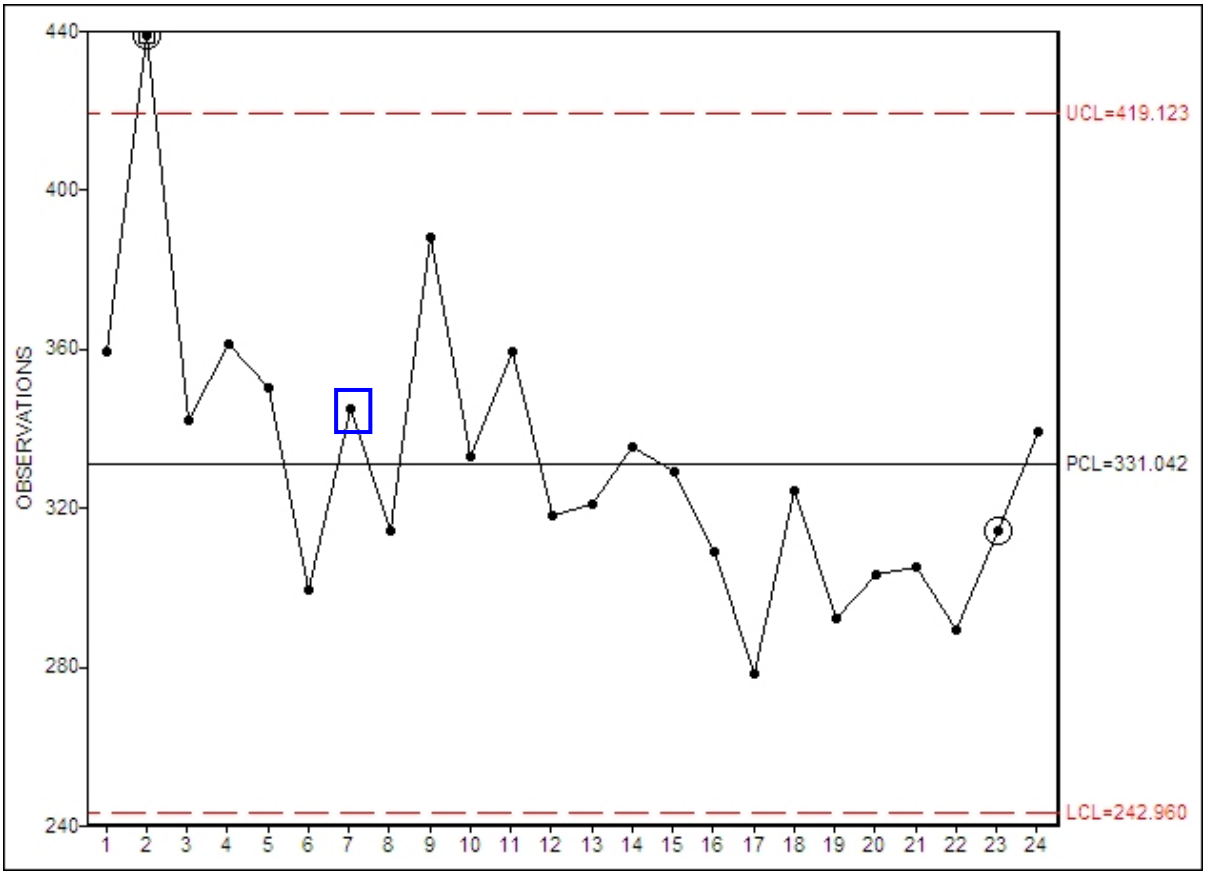

FIGURE 1.3: Severity of Illness (SOI) – Level 2 Control Chart

Although there was a spike in March 2006 (data point 9), the volume continued to decrease from that point moving forward. The lowest volume of SOI Level 2 was experienced during the month of November 2006. Run test 2 was violated during May 2007. This violation further confirms the hypothesis that the overall volume of SOI Level 2 decreased with the implementation of CDIP and improved documentation.

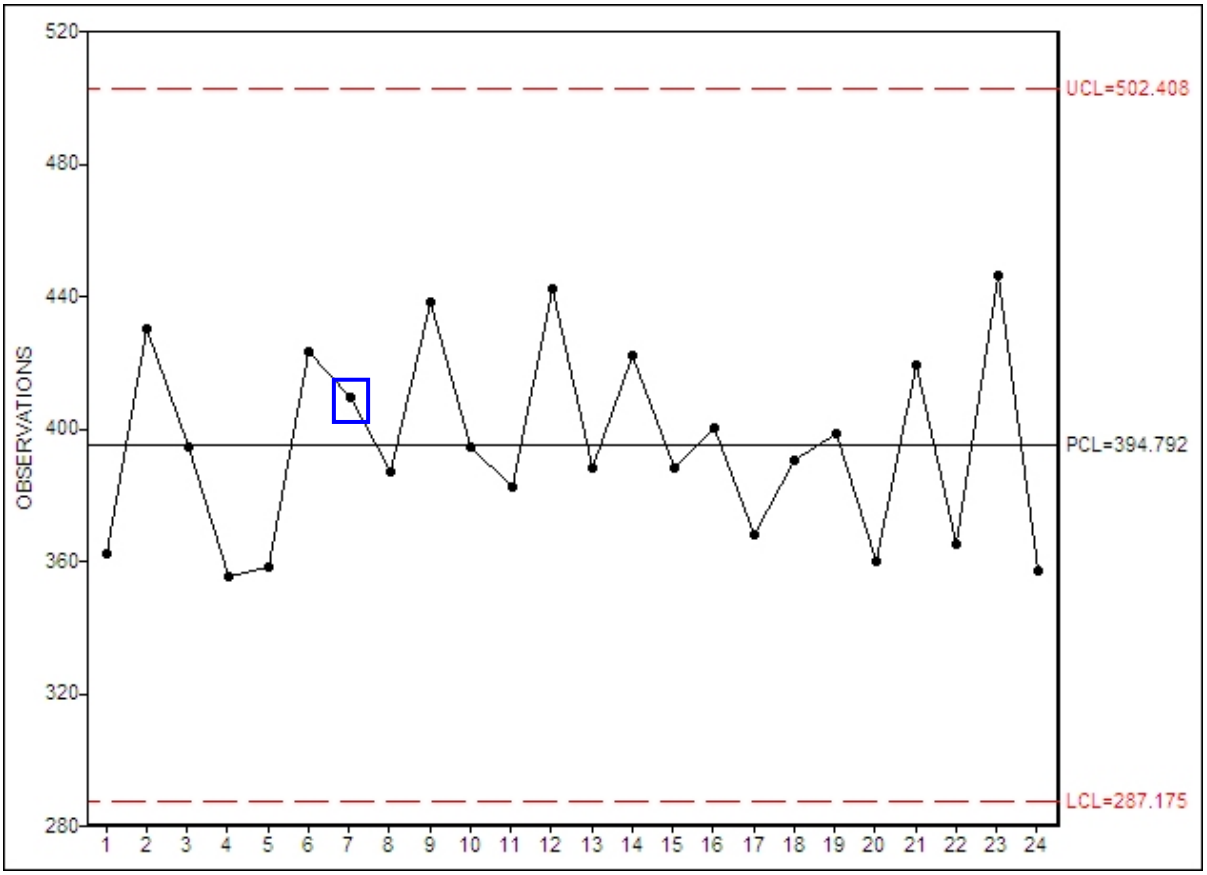

FIGURE 1.4: Severity of Illness (SOI) – Level 3 Control Chart

When reviewing Figure 1.4, the SOI Level 3 for the initial time period, were in control. There were no statistically significant changes to this SOI Level. The variations of the volumes that were observed can be attributed to the normal variation of the cases seen during this time period. The assumption that there would be a shift in the SOI Level 3 was not proven during the initial time period of study.

Figure 1.5 graphically depicts the SOI Level 4. Five (5) data points out of the twenty-four (24) violated one or more run tests. August and September 2005 (data points 2 and 3) violated run test 5. Both of these data points were part of 2 out of 3 successive data points beyond the 2 sigma mark. April through June (data points 10-12) all violated

run test 6. They were all part of four out of five successive points beyond the 1 sigma line.

There was an increase in the SOI Level 4 from September through December 2005 (data points 3-6), prior to the programs implementation. There was a sharp drop experienced in January (data point 7) with a continually rise beginning through June 2006 (data point 12). The volume then takes another downturn from June 2006 through February 2007 (data point 20). Another large increase in the volume was experience during February through March (data point 21) with the values decreasing again through June 2007 (data point 24).

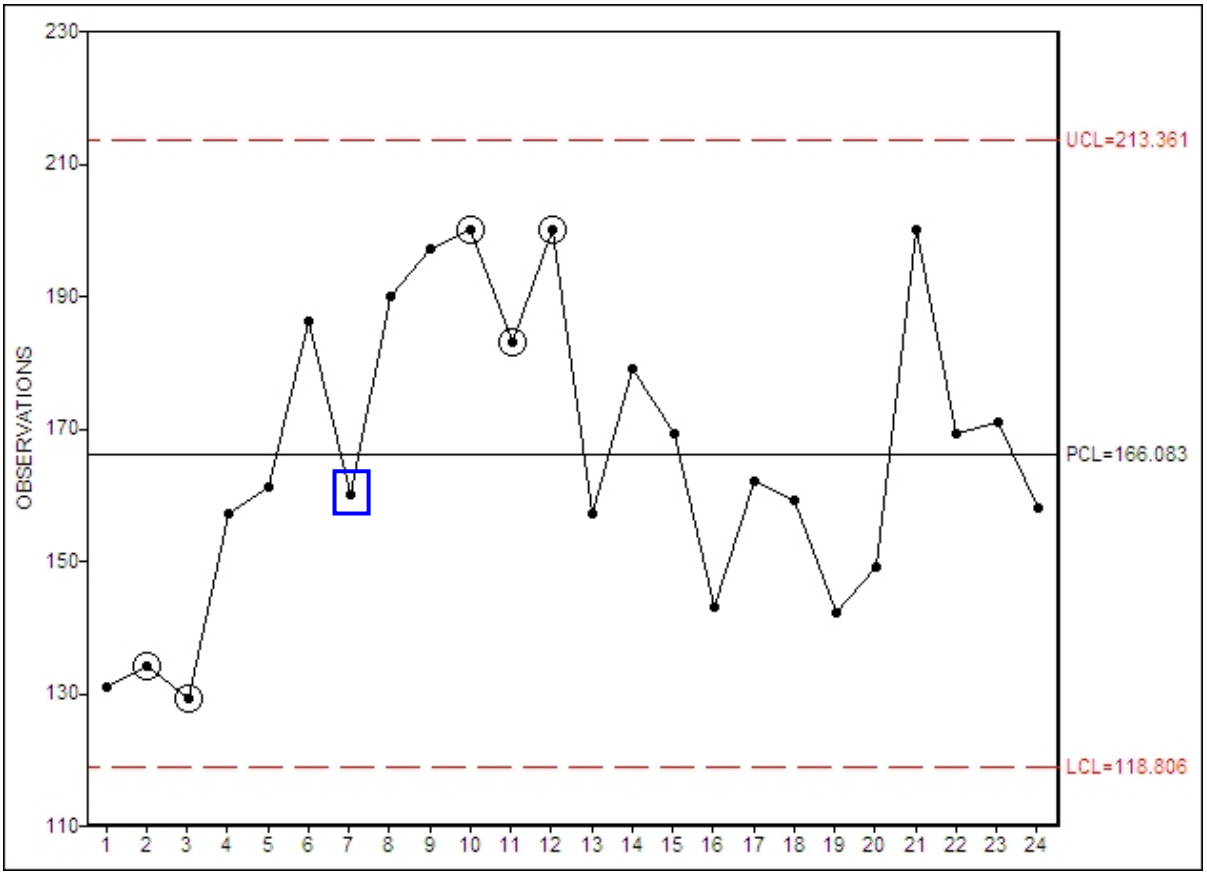

FIGURE 1.5: Severity of Illness (SOI) – Level 4 Control Chart

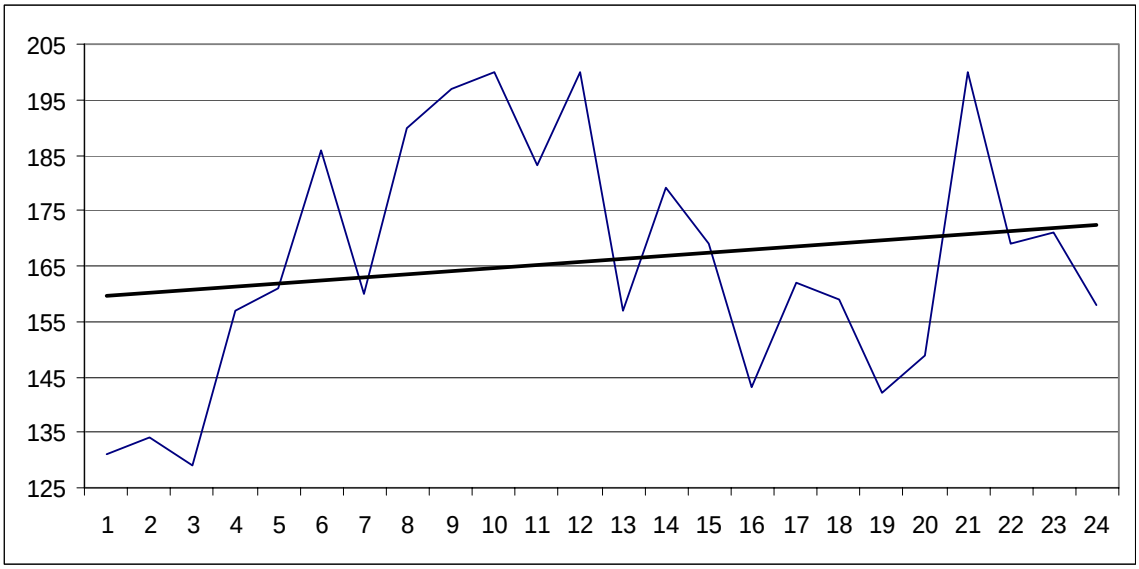

FIGURE 1.6: Severity of Illness (SOI) – Level 4 Run Chart w/Trendline

Based on the detail provided in the control chart, it is inconclusive as to the impact that the Clinical Documentation Improvement Program could have potentially provided on the SOI Level 4 details. It was determined that utilizing a run chart with a trendline , Figure 1.6, would provide a much more straightforward data display method to determine if there was an impact made in the SOI Level 4.

When reviewing the detail in the run chart, Figure 1.6, the trendline provided the confirmation that there was an impact to the SOI Level 4. The increase in the SOI Level 4 volumes validates the assumption of the hypothesis that the implementation of the program would assist in an uptake of SOI Level 4 volumes.

INITIAL TIME PERIOD (July 2005 – June 2007) – RISK OF MORTALITY

When reviewing Figure 2.1, the expected results would be similar to those of the SOI. There should be a decrease in the overall volume of ROM Level 1 and 2 had an increase in the ROM Level 3 and 4. This would then validate the fact that the

documentation is improving and the physicians are more accurately reflecting the risk of mortality for their patients.

