**PATIENT CONTINUITY IN PRIMARY CARE (ALLEGHENY HEALTH NETWORK)**

by

Monica Menon

BS, Duquesne University, 2016

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This essay is submitted

by

Monica Menon

on

April 24, 2019

and approved by

**Essay Advisor:**

Tina Hershey, JD, MPH

Professor

Health Policy and Management

Graduate School of Public Health

University of Pittsburgh

**Essay Reader:**

Gary Fischer, MD

Professor

Division of General Internal Medicine

School of Medicine

University of Pittsburgh

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Tina Hershey, JD, MPH

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**ABSTRACT**

**Motivation:** Patient continuity in primary care has a huge impact on public health by reducing the separation of care, and making care unified. Patient safety and quality of care are improved, which leads to the overall improvement of public health as well.

**Problem Statement:** Allegheny Health Network (AHN) is an advocate of patient continuity with the health care advantages including reduced costs, reduced hospitalization stays, increased satisfaction, and overall improve quality. The AHN primary care service line wanted to see if any of the factors that play a part in patient continuity affected the patients of AHN when deciding which provider to choose.

**Approach:** Data was analyzed by calculating care of continuity index scores for each provider. Then, data regarding certain factors was extracted from various Tableau dashboards and spreadsheets. Graphs were then made comparing the care of continuity index scores with these factors trying to see if there was a trend that the research stated.

**Results:** Average age, Highmark Medicare, Medicare, emergency department, and ease of scheduling appointment had a positive relationship with care of continuity. Chronic conditions had a negative relationship with care of continuity. Gateway Medicare, Highmark Insurance, and UPMC Insurance, and overall standard for patient experience had no relationship with care of continuity. As CGCAPHS (Clinician and Group Consumer Assessment of Healthcare Providers and Systems) rank and rank of access decreased, there was increased patient continuity.

**Conclusion:** AHN should take steps to investigate why chronic conditions had a negative relationship with care of continuity and why payer mix and overall standard had no relationship with care of continuity. This would explain to AHN reasons why these aspects are not following what the research states. Diving into further analysis of these aspects would also allow AHN opportunity to improve upon these aspects.

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# Introduction

Primary Care is the health promotion, disease prevention, health maintenance, counseling, patient education, diagnosis, and treatment of acute and chronic illnesses in various health settings (American Academy of Family Physicians, 2017). It is the care that is the first contact for patients with undiagnosed health symptoms and concerns (American Academy of Family Physicians, 2017). Primary care includes family medicine, internal medicine, pediatrics, general obstetrics and gynecology, gerontology, behavioral health, and community health (Primary Care Progress, 2019). After this contact with primary care occurs, patients see specialties (American Academy of Family Physicians, 2017).

Primary care allows for patient advocacy and cost effectiveness care (American Academy of Family Physicians, 2017). Primary care physicians and practices meet patient needs to take care of numerous symptoms and concerns (American Academy of Family Physicians, 2017). The care provided include chronic, preventive, and acute in inpatient and outpatient health facilities (American Academy of Family Physicians, 2017).

Many patients, after they find a primary care physician they connect with, try to stay with that physician for years to come (Penn Medicine, 2014). With this relationship, the physician can establish a pathway to achieve good health (Penn Medicine, 2014). This is done by identifying risk factors as well as coordinating, and managing chronic disease care for better quality of life (Penn Medicine, 2014). This lets the primary care physician manage all aspects of healthcare for better total health (Penn Medicine, 2014).

Primary care has important public health implications as well. Primary care can catch serious problems in the beginning that can avoid harsh consequences such as premature death (Primary Care Progress, 2019). There are also many ways it lowers costs (Primary Care Progress, 2019). People with a primary care provider save 33% more dollars than people who only see specialists (Primary Care Progress, 2019). Primary care also decreases the times people end up in emergency rooms (Primary Care Progress, 2019). Utilizing primary care providers to catch medical concerns and issues early would save the US $67 billion every year (Primary Care Progress, 2019).