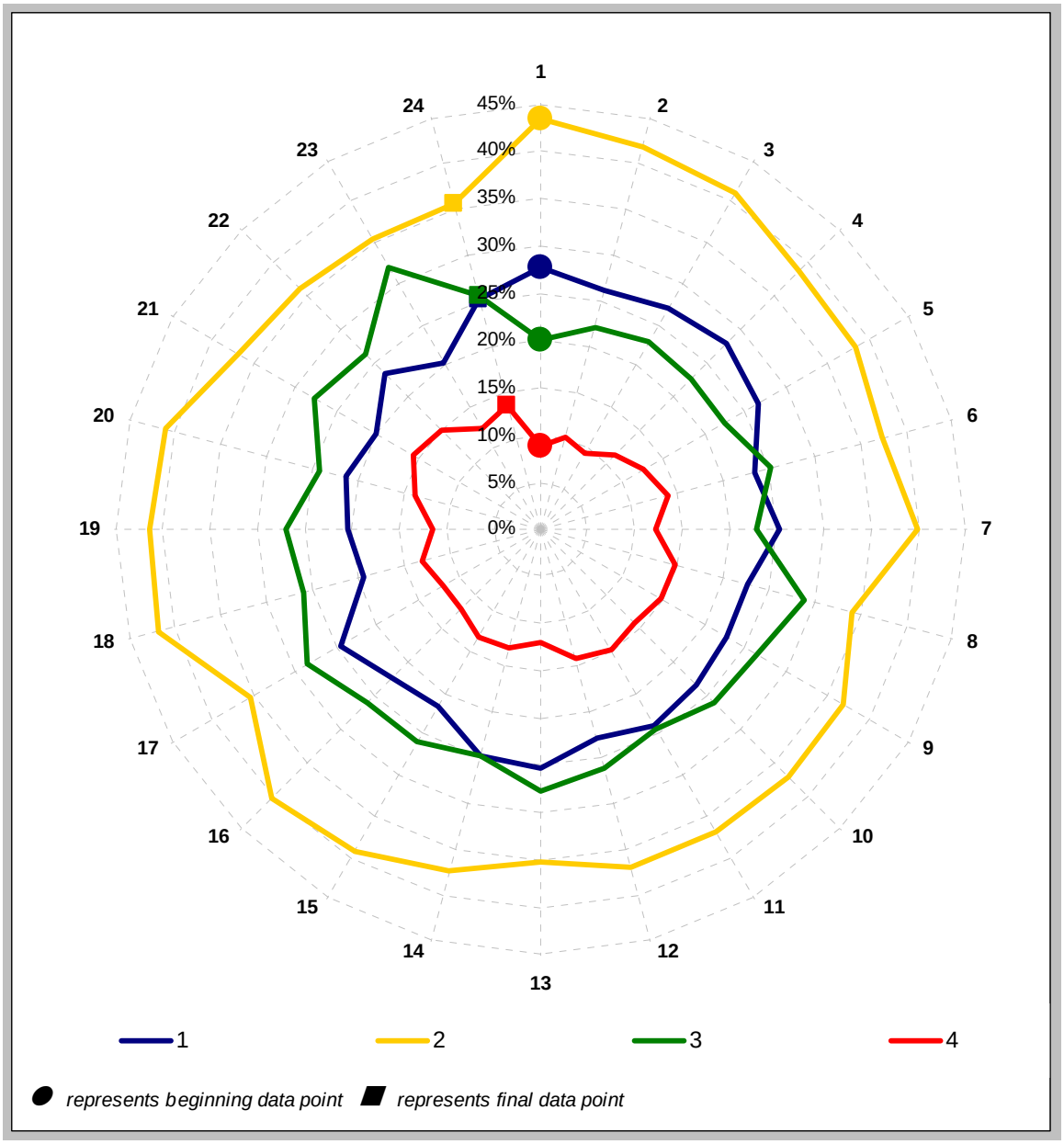

FIGURE 2.1: Risk of Mortality (ROM) – Level Comparison

ROM Level 1 and 2 had a decrease in their overall volume, as evidenced by Figure 2.1. When specifically reviewing the data point 24 in comparison to data point 1, there is an upward shift between the two, thus providing the validation that the hypothesis

was correct in the assumption that the ROM Levels 1 and 2 would experience a decrease in their overall volumes. The ROM Level 3 and 4 reflect the opposite. The comparison between data points 24 to 1 show a decrease which proves the fact that those levels increased in their overall volume.

In Figured 2.2, the August (data point 2) and October (data point 4) 2005, the volume of ROM level ones were out of control. This equates to an unusually high volume of accounts that were being coded and finalized with a ROM of one. The documentation in the medical records, prior to the program's implementation, did not truly reflect the severity of the patient's disease processes.

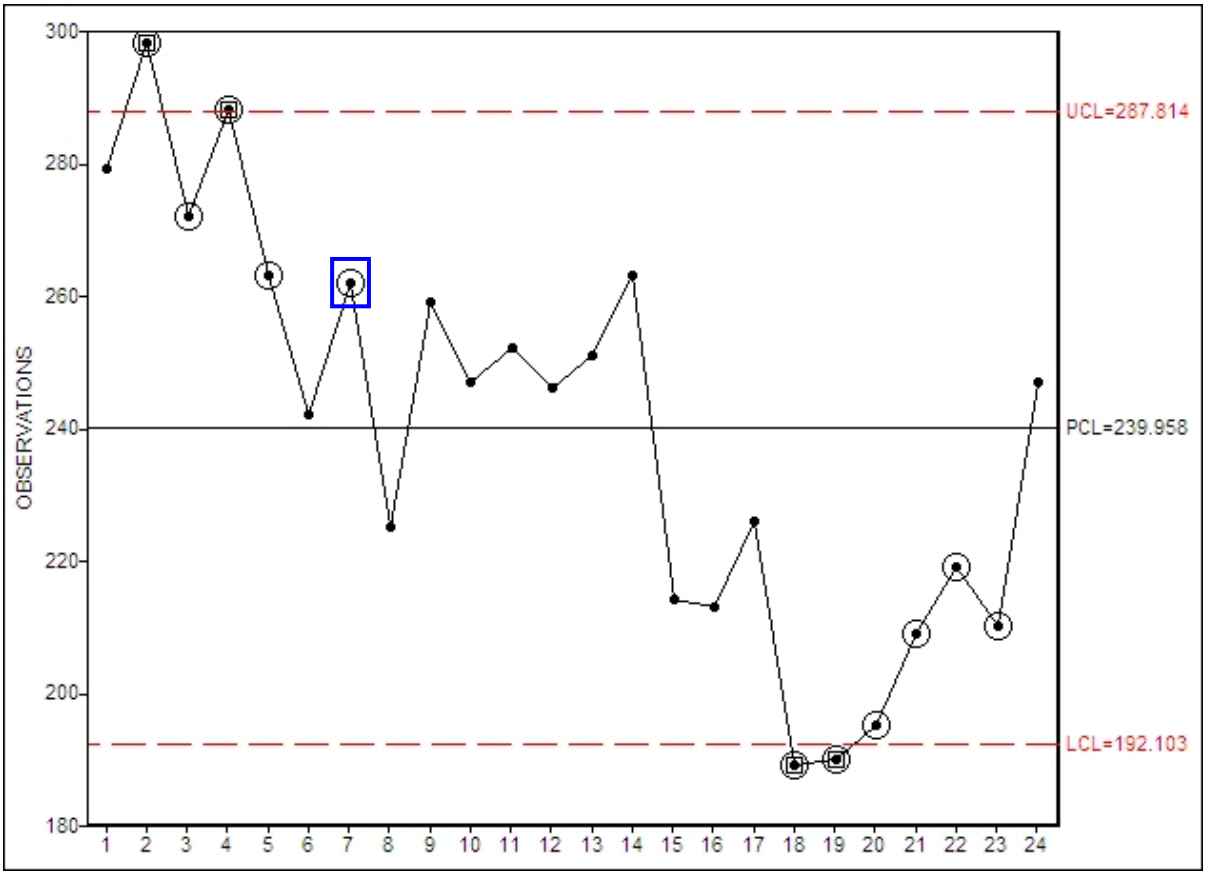

FIGURE 2.2: Risk of Mortality (ROM) – Level 1 Control Chart

From August through January (data points 2-7), several run test were violated during this time. Even prior to the formal implementation of the Clinical Documentation Improvement Program, the volume of the ROM level ones were decreasing. As with the

SOI level ones, the ROM level one had a sharp decrease from January to February (data points 7 and 8) and the volume then increased again in March (data point 9).

When looking at August 2006 (data point 14), the volume of ROM level ones experience another large decrease in volume. This can be attributed to the education be provided to approximately eighty percent of the physicians by service line. The lowest volumes were experienced during December 2006 – January 2007, which led to both data points 18 and 19 violating run test number 1 meaning that they were out of control being beyond the 3 sigma line. Ultimately the hypothesis was validated with the decrease in the ROM level one.

Figure 2.3, ROM Level 2, only one data point is out of control which occurred prior to the program's implementation. The same phenomena that occurred with ROM Level 1 occurred with Level 2 as well. During the entire duration of the initial time period the ROM Level 2, ultimately remained on a downward trend.

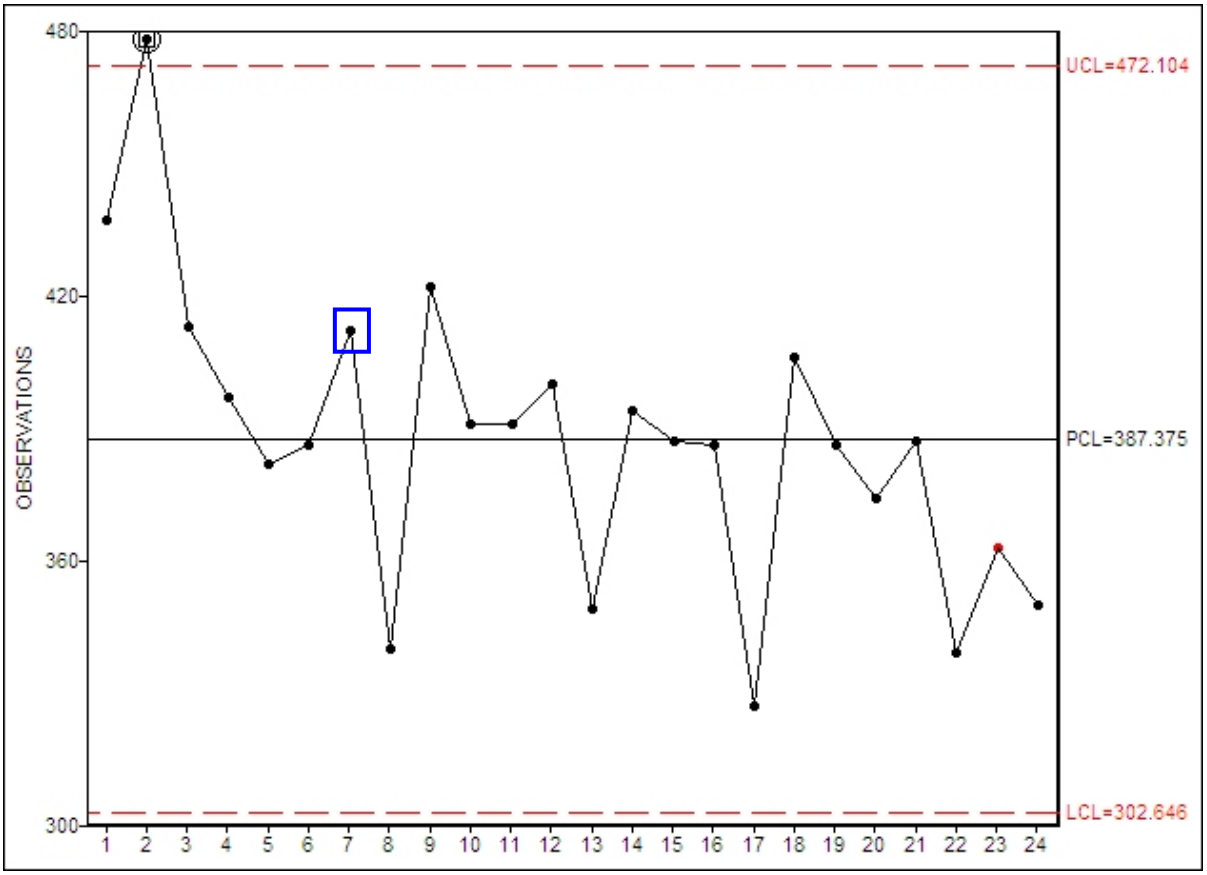

FIGURE 2.3: Risk of Mortality (ROM) – Level 2 Control Chart

ROM Level 3, Figure 2.4, and Level 4, Figure 2.6, control chart the volume of accounts during the initial time period. On ROM Level 3, only one data point violates a run test. This test is four out of five successive points beyond sigma 1. There was an initial uptake in the ROM Level 3 during the first few months of the program (beginning with data point 7). The points begin to shift gradually downward beginning in March 2006 (data point 9) through February 2007 (data point 20). The volume of ROM Level 3 began to increase in February through the remainder of the initial time period in June.

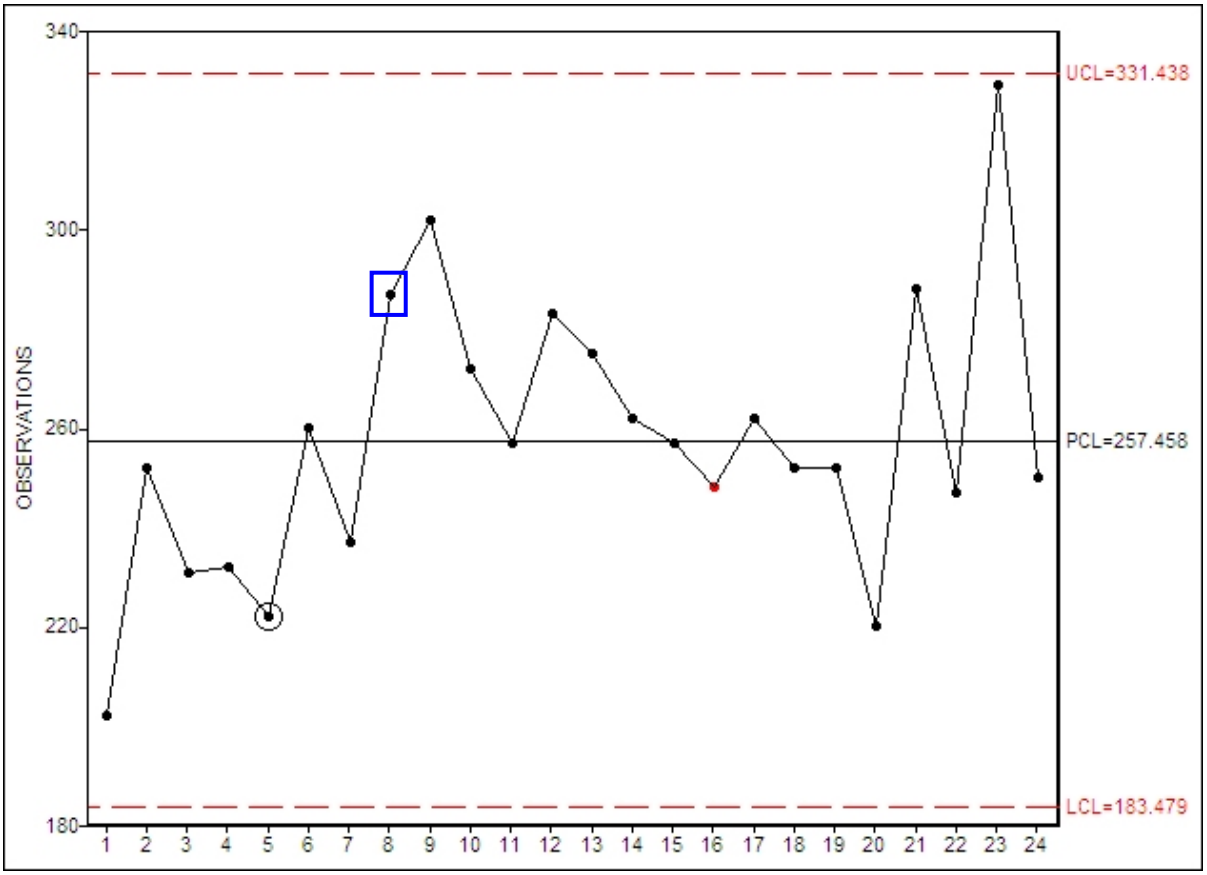

FIGURE 2.4: Risk of Mortality (ROM) – Level 3 Control Chart

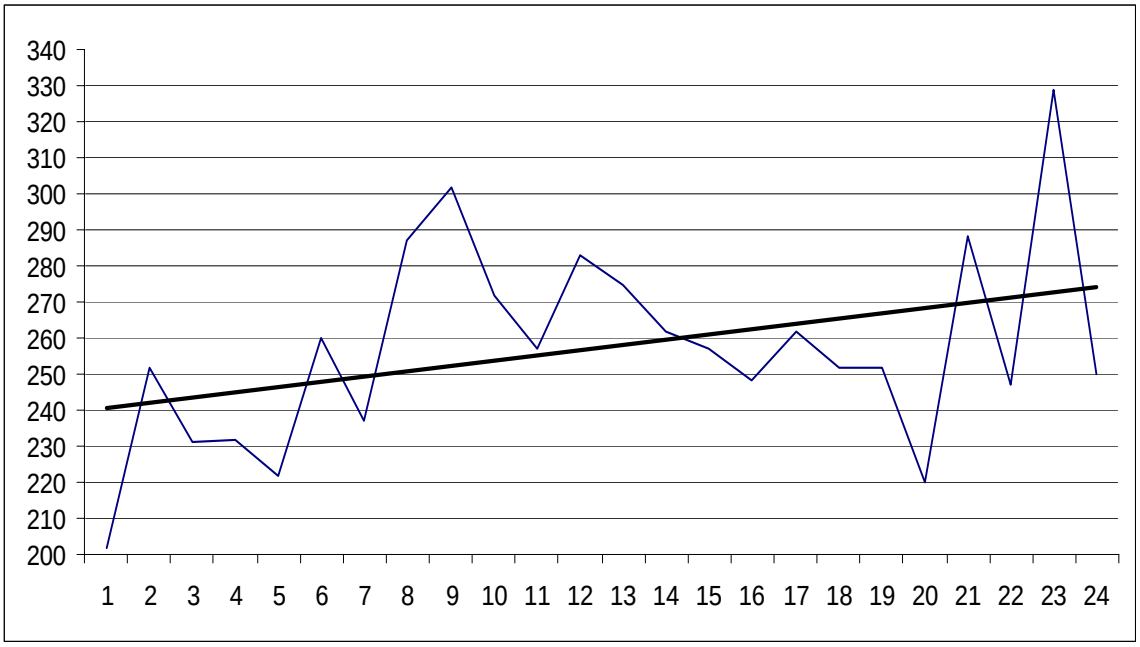

FIGURE 2.5: Risk of Mortality (ROM) – Level 3 Run Chart w/Trendline

As for the ROM Level 4 accounts, Figure 2.6, there were 4 data points that violated the control chart run tests. The first point, number 5, was beyond the 2 sigma line. In April – June (data points 10-12) were part of successive points beyond sigma 1. There was an increase in the Level 4 accounts from September through June (data points 3-12). As the program was being implemented an initial shift occurred with the ROM Level 4 accounts.