## Patient Continuity

In primary care, patient continuity is an established relationship between a primary care physician and patient that lasts beyond a few times of care for specific medical reasons (Haggerty et al, 2003). Within patient continuity, there are two concepts that are crucial: care for an individual patient and care delivered over time (Haggerty et al, 2003). Without these two aspects, there cannot be patient continuity as these two aspects measure how a patient is taken care of during an extended time period.

Within overall patient continuity, there are three types of continuity (Haggerty et al, 2003). These are informational, management, and relational (Haggerty et al, 2003). Informational continuity is the basis that information is the link of the connection of one provider to each medical event of a patient (Haggerty et al, 2003). Information is medical and person focused (Haggerty et al, 2003). While all medical information is mostly documented, patient’s preferences and values are also crucial for a patient’s wellbeing (Haggerty et al, 2003). Management continuity is when services are delivered to a patient in an appropriate and timely way, which gives patients and providers the sense that they know the patient will be taken care of (Haggerty et al, 2003). Regular meetings between the patient and provider are established so care is delivered when needed and changes can be adapted to when necessary (Haggerty et al, 2003). Lastly, relational continuity connects current care to future care (Haggerty et al, 2003). It is the notion that there will be care in the future and it will be consistent (Haggerty et al, 2003).

## Care of Continuity Index

Continuity of care is when the physician led care team has ongoing care management towards high quality and cost effective care (American Academy of Family Physicians, 2017). Continuity of care creates a long-term patient physician partnership where the physician knows a long span of the patient’s history and can introduce new decisions with this background information (American Academy of Family Physicians, 2017).

Currently, there are new models of patient care such as bundled payment, accountable care organizations, and patient centered medical homes, all designed to reduce costs and increase quality with improved care coordination (Hussey et all, 2016). Continuity has proven to decrease costs, rates of hospitalization, and increase satisfaction (Hussey et all, 2016).

The care of continuity index is calculated with how many times a patient visits the same provider over a period of time (Hussey et all, 2016). This index includes two aspects (University of Manitoba, 2015). The first is the aspect that the patient needs care and the second is that the care is ongoing over a time period (University of Manitoba, 2015). The index ranges from zero to one (American Academy of Family Physicians, 2014). Zero is a patient sees a different provider for each visit and one is the patient sees the same provider for all visits (American Academy of Family Physicians, 2014). A 0.1 increase in the care of continuity index was shown to have 4.7% decreased costs for congestive heart failure, 6.3% decreased costs for chronic obstructive pulmonary disease, and 5.1% decreased costs for diabetes mellitus (American Academy of Family Physicians, 2014). In dollar amounts per patient, that is a $64 decrease for chronic obstructive pulmonary disease, $66 decrease for congestive heart failure, and $52 decrease for diabetes mellitus (American Academy of Family Physicians, 2014).

### Factors Affecting Patient Continuity

There are many factors that affect patient continuity. These include demographic factors, patient and healthcare professional factors, patient healthcare professional relationship, inter-professional factors, role of receptionists, and organizational factors (Alazri et al, 2007). Within demographic factors in the US, it was shown that most patients stayed with the same provider if they could travel or access the provider (Alazri et al, 2007). This shows the importance of patient access, which can include not just being able to travel to the provider, but being able to schedule appointments to see the provider. Without the ability to schedule appointments, patients would have a huge obstacle in accessing the same provider.