Even though there was no overwhelming visual validation surrounding the increase ROM Levels 3 and 4 when viewing the control chart, it appears that the bulk of the data points are above the center line in the control chart. The decision was then made to place the data points for both levels into run charts. This then allows for visual confirmation of the increase of ROM Levels 3 and 4 accounts during the initial time period. The overall increase is approximately 30 accounts for ROM Level 3 and approximately 15 for ROM Level 4.

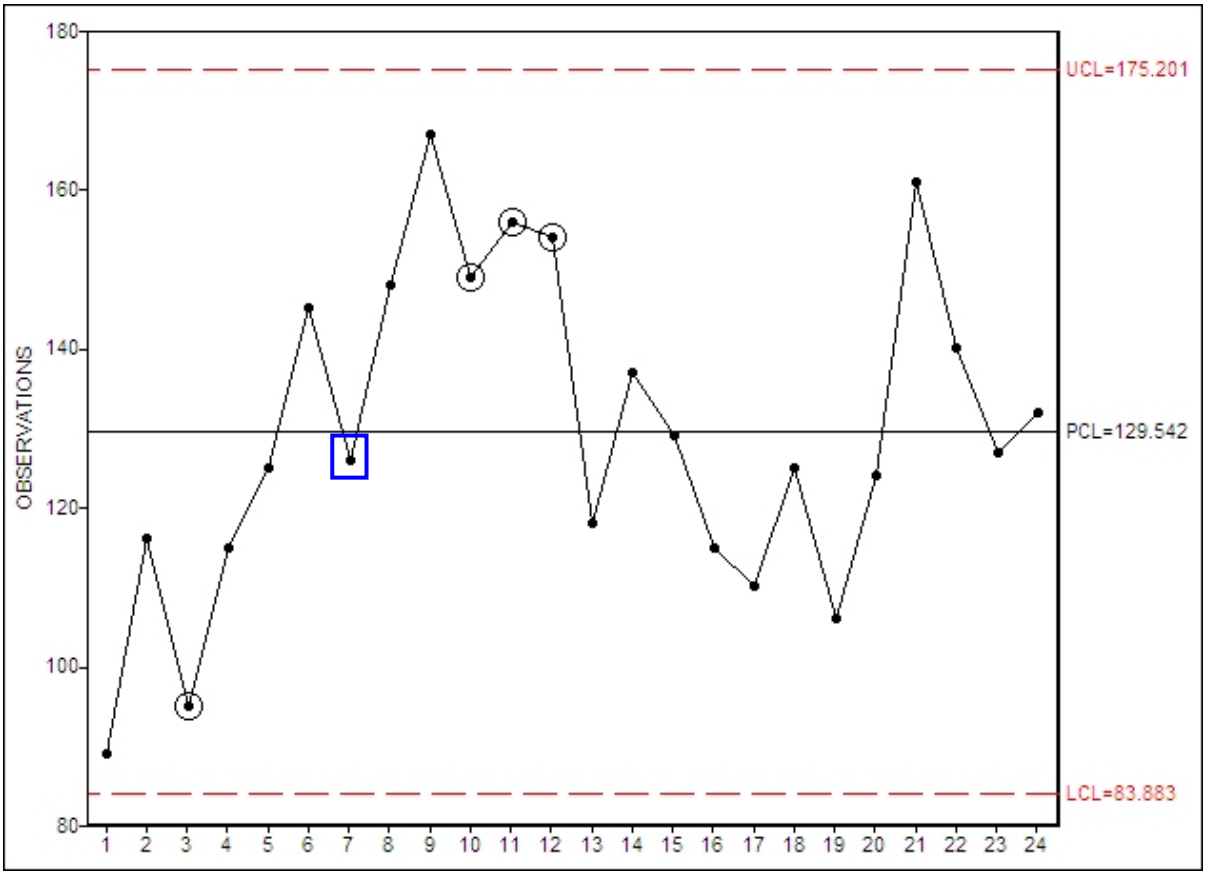

FIGURE 2.6: Risk of Mortality (ROM) – Level 4 Control Chart

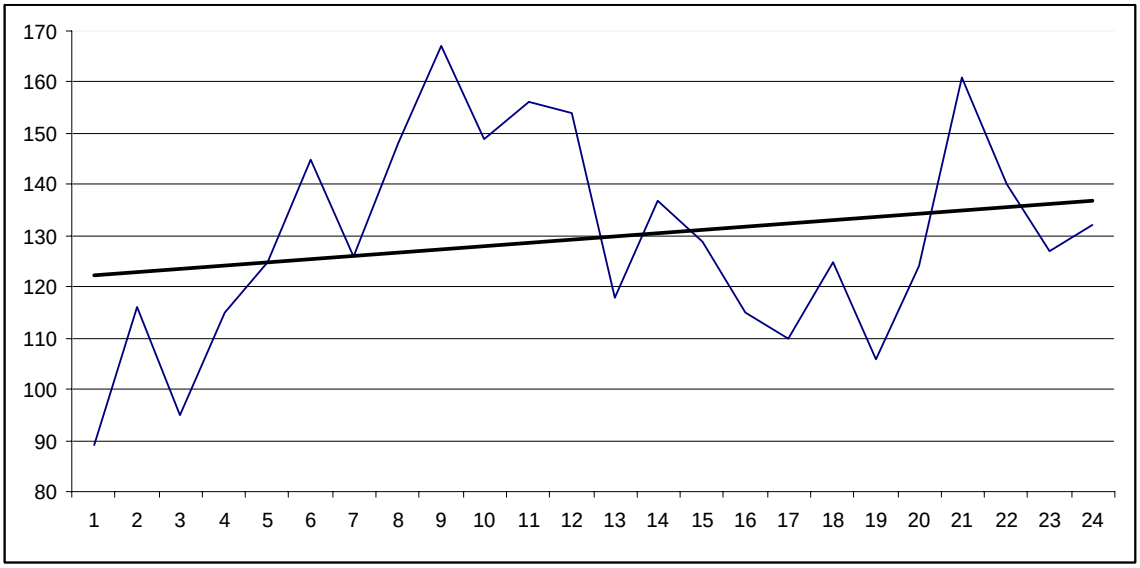

FIGURE 2.7: Risk of Mortality (ROM) – Level 4 Run Chart w/Trendline

INITIAL TIME PERIOD (July 2005 – June 2007) – CASE MIX INDEX

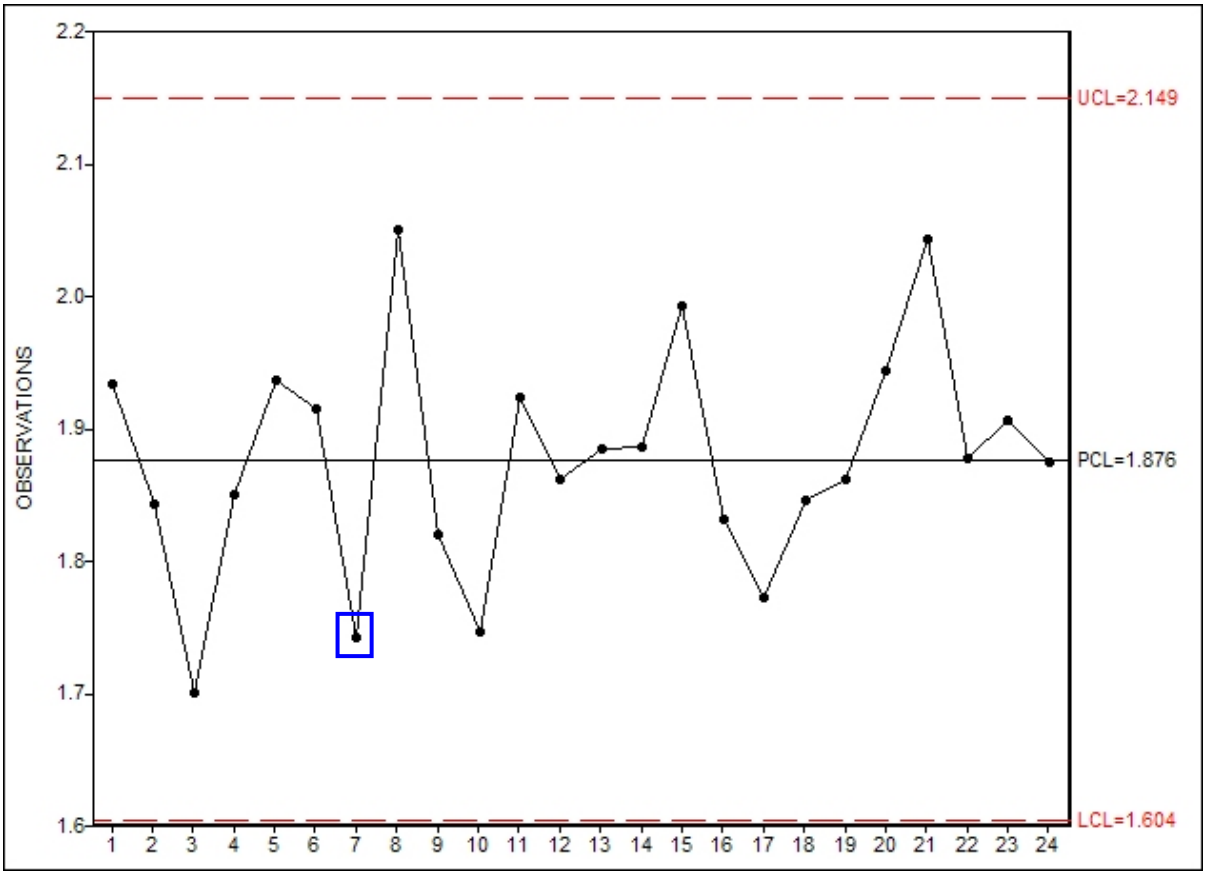

FIGURE 3.1: Case Mix Index (CMI)

The Case Mix Index (CMI) for the initial time period was statistically in control based on the run tests ran on the data. When reviewing the individual months from year to year, no cyclical trends are able to be gleaned for the initial detail collected. It is also difficult to determine via the control chart if the Clinical Documentation Improvement Program had an impact on the CMI. The volume of patient encounters declined from March 2006 through its lowest point in February 2007.

It was determined, as with other figures utilized, that a run chart with a trendline would be the best method of displaying this detail. Figure 3.2 demonstrates that there was an uptake in the CMI from the implementation of the program. Despite the number

being approximately .05 over the twenty-four month time period, this is tremendous impact as it is difficult to move the CMI more than .1 - .2 points.

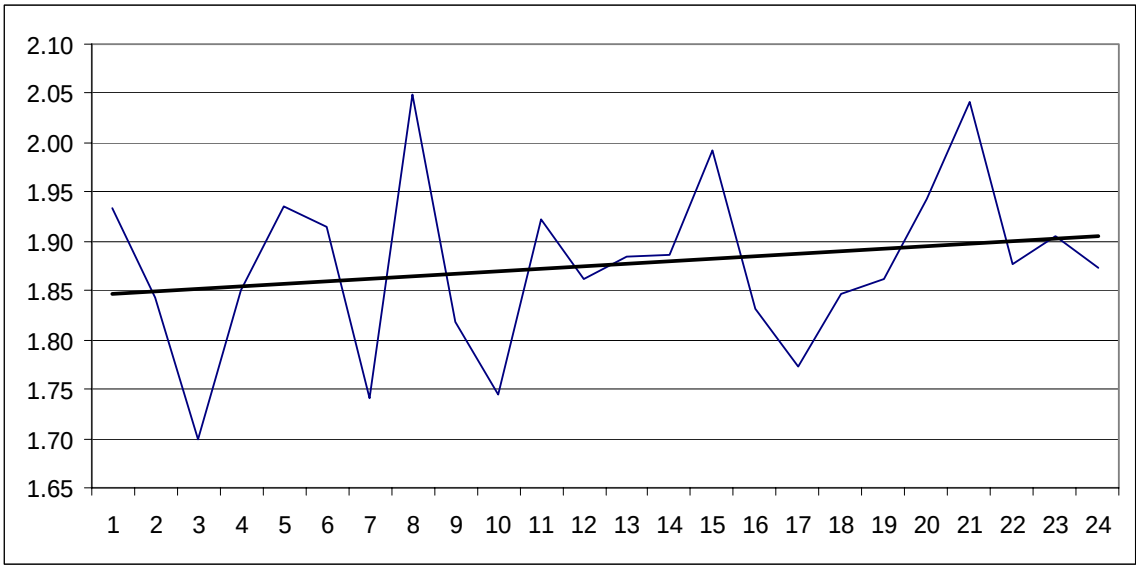

FIGURE 3.2: Case Mix Index (CMI) – Run Chart w/Trendline

Overall, during the initial time period, it was difficult to determine if there were overwhelming successes gained from the implementation of the Clinical Documentation Improvement Program. There was a slight increase in the overall CMI realized during the initial time period. The shift in the overall CMI cannot be completely attributed to the CDIP Implementation.

Natural variation could be experienced during this time period that could also impact the CMI outcomes. Upon the conclusion of the initial review, the decision was made to expand the time period for this study to include an additional two years worth of data, extending the conclusion of the time period through June 2009.

EXTENDED TIME PERIOD (July 2005 – June 2009) – SEVERITY OF ILLNESS

When looking at the extended time period, the expectation would be that the CDI Program would have stabilized their internal processes. Also, the physicians should have become more accustomed to the program and its nuances of what needs to be included in their documentation. The expectations that the Levels 1 and 2 would decrease and there would be an increase in the volumes of Levels 3 and 4. There is also an assumption that there would be more stability in the CMI, while keeping in mind that the CMI is impacted by what "walks through the door" for the facility's patient population.

In Figure 4.1, the radar graph portrays each of the 4 Levels of Severity of Illness scores during the extended time period. With the addition of 24 more months of the program, the benefit of the program is more apparent. The facility was able to slightly decrease their overall volume of SOI Level 2. There was a drastic decrease in the overall volume of SOI Level 1.There was also an increase in the overall SOI Level 3. The volume of SOI Level 4 encounters continually increased in volume by approximately 5%.

When comparing the initial and extended time periods, the ranking of volumes for each of the severity levels remained constant. SOI Level 3 was the highest in overall volume and SOI Level 1 was the lowest. As for the individual SOI Levels, the SOI Level 2 had a larger decrease when reviewing the radar graph for the extended time period. SOI Level 3 volume showed no marked increase over the initial 18 months of the program, although the volume did increase to remain consistently between the 40^{th} to 45^{th} percentiles. The SOI Level 1 decreased to remain approximately 10% of the overall volume.

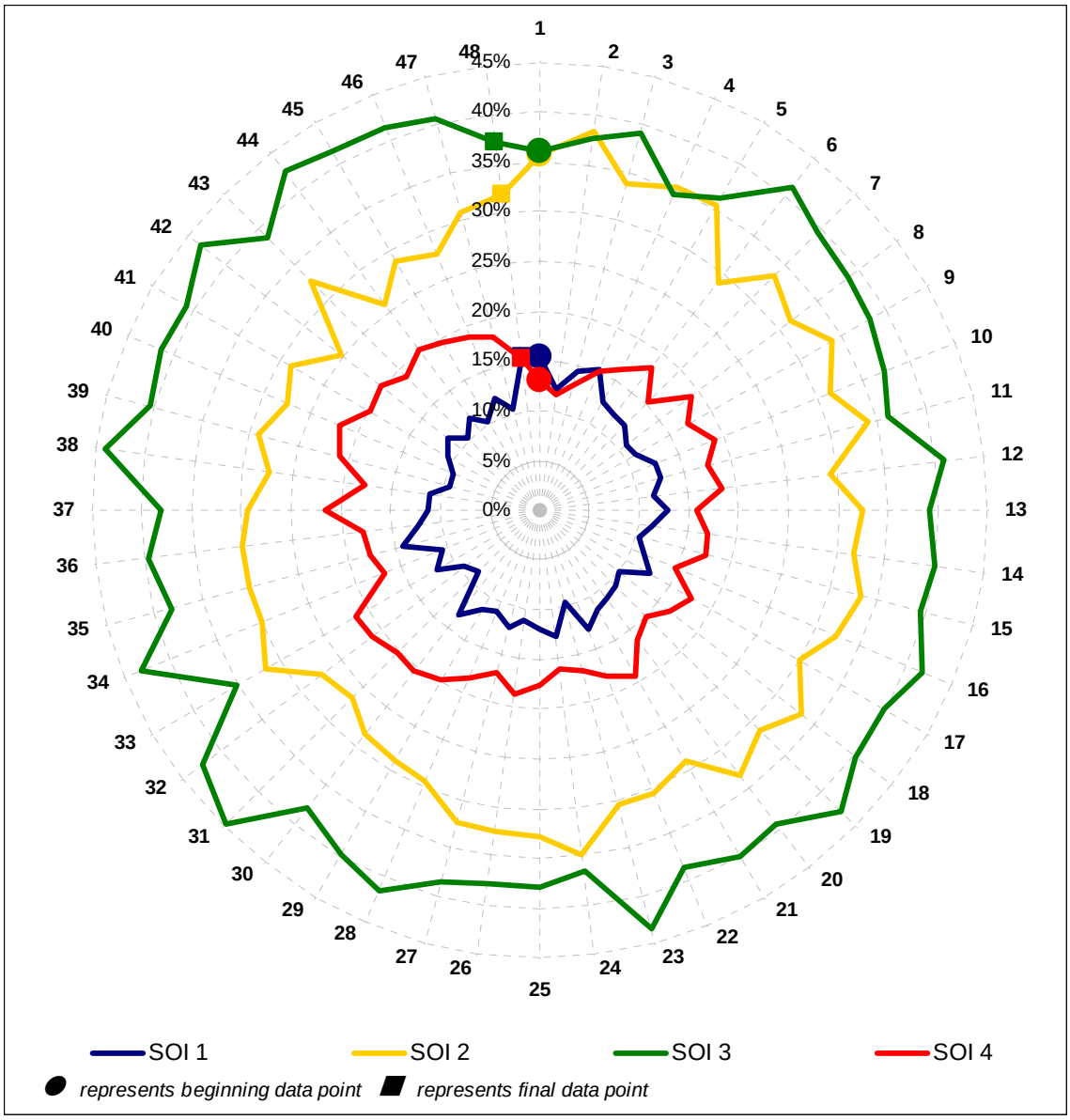

FIGURE 4.1: Severity of Illness (SOI) – Level Comparison

SOI Level 1, Figure 4.2, there were 4 data points that were statistically out of control. Three of these occurred during the six (6) months prior to the implementation of the program. Despite the large increase in volume during May 2008, there was a marked decrease in the overall SOI when taking into account their entire time period of the program through June 2009. The decrease in the overall volume proved the hypothesis

that the implementation of the Clinical Documentation Improvement Program assisted with this change.

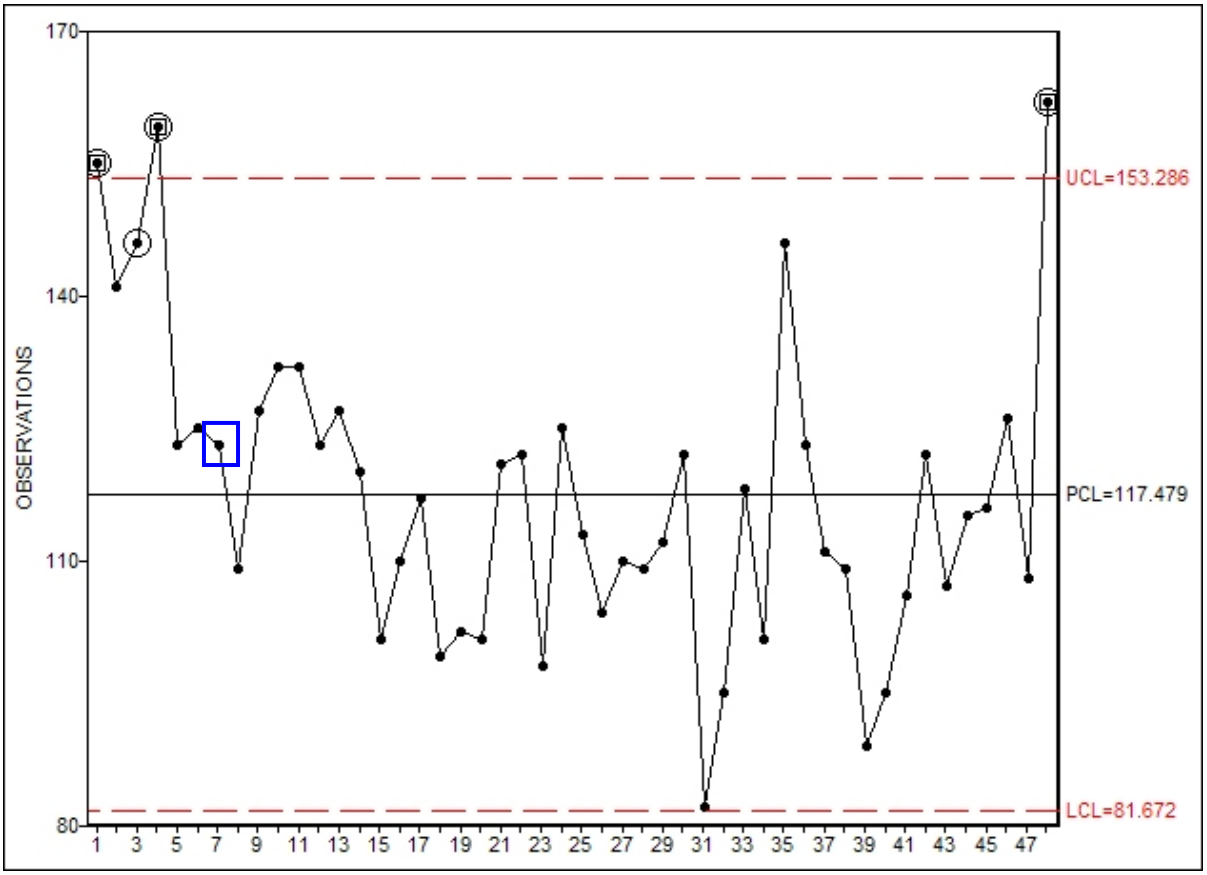

FIGURE 4.2: Severity of Illness (SOI) – Level 1 Control Chart

SOI Level 2, Figure 4.3, several of the data points violated run test errors. Three data points occurred during the pre-implementation time period. The bulk of the run test errors were due to the decrease in the overall volume of accounts with SOI Level 2. These tests included: 2 out of 3 points beyond 2 sigma, 4 out of 5 points beyond 1 sigma, and 9 successive points on the same line of the line.

The initial time period showed a slight decrease in the overall volume of accounts with SOI Level 2. With the addition of the next twenty-four (24) months, there was an even greater decrease experienced. There was a spike in the volume occurring in January

2009, data point 43, but the volume decreased again in February. The volume appears to be on a slight increase since February. The hypothesis was further confirmed, with the extension of the time period, that the overall volume of SOI Level 2 will decrease with CDIP interventions.

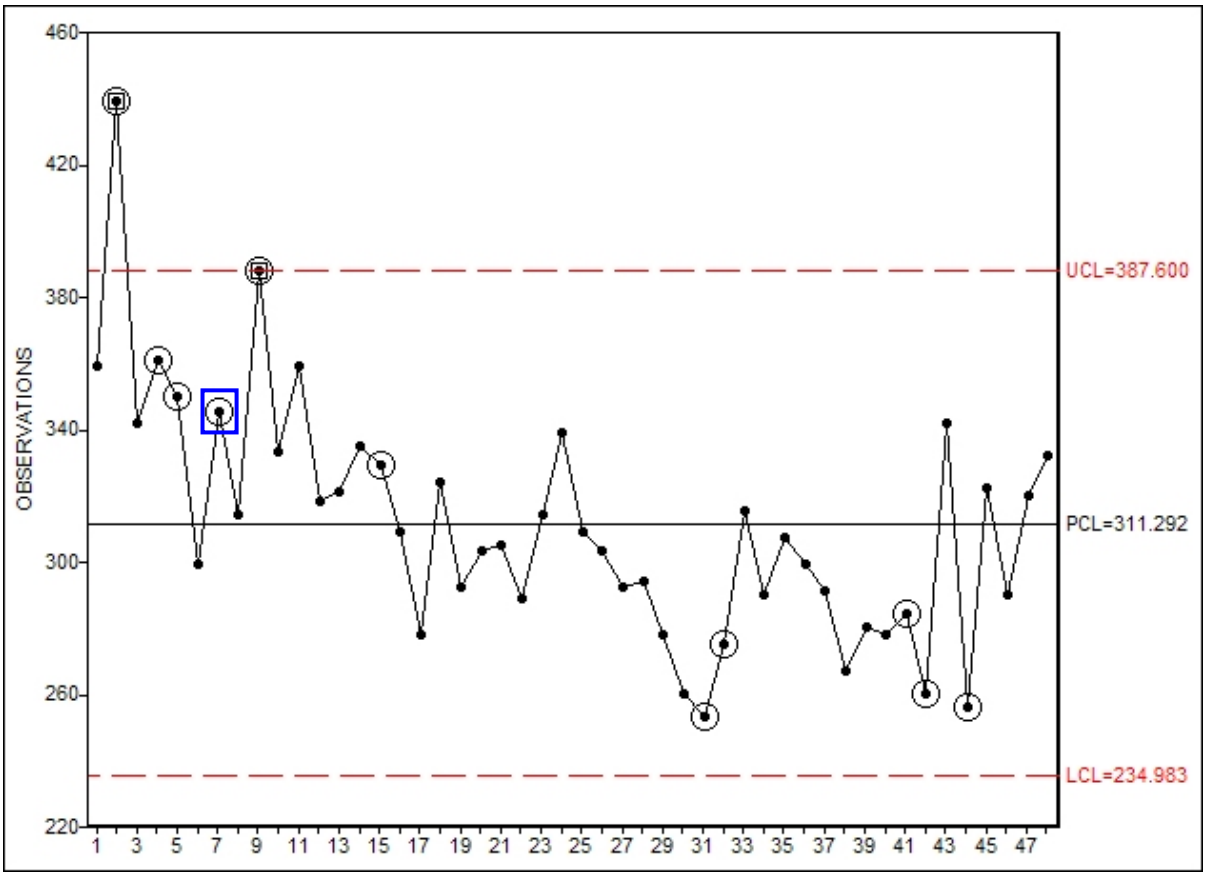

FIGURE 4.3: Severity of Illness (SOI) – Level 2 Control Chart

Based on the control chart for the SOI Level 3, Figure 4.4, the data points are statistically in control. There were 2 points that had run test errors which were both 4 out of 5 points beyond 1 sigma. The second point that violated the run test error was in September 2008. That month began the gradual increase in the SOI Level 3 account volumes.

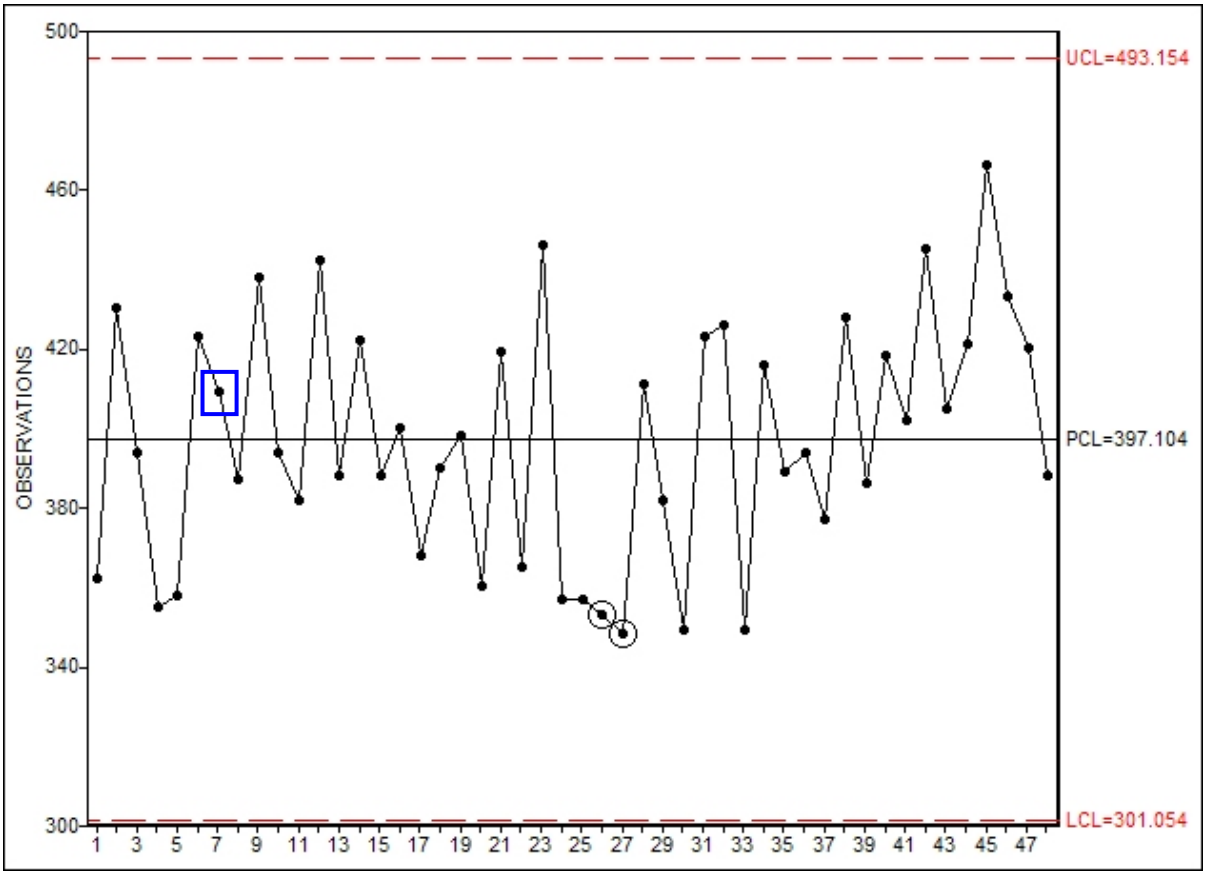

FIGURE 4.4: Severity of Illness (SOI) – Level 3 Control Chart

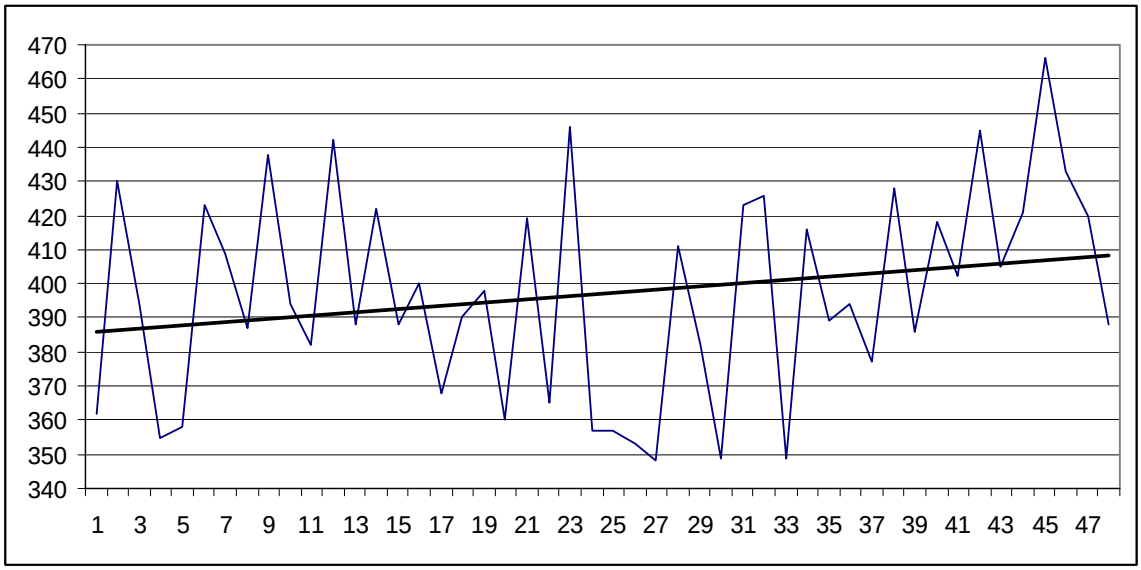

FIGURE 4.5: Severity of Illness (SOI) – Level 3 Run Chart w/Trendline

Despite the visual confirmation of the increase from that month, it is difficult to determine if the program provided an impact to the SOI Level 3 prior to that. To better assist in the determination of the impact of CDIP, the raw data was then put into a run chart and a trendline was added. There was an overall improvement of approximately 25 data points. This confirms the assumption that the improved documentation to the medical records would, in fact, increase the volume of accounts with the SOI Level 3.