Next, patient and healthcare professional factors play a part with reasoning why patients are seeing a provider (Alazri et al, 2007). For example, a patient might be more inclined to switch providers if a different provider has a specialty which the patient’s condition needs. Also, another factor is severity. Patients who have more severe conditions such as cancer, psychological problems, and family problems were more inclined to stay with the same provider than patients who are seeing a provider for issues such as a cold, rash, and broken bones (Alazri et al, 2007). A last factor is the amount of time the provider practices (Alazri et al, 2007). It was shown full time providers have patients of higher continuity than part time providers (Alazri et al, 2007). This includes if a provider takes on management and teaching which would decrease the provider’s availability to see patients and if the provider will only see patients on certain days (Alazri et al, 2007). With this factor and how high primary care physicians are regarding continuity now, providers are trying to introduce team continuity (Alazri et al, 2007). With team continuity, a patient can be seen by various providers within the same practice as long as these providers are in good communication (Alazri et al, 2007).

Next, the patient healthcare professional relationship is a crucial aspect in patient continuity. Patients who have trust in their provider were shown to have higher continuity than patients with lack of trust (Alazri et al, 2007). Lack of trust can lead to disagreements between patients and providers that may account for why patients are switching providers (Alazri et al, 2007). Also, increased patient satisfaction and experience has been correlated with high patient continuity (Alazri et al, 2007). When patients are happy with their provider, they are more likely to stay and not switch.

Another aspect that affects patient continuity is inter-professional factors. One of these factors is care coordination among providers (Alazri et al, 2007). Care coordination between providers and services is vital for continuity (Alazri et al, 2007). Without care coordination, it disrupts communication which in return disrupts continuity (Alazri et al, 2007).

Next, the role of receptionists is crucial to patient continuity. As organizations grow, accessibility to providers decrease (Alazri et al, 2007). When receptionists are well trained and make it easier to see providers, continuity increases (Alazri et al, 2007).

Lastly, organizational factors are also a crucial aspect in patient continuity. An example of an organizational factor that especially affects continuity in the US is insurance (Alazri et al, 2007). Without insurance, there is limited access to providers. Insurance can also specify which providers can be accessed(Alazri et al, 2007). Insurance also reduces costs in healthcare (Alazri et al, 2007).

# Second chapter: Allegheny Health Network Primary Care

Allegheny Health Network (AHN) is one of the major health systems in Western Pennsylvania. AHN is an advocate of patient continuity with research indicating health care advantages such as reduced costs, reduced hospitalization stays, increased satisfaction, and overall improve quality. The AHN primary care service line wanted to see if any of the factors that play a part in patient continuity affected the patients of Allegheny Health Network when choosing providers.

## Methods

While there are various aspects that affect patient continuity, the factors that were evaluated in this study were average age, chronic conditions, payer mix, emergency department visits, patient experience, ease of scheduling appointments, and patient access. Before the factors were evaluated, care of continuity indexes was calculated. A Tableau dashboard of locations of each provider was utilized. Within this dashboard, there was a scroll box for each provider. For each provider, it listed the number of visits to that provider. It also listed the total number of visits for all of those patients of all providers. Each care of continuity index for each provider was calculated by adding the total number of visits to the provider by all the AHN primary care patients then that amount was then divided by the total number of visits for all of those patients of all providers. This was done for all Allegheny Health Network Primary Care Providers.

Most of the factors were evaluated also using various Tableau dashboards. For average age, each provider listed the average age of their patients. A scatter plot was created comparing the average age of patients versus the care of continuity index for the provider for all of the AHN Primary Care Providers.

For chronic conditions, there was a Tableau dashboard for each provider that included the number of chronic conditions of their patients. A scatter plot was created comparing the amount of chronic conditions a provider’s patients had versus the care of continuity index for the provider. Every provider was shown on the scatter plot.

For payer mix, since there were multiple various mixes, the payers that were included were Highmark Medicare, Gateway Medicare, Medicare, Highmark, and UPMC. There was a Tableau dashboard for each provider that included a pie chart with percentages of payers of all patients. A scatter plot was created comparing the specific payer focused on versus the care of continuity for the provider. Every provider was shown on the scatter plot.