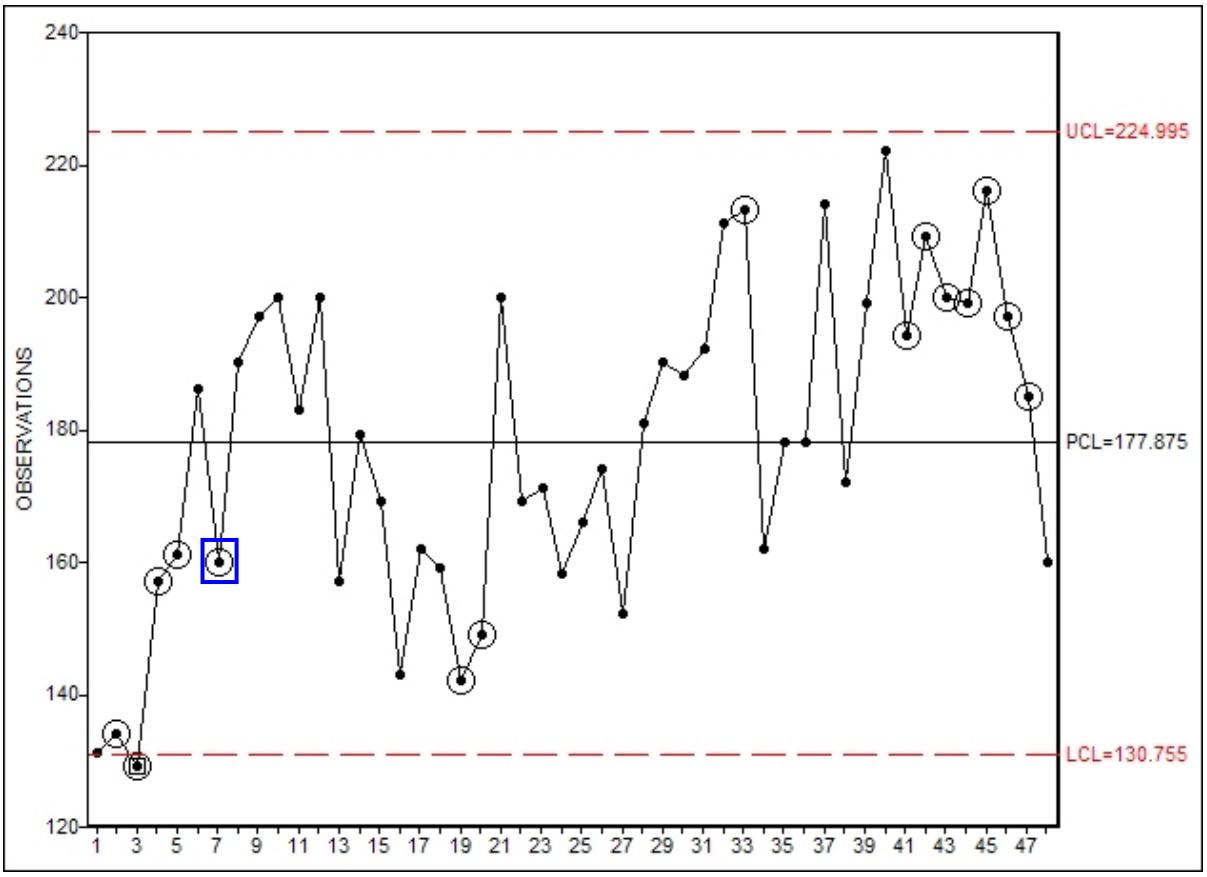

FIGURE 4.6: Severity of Illness (SOI) – Level 4 Control Chart

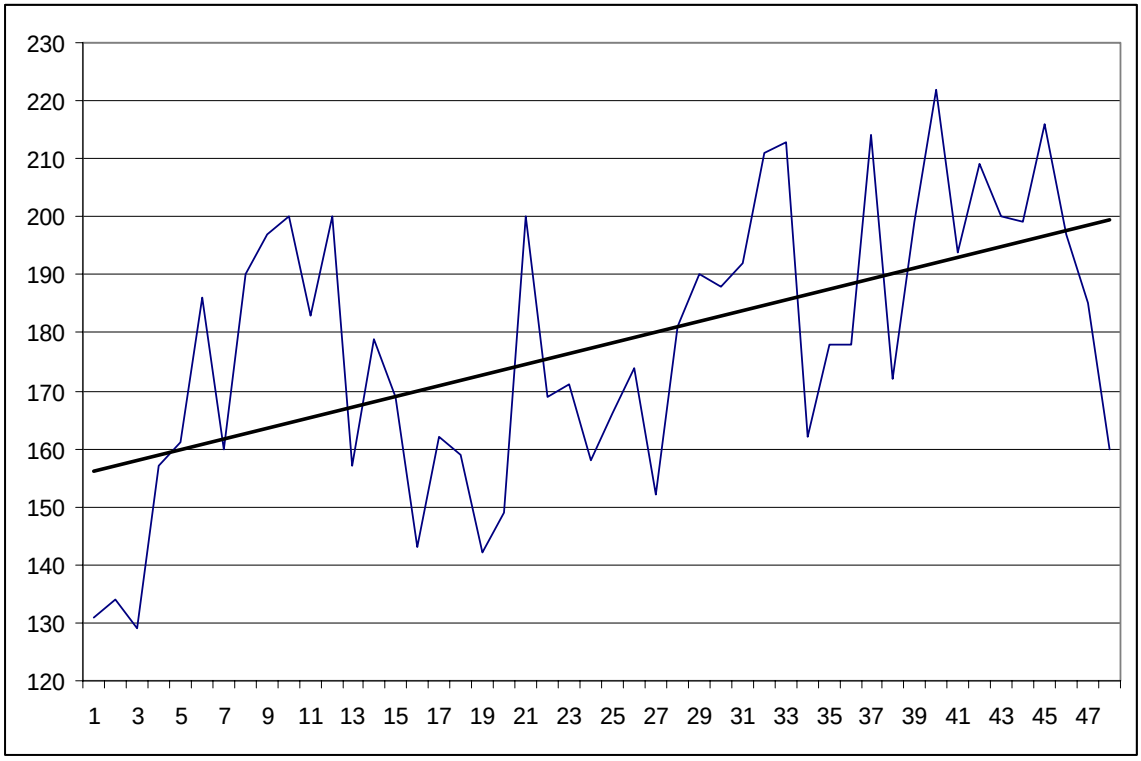

FIGURE 4.7: Severity of Illness (SOI) – Level 4 Run Chart w/Trendline

During the initial time period it was difficult to determine an overall benefit being gleaned from the CDI Program with regards to the SOI Level 4. It appeared that there was a sharp decrease beginning in April 2007 (data point 10) through January 2008 (data point 19). When the time period was extended through June 2009, the data points begin to trend more above the center line.

Several points were violations of run tests, but ultimately during the time period that the CDIP has been implemented, the data points were statistically in control. The bulk of the data points violated run test number 6, 4 out of 5 successive data points beyond 1 sigma. These occurred during late 2008 through early 2009 as the SOI Level 4.

The run chart, Figure 4.7, is a better reflection of the impact being provided by CDIP to the overall volume of SOI Level 4 accounts. Despite the downward fluctuations,

there was an increase of approximately 45 cases over the extended time period. The hypothesis that the program would have a positive impact to the overall SOI level 4 was proven.

EXTENDED TIME PERIOD (July 2005 – June 2009) – RISK OF MORTALITY

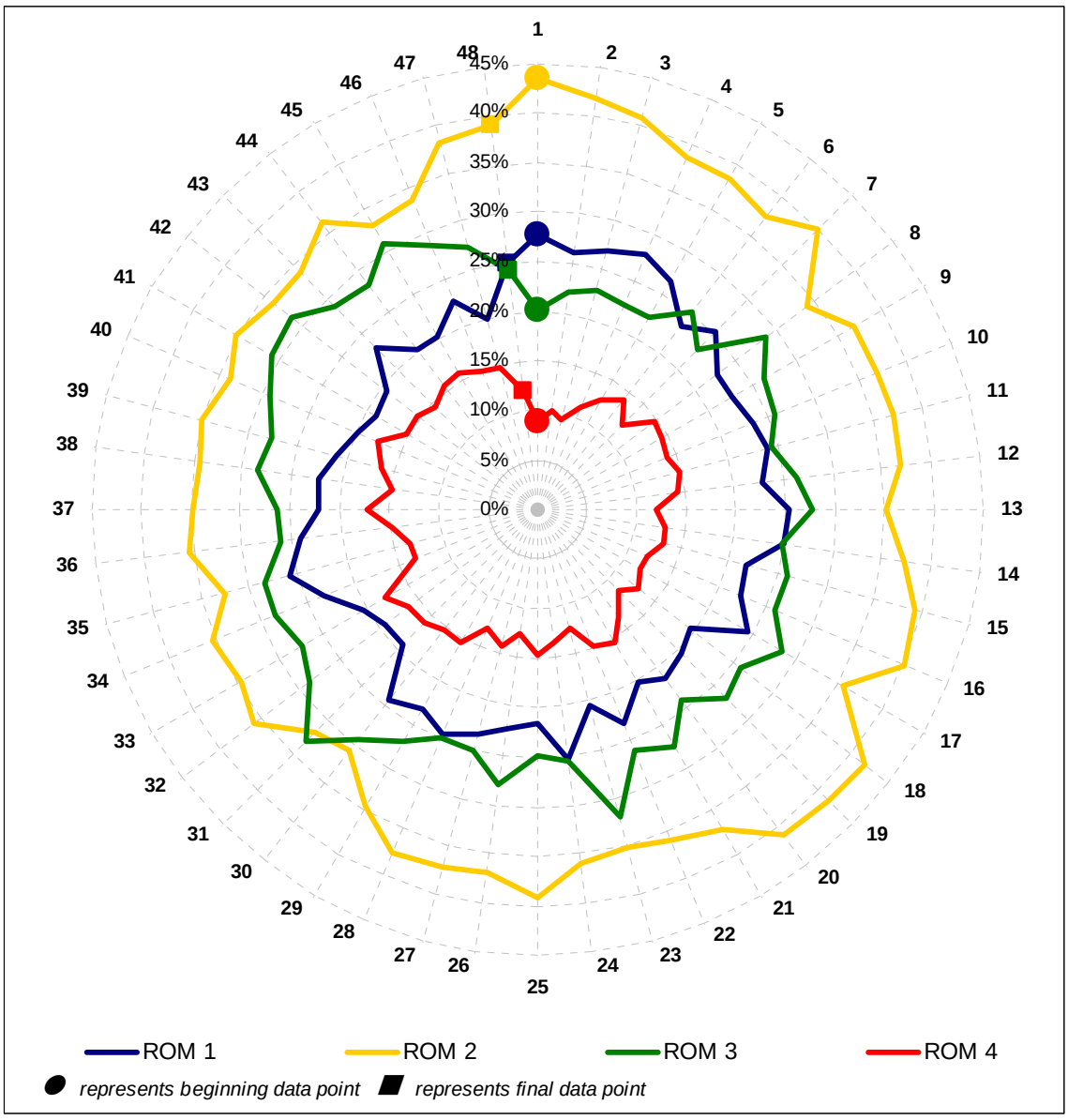

FIGURE 5.1: Risk of Mortality (ROM) – Level Comparison

The ranking of the ROM Levels, Figure 5.1, remained similar when comparing the initial and extended time periods to each other. There were large changes in the volumes of each of the levels with the ROM Levels 1 and 2 decreasing and 3 and 4 increasing. The ranges in the volume percentage for ROM Levels 1 through 3 were very similar with the difference between the highest and lowest points averaging 13%. ROM Level 4 had an increase of approximately 10%.

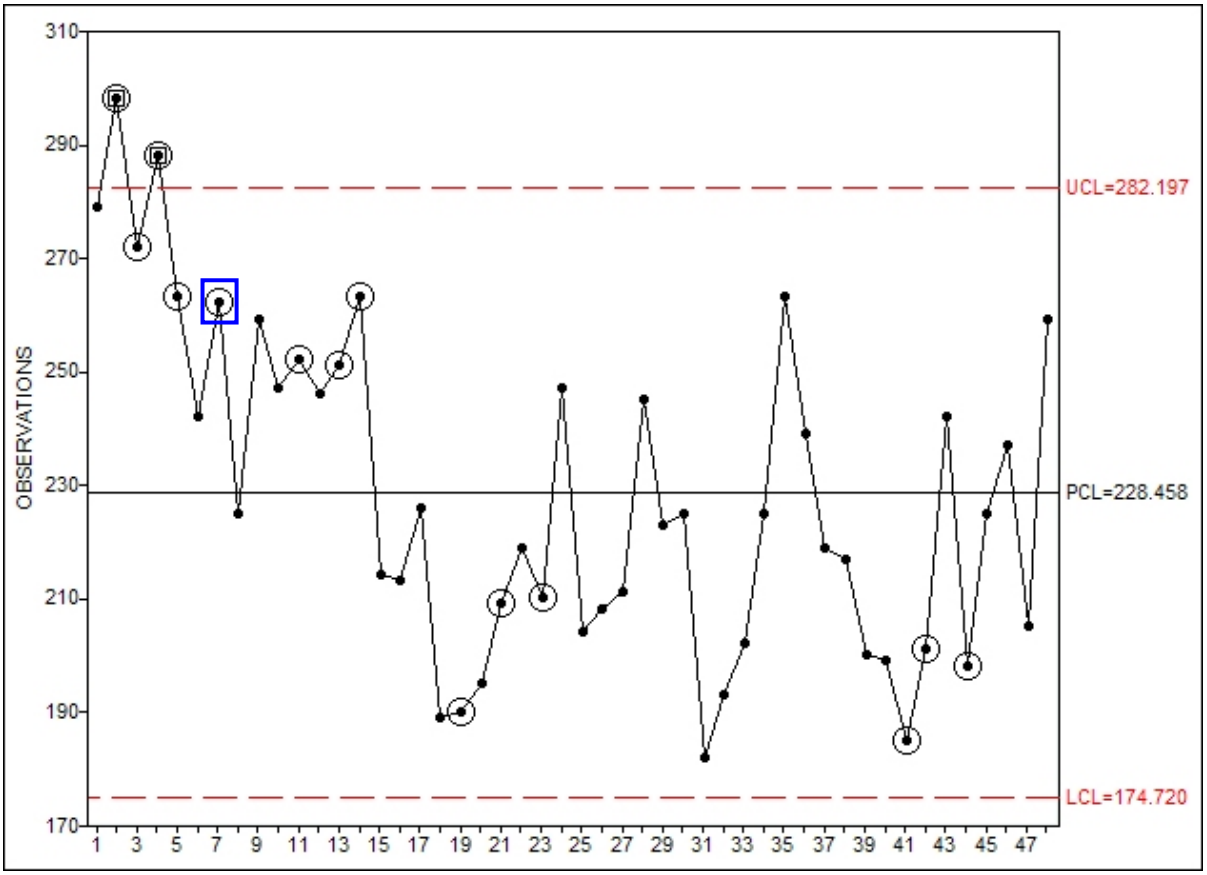

FIGURE 5.2: Risk of Mortality (ROM) – Level 1 Control Chart

Since the implementation of CDIP, there has been a continual decline in the volume of ROM Level 1 accounts, Figure 5.2. The increase was observed in January 2008 (data point 31) and continued through May (data point 35) only to begin a decline from that month moving forward. The volumes have increased through June 2009.

Several run test violations were observed during the implementation time period. The two data points that are out of control both occurred during the pre-implementation time period. Overall the ROM Level 1 was statistically in control.

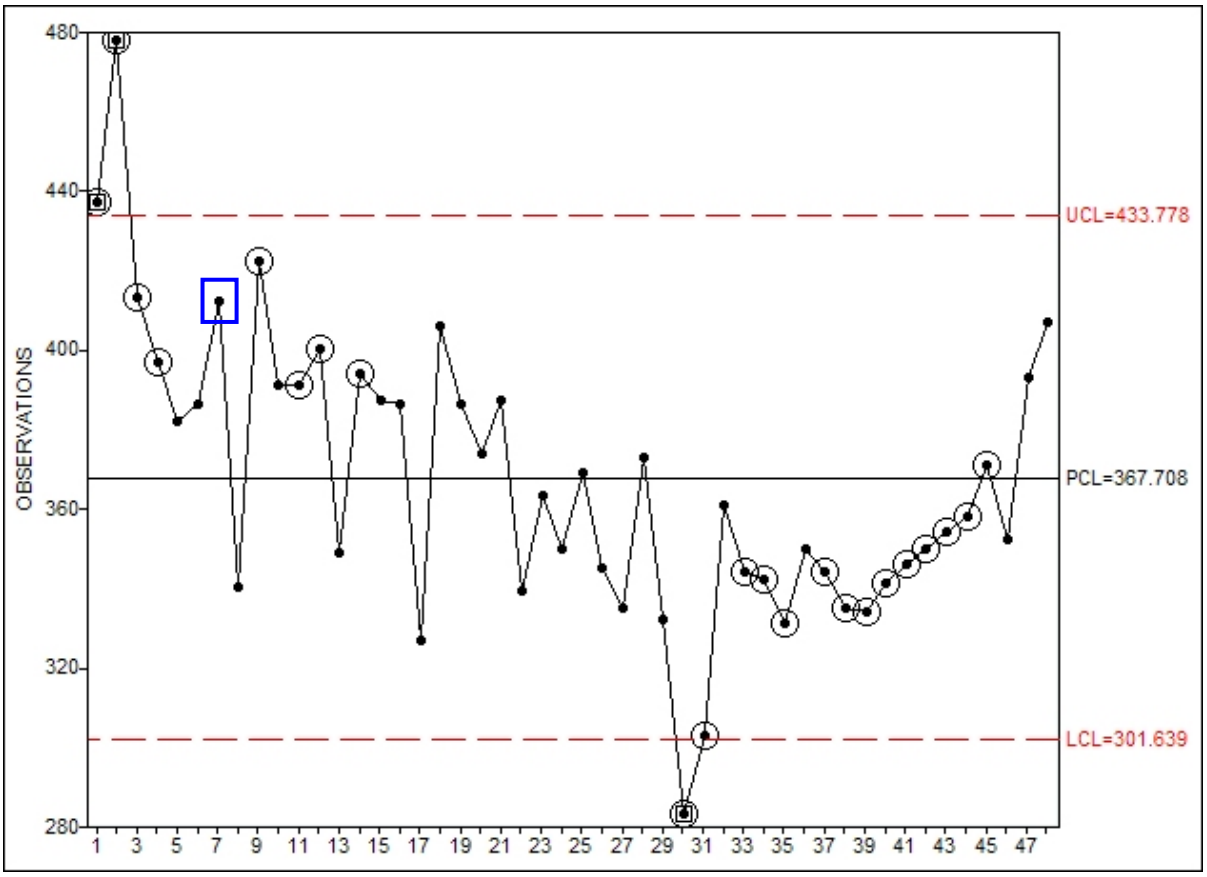

FIGURE 5.3: Risk of Mortality (ROM) – Level 2 Control Chart

As with the ROM Level 1, the ROM Level 2 also experienced a decline in the overall volume. This ultimately led to data point 30, December 2008, violating 2 run tests and being statistically out of control. The other 2 data points that were out of control both occurred prior to the implementation of the program. The majority of the points were beyond the 1 sigma lines. A slight increase in the overall volume began in April 2009.

In reviewing the control charts for both ROM Levels 1 and 2, the hypothesis was confirmed that there would be a decrease realized in their overall volumes with the implementation of a Clinical Documentation Improvement Program.

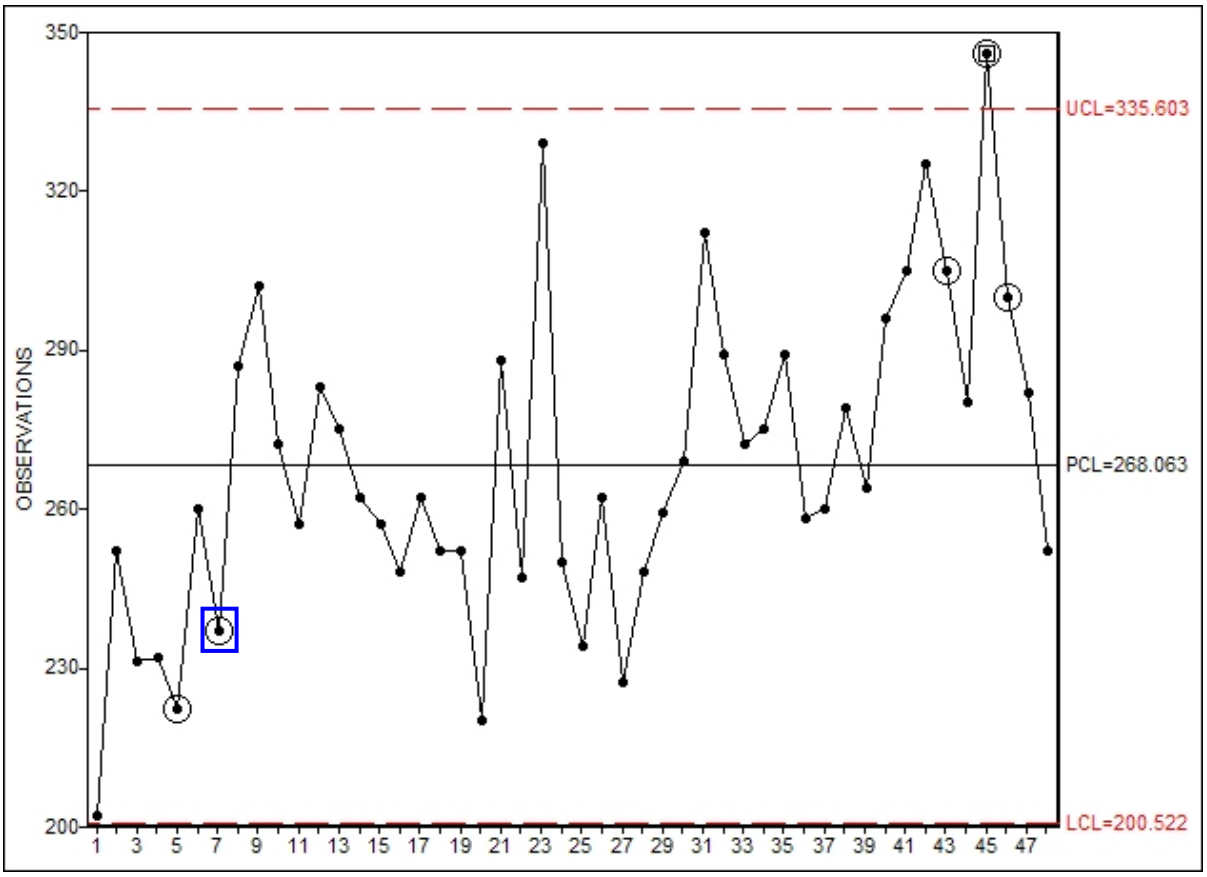

FIGURE 5.4: Risk of Mortality (ROM) – Level 3 Control Chart

When reviewing the detail of ROM Level 3, Figure 5.4, there was a slight increase in the overall volume but the impact of the improved documentation was not achieved until the second half of 2007. This gradual increase continued through March 2009 (data point 45). Since March 2009 there has been a decrease in the overall volume of encounters with ROM Level 3.

The control chart only displayed one data point that was statistically out of control. This occurred March 2009. The run test errors were all in violation of test 6, 4 out of 5 successive points beyond sigma 2.

During the initial time period there was an approximate increase in ROM accounts of thirty. When adding the additional two years of data, Figure 5.5, the increase in overall volume is closer to forty-five accounts. With the additional time period, there is an even greater impact achieved with respect to the Rom Level 3 accounts.

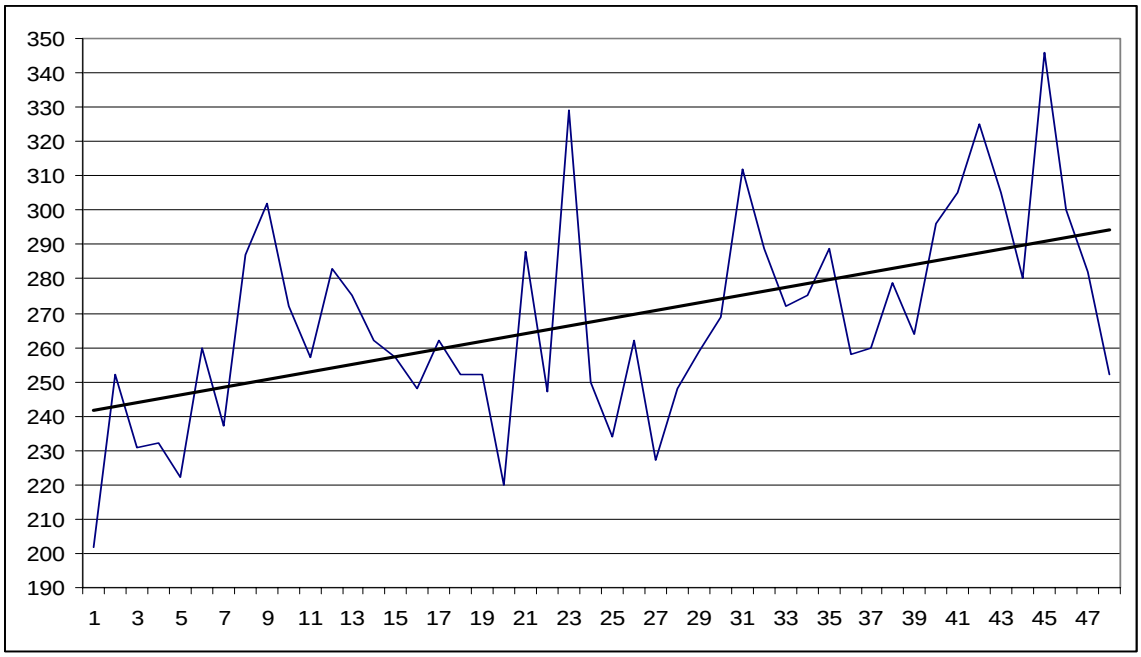

FIGURE 5.5: Risk of Mortality (ROM) – Level 3 Run Chart w/Trendline

As with ROM Level 3, ROM Level 4 experienced an increase during the initial months of implementation and then a decrease leading to the lowest volumes received, Figure 5.5. With ROM Level 4 this occurred in January 2008 (data point 19). During the program's existence, the data points were statistically in control. There were two data

points that were out of control; they both occurred prior to the implementation of the program

The run chart for the impact to the ROM Level 4 showed an increase in the overall volume at approximately 20 accounts. With the addition of the second set of twenty-four months, Figure 5.6, the program was able to double the amount increased from the first 18 months of the program to almost 40, from 120 to 160 accounts. This confirms the assumption made that the implementation would impact the overall volume of encounters with the SOI Level 4.

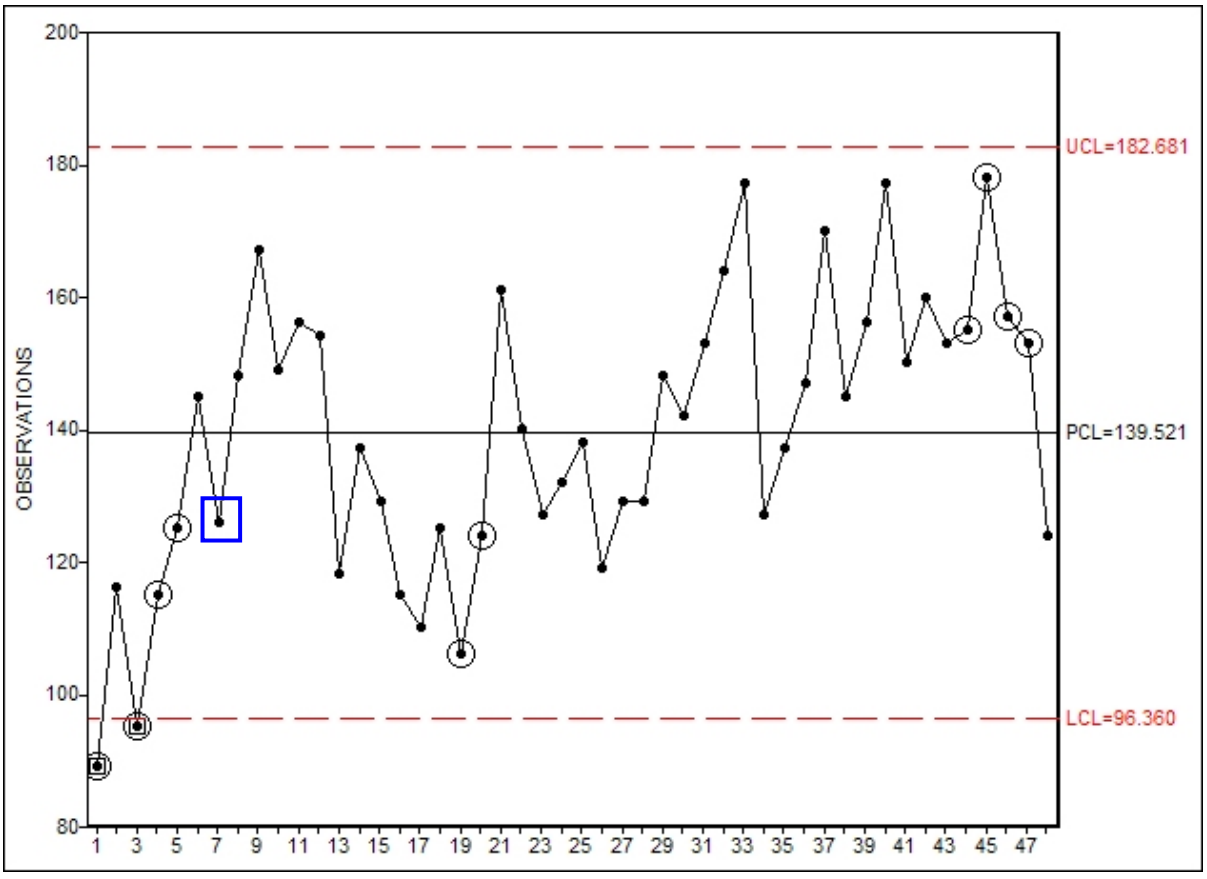

FIGURE 5.6: Risk of Mortality (ROM) – Level 4 Control Chart

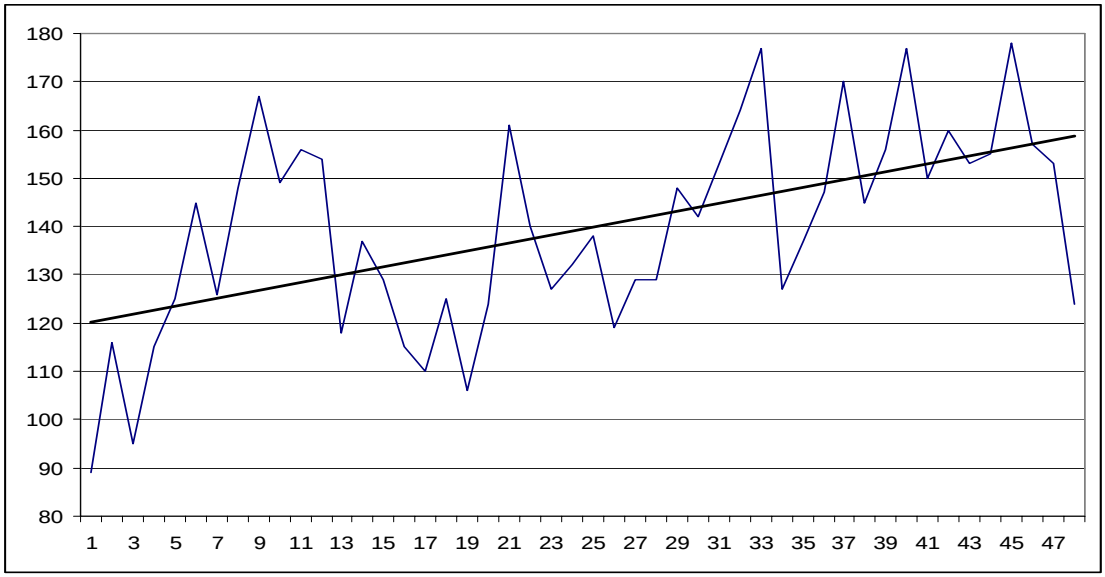

FIGURE 5.7: Risk of Mortality (ROM) – Level 4 Run Chart w/Trendline

EXTENDED TIME PERIOD (July 2005 – June 2009) – CASE MIX INDEX

During the initial time period, there was a range between data points of 0.35 in the overall CMI. When reviewing the extended time period, the overall range between points was 0.44. An even greater increase to the CMI was able to be achieved when reviewing the extended time period. Statistically the CMI remained in control during the extended time period. Only 4 data points violated run test errors. Those tests include 6 successive data points either increasing or decreasing and 9 successive data points on the same side of the line. These all occurred during the additional twenty-four months.

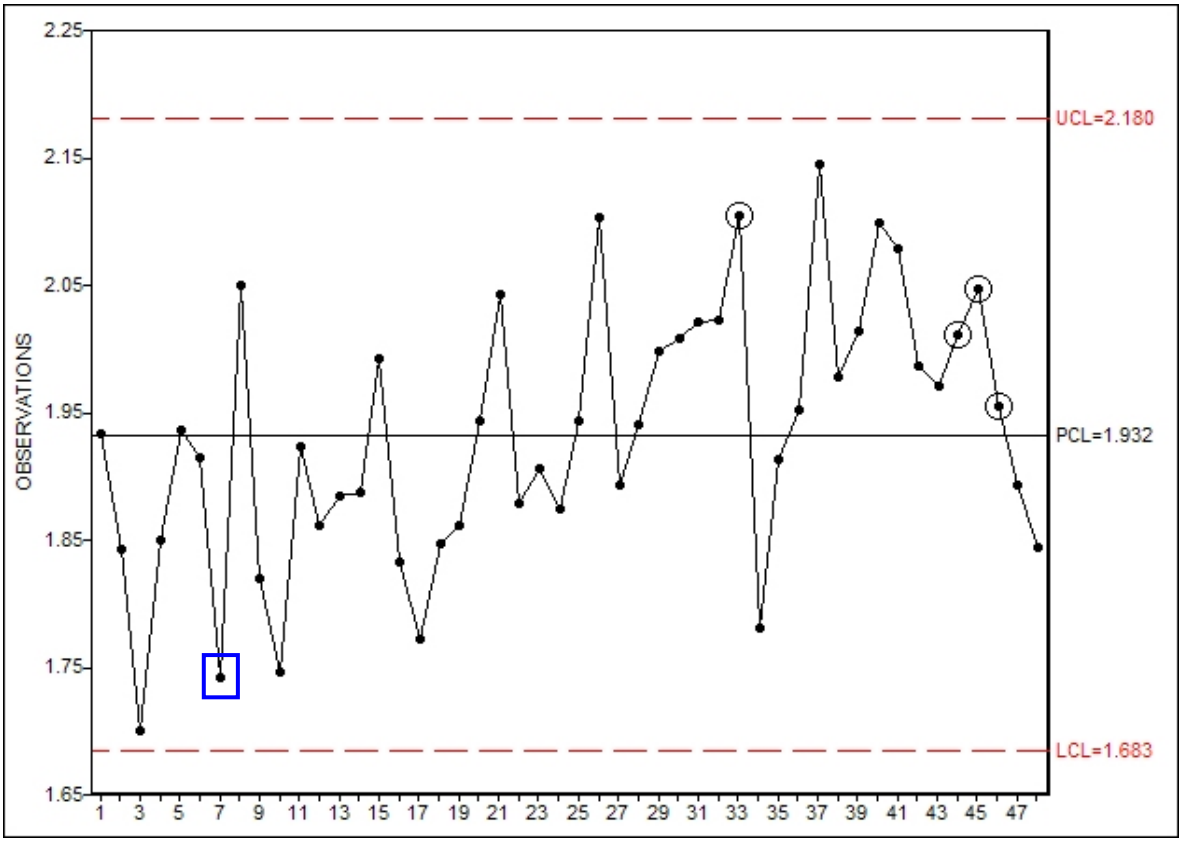

FIGURE 6.1: Case Mix Index (CMI)

For further confirmation and a comparison between the initial and extended time periods, the CMI detail was placed into a run chart, Figure 6.2. During the initial time period there was only a 0.05 increased realized in the CMI. The impact to the CMI increased to a 0.17 when looking at the extended time period. This is an extremely large increase to the CMI as it is difficult to shift the index quickly

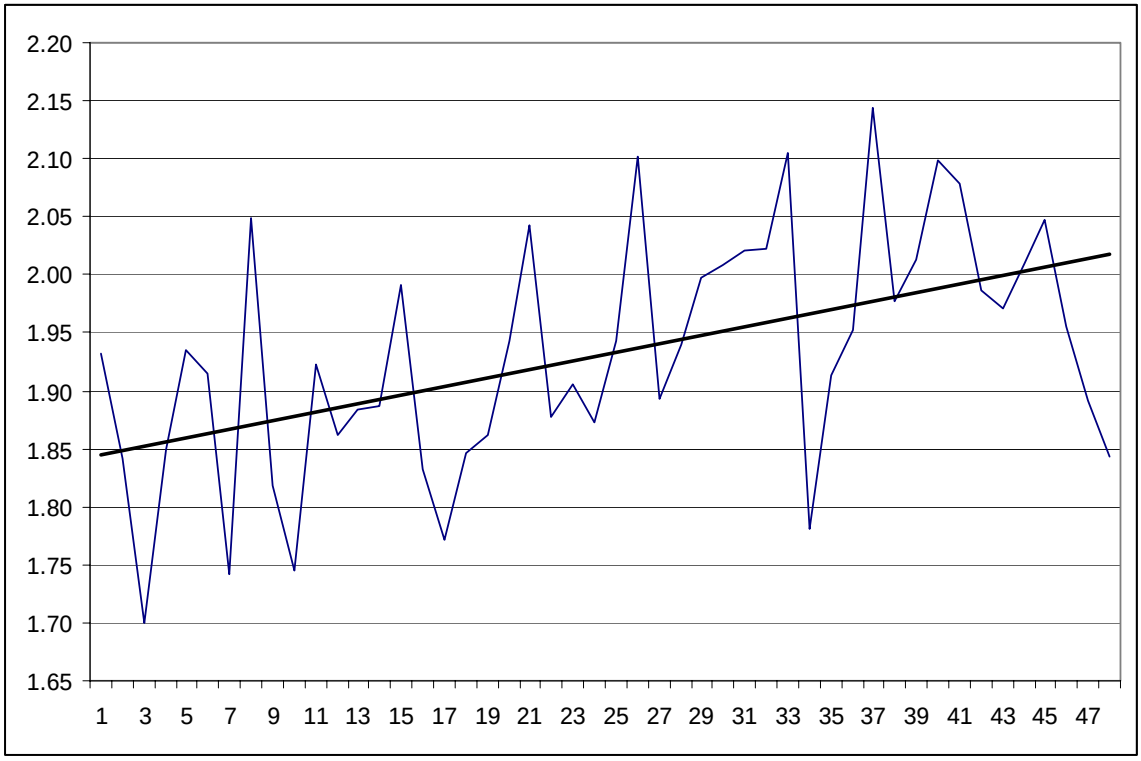

FIGURE 6.2: Case Mix Index (CMI) – Run Chart w/Trendline

.

CHAPTER FIVE: DISCUSSION

EXPLANATION OF OUTCOMES

The Severity of Illness (SOI) and Risk of Mortality (ROM) scores are two of the indicators that the healthcare facility uses for measurements of the programs' overall impact. The hypothesis for this study was that with the implementation of the Clinical Documentation Improvement Program, the overall scores for the SOI and ROM Levels 1 and 2 would decrease while the Levels 3 and 4 would increase. Another hypothesis for this study was that through improved documentation, the overall Case Mix Index (CMI) would increase.

Based on the data provided, all of the assumptions were met in both of the time periods. The full impact of the program was not apparent during the initial time period; therefore, it was extended to include the subsequent twenty-four months. With this additional time the physicians had the opportunity to have ongoing education and interactions with the Clinical Documentation Liaisons. As the documentation practices began to change, a more complete picture of the program's impact was able to be realized.

The SOI scores experienced larger fluctuations during the extended time period. There were significant decreases in the SOI Levels 1 and 2, as well as, significant increases in the SOI Levels 3 and 4. The documentation that accurately reflected the patient's true severity is a contributing factor to this increase.

The ROM scores experienced shifting during the initial time period. The second largest volume, by score, changed several times throughout the initial time period,

between ROM 1 and 3. The end of this time period showed that there was a sustained increase to the ROM Level 3.

There were also substantial variations in the other ROM levels as well. ROM Level 2, which remained the highest level by volume, began to realize a consistent decrease from February 2007 and moving forward. A large increase in the volume of ROM Level 4 accounts began to steadily increase as well beginning in January 2007.

The Case Mix Index (CMI) impact was not fully apparent during the initial time period. The impact to the overall CMI was approximately 0.05. The extended time period showed that the impact to the overall CMI increased to 0.17. If the overall patient population remained constant, the increase in the overall CMI could partly be attributed to the changes in documentation practices by the physicians.

IMPLICATIONS OF RESULTS

The results have implications on several aspects of the program. Some of these include the improvement in overall outcome scores, rankings on healthcare consumer websites, physician confidence, and increased communication.

The improvement in the overall outcome measures is directly linked to improved documentation. The benefit of implementing CDIP is that the program will work to improve the denominator of the facility's scores. Even if the observed rates, numerator, remain constant, the increased specificity in the documentation will allow the expected bucket, denominator, to grow. Some particular outcome measures that can be impacted include the mortality index and also the length of stay (LOS) index.

As the facility's indices improve, the rankings on the healthcare consumer websites will begin to change as well. This will allow the healthcare consumer to make

more informed decisions regarding where they, or a loved one, will receive their care. Facilities desire to be ranked in the top 10% to become the providers of choice.

Physician confidence with the documentation is another implication of the results. As the physicians alter their documentation to increase the specificity of the disease processes, the volume of interventions that would need to be made by the Clinical Documentation Liaisons (CDLs) would then decrease. This would equate to the physicians utilizing the tools and techniques that had been provided to them.

This also assists with the physician's clinical decision making. They utilize the documentation to support their diagnoses and treatment plans. With the standardization of the documentation, the physicians are able to communicate more effectively and efficiently with each other. By utilizing the documentation improvement principles, consulting physicians, or physicians with weekend rotations, are able to review the last few days worth of progress notes and begin to formulate their treatment plans for the current day. They are more efficient, by not having to go back to the beginning of a patient's stay in order to determine what the course of action and treatment have been.

Increased communication affects several other groups with the implementation of CDIP. There is better communication between the CDLs and the physicians, the CDLs and the inpatient coding staff, and the CDLs with various hospital quality groups. There is also an increase in communication between the CDIP Administrators and Facility Administrators and Medical Service Line Directors.

The CDLs work closely with the physicians that are admitting patients on their units. When possible, and providing that it is not a hindrance to patient care flows, the CDLs will communicate the aspects of the chart that need increased documentation in a

face-to-face interaction with the physicians. This allows the physicians to link the clarification forms to the CDL and also to provide immediate feedback. Whenever possible, the CDLs will round with various physician groups. This allows the CDL to gain a better understanding as to how particular physician groups interact and document in their patient's medical records.

The CDLs also work with the inpatient coding staff to gain a better understanding of what type of documentation that they may need from the physicians. The CDLs assist various quality groups in the facility. They work with the Core Measures teams and also service line staff. They work to tailor forms and various other communication tools so that the forms will benefit not only the particular groups, but that the improved specificity needed for CDIP would be provided.

SUMMARY OF DISCUSSION

Overall, the largest impacts to the healthcare facility were seen in their ROM scores, particularly levels 3 and 4, increasing and the increase in the overall CMI. The program proved to be a success for this particular healthcare facility and provided the desired results.

There are still other areas that are being identified as having shown improvement since the implementation of CDIP. These improvements cannot be solely due to the implementation of the program, but the results could be in a combination of other improvement initiatives that have been instituted during the past several years.

CHAPTER SIX: CONCLUSION

LIMITATIONS

There are three (3) main factors that could pose a limitation to this study. They include: (1) cyclical illnesses, (2) annual DRG weight changes, and (3) Case Mix Index (CMI). There were two data sets utilized for this study. Both included include six (6) months prior to the January 2006 implementation of the Clinical Documentation Improvement Program. The initial time period only looks at the first eighteen months of the program, June 2007. The extended time period concludes in June 2009, which lengthens the time period by twenty-four months.

Cyclical illnesses would refer to the trends of disease processes or injuries increasing during particular times of the year. For example, the incidence of pneumonia could increase during the winter months or the incidence of motor vehicles could increase over the summer months or during inclement winter weather. Since the detail was analyzed at a higher level, no evident trends appeared that would prove that cyclical illnesses or injuries do exist.

Centers for Medicare and Medicaid Services (CMS) revises DRGs on an annual basis based on the governments fiscal year, October 1st to September 30th. The refinements could be something minor that would only affect the verbiage that describes the DRG. There are other times that the actual DRG itself could either be removed or a new DRG could be added to the overall list. The largest change that would bear the greatest impact would be to the DRGs would include an increase or decrease to the DRG weight since this has a direct impact on the healthcare facility's finances.

FUTURE RESEARCH

The metrics of the Severity of Illness and Risk of Mortality Scores coupled with the Case Mix Index will continually need to be monitored to determine in there are any fluctuations in the impact that the Clinical Documentation Improvement Program provides. As these trends arise, each would need to be analyzed to determine if there was any clinical significance to the changes or if they were simply common cause variation.

Another area that can be researched further would be the accuracy of the inpatient coders. Future studies to determine if there was a particular coder or group of coders that may be experiencing some difficulty in applying the diagnosis codes in relation to the documentation that was supplied by the physicians or other ancillary healthcare providers. If there was a large amount of difficulty experienced, an audit could be performed to determine what type of impact could have been achieved if there were no difficulties present.

The response rates by the physicians would be another area where future research could be performed. The CDLs are the initial group responsible for assigning a response from the clarification. Then the reviewer takes a second look at the account to validate the clarification responses. If there are physicians, or particular groups, that are consistently not responding to the interventions that are being attempted by the CDLs, then further data analysis could be performed.

The audit would be similar to the validation of the codes being applied by the inpatient coders. The review would take a second look at the accounts to determine if the CDLs marked the physician as a non-responder. If the physician still had not responded to the intervention, then that particular subset of accounts would be included in the audit.

The audit would consist of reviewing the accounts to determine what the clarification reason was. Once the reason(s) was determined, the reviewer would then apply the codes to the account. The reviewer would note any changes that had been made to the SOI, ROM, DRG, DRG weight, and average Length of Stay (LOS).

This detail could then be provided back to the physicians or the Medical Directors of their particular service lines so that they could determine the next steps to be taken with the physicians. Since the documentation can impact various measures and metrics, it is important to provide the physicians and Medical Directors with data on the various types of impacts participating in a CDI Program can provide them.

This particular program was implemented in a hospital system. Further research could be performed to determine if the other facilities experienced similar results to the facility reviewed for this study. The results could then be used as benchmarks for the healthcare organization when implementing the Clinical Documentation Improvement Program at other facilities.

SUMMARY

The implementation of a Clinical Documentation Improvement Program (CDIP) is a decision that should not be made hastily. There are various types of programs that can be chosen. Each one of them has the potential to becoming a success. The facility that was utilized for this study chose a physician led program. The facility felt that it was important for their physicians to hear the message from a physician and that is would be well received with this approach.

Overall, the impact that CDIP has brought to this facility has proved that the implementation achieved the desired results. The facility has experienced positive

impacts to their SOI, ROM, and CMI metrics. In addition to these changes the rankings listed on various healthcare consumer websites have also improved.

This healthcare system continues to feel that the Clinical Documentation Improvement Program has provided a overall benefit to them. The administration desired the implementation of CDIP into the remaining facilities in their system with the hopes to produce similar, or even greater, results than those that were demonstrated by this study.

With these changes, external reporting will continue to improve and further solidify this healthcare system as the provider of choice.

REFERENCES

REFERENCES

Centers for Medicare and Medicaid Services, (December 2007). Hospital Acquired Conditions (HAC) in acute Inpatient Prospective Payment System (IPPS) hospitals. Retrieved October 10th, 2008, from http://www.cms.hhs.gov/HospitalAcqCond/Downloads/HACFactsheet.pdf

Centers for Medicare and Medicaid Services, (December 2007). Present on Admission (POA) indicator reporting by acute Inpatient Prospective Payment System (IPPS) hospitals. Retrieved October 10th, 2008, from http://www.cms.hhs.gov/HospitalAcqCond/Downloads/t.pdf

Centers for Medicare and Medicaid Services, (April 17, 2008).Quality reporting initiative will help improve health care for beneficiaries and provide incentives for eligible professional. Retrieved March 27th, 2009, from http://www.cms.hhs.gov/apps/media/press/release.asp?Counter=3047

Darling, Kathryn (April 18, 2007). The Right Care, For Every Person, Every Time. *Health Industry Online.* Retrieved May 30th, 2009, from http://www.strasburger.com/p4p/publications/valuck_value_based_purchasing_VBP.pdf.

Department of Health and Human Services, (2005). ICD-9-CM official guidelines for coding and reporting. Retrieved October 10, 2008, from Centers for Disease Control Web site: http://www.cdc.gov/nchs/data/icd9/icdguide.pdf

Dimick, C (2008). Leading Clinical Documentation Improvement: Three Successful HIM-led Programs. *Journal of AHIMA 79. 7*, 40-44.

Gold, MD, Robert S. (April 2004). What happens to hospitals severity scores when different terminology is used? Retrieved August 15, 2009, from DCBA, Inc - Documentation Coding & Billing Accuracy Web site: http://www.dcbainc.com/library/coders/04_2004.htm

Gold, MD, Robert S. (June 2004). Coding for severity. Retrieved August 15, 2009, from DCBA, Inc - Documentation Coding & Billing Accuracy Web site: http://www.dcbainc.com/library/coders/CS_06_2004.htm

Gold, MD, Robert S. (October 2005). The goal of a clinical documentation improvement program is to make it right - not to increase reimbursements! Retrieved August 15, 2009, from DCBA, Inc - Documentation Coding & Billing Accuracy Web site: http://www.dcbainc.com/library/coders/CS_10_2005.htm

Gold, MD, Robert S. (May 2007). Are you measuring the right things? Retrieved August 15, 2009, from DCBA, Inc - Documentation Coding & Billing Accuracy Web site: http://www.dcbainc.com/library/coders/CS_05_2007.html.

HealthGrades (2009). Hospitals frequently asked questions. Retrieved August 15, 2009, from HealthGrades Web site: http://www.healthgrades.com/consumer/index.cfm?fuseaction=mod&modtype=FAQS&modact=FAQS&action=getGroupQA&all_id=5&TV_LID=LNK_HOSP_FAQ_AnswersAll.

Health Level 7, (2009). About HL7. Retrieved March 27, 2009, from Health Level 7 Web site: http://www.hl7.org/.

McKinsey Global Institute (January 2007). Accounting for the cost of health care in the United States. Retrieved August 15, 2009, from McKinsey & Company – McKinsey Global Institute Web site: http://www.mckinsey.com/mgi/rp/healthcare/accounting_cost_healthcare.asp.

National Coalition on Health Care, (2008). Health care quality: Facts on the quality of health care. Retrieved August 15, 2009, from National Coalition on Health Care Web site: http://www.nchc.org/facts/quality.shtml.

National Coalition on Health Care, (2008). Health insurance costs: Facts on health care costs. Retrieved August 15, 2009, from National Coalition on Health Care Web site: http://www.nchc.org/facts/cost.shtml.

S.1932 Deficit Reduction Act of 2005 (January 27, 2006)

University HealthSystem Consortium, (2009). About UHC. Retrieved March 27, 2009, from University HealthSystem Consortium Web site: https://www.uhc.edu/12443.htm

Wolters, T (May 2007). MS-DRGs: CMS implements major revisions to IPPS. *BKD*, Retrieved October 10, 2008, from http://www.bkd.com/docs/industry/CMSImplementsDRGRevisions.pdf

World Health Organization, History of the development of the ICD. Retrieved October 10th, 2008, from World Health Organization Web site: http://www.who.int/classifications/icd/en/HistoryOfICD.pdf

APPENDICES

APPENDIX A: TIME PERIOD LEGEND FOR GRAPHS

Graph Listing	***Month***		***Graph Listing***	***Month***
1	July-05		25	July-07
2	August-05		26	August-07
3	September-05		27	September-07
4	October-05		28	October-07
5	November-05		29	November-07
6	December-05		30	December-07
7	January-06		31	January-08
8	February-06		32	February-08
9	March-06		33	March-08
10	April-06		34	April-08
11	May-06		35	May-08
12	June-06	]	36	June-08
13	July-06		37	July-08
14	August-06		38	August-08
15	September-06		39	September-08
16	October-06		40	October-08
17	November-06		41	November-08
18	December-06		42	December-08
19	January-07		43	January-09
20	February-07		44	February-09
21	March-07		45	March-09
22	April-07		46	April-09
23	May-07		47	May-09
24	June-07		48	June-09

APPENDIX B: INITIAL TIMEFRAME – SOI RAW DATA

Severity of Illness (SOI)				
TIME PERIOD	1	2	3	4
1	155	359	362	131
2	141	439	430	134
3	146	342	394	129
4	159	361	355	157
5	123	350	358	161
6	125	299	423	186
7	123	345	409	160
8	109	314	387	190
9	127	388	438	197
10	132	333	394	200
11	132	359	382	183
12	123	318	442	200
13	127	321	388	157
14	120	335	422	179
15	101	329	388	169
16	110	309	400	143
17	117	278	368	162
18	99	324	390	159
19	102	292	398	142
20	101	303	360	149
21	121	305	419	200
22	122	289	365	169
23	98	314	446	171
24	125	339	357	158

APPENDIX C: INITIAL TIMEFRAME – ROM RAW DATA

Risk of Mortality (ROM)				
TIME PERIOD	1	2	3	4
1	279	437	202	89
2	298	478	252	116
3	272	413	231	95
4	288	397	232	115
5	263	382	222	125
6	242	386	260	145
7	262	412	237	126
8	225	340	287	148
9	259	422	302	167
10	247	391	272	149
11	252	391	257	156
12	246	400	283	154
13	251	349	275	118
14	263	394	262	137
15	214	387	257	129
16	213	386	248	115
17	226	327	262	110
18	189	406	252	125
19	190	386	252	106
20	195	374	220	124
21	209	387	288	161
22	219	339	247	140
23	210	363	329	127
24	247	350	250	132

APPENDIX D: INITIAL TIMEFRAME – CMI RAW DATA

TIME PERIOD	SUM OF ALL DRGS	DRG COUNT	CMI
1	1946.2774	1007	1.9327
2	2107.5172	1144	1.8422
3	1718.4948	1011	1.6998
4	1908.8411	1032	1.8497
5	1919.8385	992	1.9353
6	1977.653	1033	1.9145
7	1805.7567	1037	1.7413
8	2048.9672	1000	2.0490
9	2091.5895	1150	1.8188
10	1848.356	1059	1.7454
11	2030.2394	1056	1.9226
12	2015.6356	1083	1.8612
13	1870.3564	993	1.8835
14	1991.7158	1056	1.8861
15	1965.8129	987	1.9917
16	1762.0142	962	1.8316
17	1639.3001	925	1.7722
18	1794.0194	972	1.8457
19	1738.3127	934	1.8611
20	1773.7484	913	1.9428
21	2134.2053	1045	2.0423
22	1774.2941	945	1.8776
23	1961.0602	1029	1.9058
24	1834.2149	979	1.8736

APPENDIX E: EXTENDED TIMEFRAME – SOI RAW DATA

Severity of Illness (SOI)									
TIME PERIOD	1	2	3	4	TIME PERIOD	1	2	3	4
1	155	359	362	131	25	113	309	357	166
2	141	439	430	134	26	104	303	353	174
3	146	342	394	129	27	110	292	348	152
4	159	361	355	157	28	109	294	411	181
5	123	350	358	161	29	112	278	382	190
6	125	299	423	186	30	122	260	349	188
7	123	345	409	160	31	82	253	423	192
8	109	314	387	190	32	95	275	426	211
9	127	388	438	197	33	118	315	349	213
10	132	333	394	200	34	101	290	416	162
11	132	359	382	183	35	146	307	389	178
12	123	318	442	200	36	123	299	394	178
13	127	321	388	157	37	111	291	377	214
14	120	335	422	179	38	109	267	428	172
15	101	329	388	169	39	89	280	386	199
16	110	309	400	143	40	95	278	418	222
17	117	278	368	162	41	106	284	402	194
18	99	324	390	159	42	122	260	445	209
19	102	292	398	142	43	107	342	405	200
20	101	303	360	149	44	115	256	421	199
21	121	305	419	200	45	116	322	466	216
22	122	289	365	169	46	126	290	433	197
23	98	314	446	171	47	108	320	420	185
24	125	339	357	158	48	162	332	388	160

APPENDIX F: EXTENDED TIMEFRAME – ROM RAW DATA

Risk of Mortality (ROM)										
TIME PERIOD	1	2	3	4		TIME PERIOD	1	2	3	4
1	279	437	202	89		25	204	369	234	138
2	298	478	252	116		26	208	345	262	119
3	272	413	231	95		27	211	335	227	129
4	288	397	232	115		28	245	373	248	129
5	263	382	222	125		29	223	332	259	148
6	242	386	260	145		30	225	283	269	142
7	262	412	237	126		31	182	303	312	153
8	225	340	287	148		32	193	361	289	164
9	259	422	302	167		33	202	344	272	177
10	247	391	272	149		34	225	342	275	127
11	252	391	257	156		35	263	331	289	137
12	246	400	283	154		36	239	350	258	147
13	251	349	275	118		37	219	344	260	170
14	263	394	262	137		38	217	335	279	145
15	214	387	257	129		39	200	334	264	156
16	213	386	248	115		40	199	341	296	177
17	226	327	262	110		41	185	346	305	150
18	189	406	252	125		42	201	350	325	160
19	190	386	252	106		43	242	354	305	153
20	195	374	220	124		44	198	358	280	155
21	209	387	288	161		45	225	371	346	178
22	219	339	247	140		46	237	352	300	157
23	210	363	329	127		47	205	393	282	153
24	247	350	250	132		48	259	407	252	124

APPENDIX G: EXTENDED TIMEFRAME – CMI RAW DATA

TIME PERIOD	SUM OF ALL DRGS	DRG COUNT	CMI		TIME PERIOD	SUM OF ALL DRGS	DRG COUNT	CMI
1	1946.2774	1007	1.9327		25	1835.989	945	1.9428
2	2107.5172	1144	1.8422		26	1963.3366	934	2.1021
3	1718.4948	1011	1.6998		27	1707.5149	902	1.8930
4	1908.8411	1032	1.8497		28	1930.1189	995	1.9398
5	1919.8385	992	1.9353		29	1920.9384	962	1.9968
6	1977.653	1033	1.9145		30	1845.2656	919	2.0079
7	1805.7567	1037	1.7413		31	1919.4161	950	2.0204
8	2048.9672	1000	2.0490		32	2035.941	1007	2.0218
9	2091.5895	1150	1.8188		33	2093.7045	995	2.1042
10	1848.356	1059	1.7454		34	1725.6172	969	1.7808
11	2030.2394	1056	1.9226		35	1951.0148	1020	1.9128
12	2015.6356	1083	1.8612		36	1939.9189	994	1.9516
13	1870.3564	993	1.8835		37	2128.6762	993	2.1437
14	1991.7158	1056	1.8861		38	1929.7368	976	1.9772
15	1965.8129	987	1.9917		39	1920.1573	954	2.0127
16	1762.0142	962	1.8316		40	2125.4513	1013	2.0982
17	1639.3001	925	1.7722		41	2049.4014	986	2.0785
18	1794.0194	972	1.8457		42	2057.9343	1036	1.9864
19	1738.3127	934	1.8611		43	2077.166	1054	1.9707
20	1773.7484	913	1.9428		44	1992.1104	991	2.0102
21	2134.2053	1045	2.0423		45	2292.3473	1120	2.0467
22	1774.2941	945	1.8776		46	2044.6875	1046	1.9548
23	1961.0602	1029	1.9058		47	1954.3974	1033	1.8920
24	1834.2149	979	1.8736		48	1920.5237	1042	1.8431

APPENDIX H: LIST OF RUN TESTS ON CONTROL CHARTS

RUN TEST	***DESCRIPTION OF TEST***
1	1 point beyond 3 sigma.
2	9 successive points on same side of center line.
3	6 successive points increasing or decreasing.
4	14 successive points alternating up and down.
5	2 out of 3 successive points beyond 2 sigma.
6	4 out of 5 successive points beyond 1 sigma.
7	15 successive points within 1 sigma of center line.
8	8 successive points not within 1 sigma of center line.

VITA

Lena N Wilson, RHIA, CCS

lenanwilson@hotmail.com

Education

Master of Science in Health Informatics, Expected August 2009
School of Informatics, Indiana University – Indianapolis, IN (IUPUI)
Thesis: *The Impact of a Clinical Documentation Improvement Program*
Advisor: Anna McDaniel, DSN, RN, FAAN
The Impact of a Clinical Documentation Improvement Program is the study that focused on the implementation and overall impact that a Clinical Documentation Improvement Program can provide to a healthcare facility.

Bachelor of Science in Health Information Administration
Minor in Medical Sociology, June 2002
School of Allied Health Sciences, Indiana University - Indianapolis, IN (IUPUI)

Employment Experience

Clarian Health, Indianapolis, IN – March 2005 to current
Manager ~ HIM Operations, November 2007 – current
- Managed all inpatient coding operations through October 2008
- Manage all CDIP operations at each campus
- Implemented CDIP in 3 additional facilities

CDIP Program Coordinator, May 2006 – November 2007
- Oversaw CDIP implementations at 2 facilities
- Responsible for overseeing all CDIP operations

Inpatient Coding Coordinator, August 2005 – April 2006
- Oversaw initial CDIP implementation
- Audited inpatient accounts for accuracy

Clinical Coding Specialist - Inpatient, March 2005 – August 2005
- Responsible for coding inpatient accounts for various facilities

Wishard Health Services, Indianapolis, IN – June 2002 – February 2005
Inpatient/Outpatient Coder
- Responsible for coding inpatient, outpatient, and ancillary accounts

Professional Association Memberships

- American Health Information Management Association (AHIMA)
  Nomination for Rising Star Triumph Award - 2003
- Indiana Health Information Management Association (IHIMA)
  CoP Committee Chairman – 2002 to 2006
  Annual Meeting Committee Chairman – 2004 to 2006
- Central Indiana Health Information Management Association (CIHIMA)
  Program Committee Co-Chair – 2003 to 2005
- Association for Clinical Documentation Improvement Specialists (ACDIS)
  CDI Workgroup Committee Member – 2009
- Indiana University Alumni Association

Articles & Presentations

- *Article* – "Clarian Health answers call for quality: Risk of mortality data, case-mix index improve dramatically with CDI Program." (CDI Journal, January 2008, vol. 2 no. 1 pgs 5-7).
- *Presentation* – "Case Study: Clarian Health, Indianapolis – Developing and Implementing a CDI Program in a Multifacility, Academic, Level 1 Trauma Center" (Association of Clinical Documentation Improvement Specialty 1st Annual Meeting - May 2008)
- *Presentation* – "Clarian CDIP Overview" (SWIHIMA – January 27, 2009)
- *Panel Discussion* - Clinical Documentation Improvement Programs (IHIMA Annual Meeting – April 2009)
- *Presentation* – "Better Performer Case Study: Clarian Health, Indianapolis, IN" (UHC Knowledge Transfer Meeting – June 11th, 2009)
- *Presentation* – "Better Performer Case Study: Clarian Health, Indianapolis, IN" (UHC Web Conference – August 10th,2009)
- *Presentation* – "Clarian CDIP Implementation" (SWIHIMA – August 14th, 2009)
- *Keynote Presentation* – "Clarian Clinical Documentation Improvement Program: maintain momentum, medical staff support, continuous education" (World Research Group – 4th Annual Clinical Documentation Improvement & Coding Expo – October 26th – 27th, 2009)