For emergency department visits, a Medicare Stars program spreadsheet was used. This spreadsheet had the commercial emergency department rate and the Medicare Advantage emergency department rate for each provider. A scatter plot was created comparing these two rates with the care of continuity. Every provider was shown on the scatter plot.

For patient experience, a spreadsheet was utilized comprising of results from different patient experience surveys such as Press Ganey. Two analyses were completed for patient experience, one for the overall standard for patient experience and one for CGCAPHS (Clinician and Group Consumer Assessment of Healthcare Providers and Systems) score. For the overall standard, the spreadsheet listed each provider’s rank for their overall standard. A scatter plot was created comparing the rank for each provider with the care of continuity for the provider for all of the providers. For CGCAPHS score, the spreadsheet listed each provider’s rank. A scatter plot was created comparing the rank for each provider with the care of continuity for the provider for all of the providers.

 For ease of scheduling appointments, a Tableau dashboard was utilized that included a rank of the ease of scheduling appointments for each provider. A scatterplot was created comparing the rank with the care of continuity for the provider for all of the providers.

 Lastly for patient access, a Tableau dashboard was utilized that included a rank of patient access for each provider. A scatterplot was created comparing the rank with the care of continuity for the provider for all of the providers.

 After the scatterplots were created, r2 and the slope were calculated using excel functions. The excel function for r2 was =(correl(column of x values, column of y values))2. The excel function for the slope was =slope(column of y values, column of x values).

## Results

### Care of Continuity Index

Figure Care of Continuity Index Results Graphed for Each Provider Practices

This graph shows the care of continuity indexes calculated for each provider practice. There is a wide range of continuity indexes across the AHN primary care practices.

### Average Age

r2=0.146; slope=0.013

Figure Age Compared Continuity Index for Each Provider Practice

This graph shows average age for each provider practice compared with the care of continuity index. R2 calculated to be 0.146 and the slope calculated to be 0.013. There is a relationship that, as the average age increases, so does patient continuity.

### Chronic Condition

**R2=0.103; SLOPE=-1.67**

Figure 3. Chronic Conditions Compared with Continuity Index for Each Provider Practice

This graph shows the number of chronic conditions for each provider practice compared with the care of continuity index. R2 was calculated to be 0.103. The slope was calculated to be -1.67. There is a relationship that, as the number of chronic conditions decrease, patient continuity increases.

### Payer Mix

**R2=0.114; SLOPE=1.614**

Figure 4. Highmark Medicare and Care of Continuity Index Graphed

This figure graphs the percentage of patients that are enrolled in Highmark Medicare with the care of continuity index as a percentage. R2 was calculated to be 0.114. The slope was calculated to be 1.614. There is a positive relationship seen with this graph.

**R2=0.010; SLOPE=-1.425**

Figure 5. Gateway Medicare and Care of Continuity Index Graphed

This figure graphs the percentage of patients that are enrolled in Gateway Medicare with the care of continuity index as a percentage. R2 was calculated to be 0.010. The slope was calculated to be -1.425. No relationship is seen with this graph.

**R2=0.040; SLOPE=1.177**

Figure 6. Medicare and Care of Continuity Index Graphed

This figure graphs the percentage of patients that are enrolled in Medicare with the care of continuity index as a percentage. R2 was calculated to be 0.040. The slope was calculated to be 1.177. There is a positive relationship until it reaches the 0.12 percentage of patients with Medicare.

**R2=0.089; SLOPE=-0.452**

Figure 7. Highmark and Care of Continuity Index Graphed

This figure graphs the percentage of patients that are enrolled with Highmark Insurance with the care of continuity index as a percentage. R2 was calculated to be 0.089. The slope was calculated to be -0.452. No relationship is seen with this graph.

**R2=0.001; SLOPE=-0.18**

Figure 8. UPMC and Care of Continuity Index Graphed

This figure graphs the percentage of patients enrolled with UPMC Insurance with the care of continuity index as a percentage. R2 was calculated to be 0.001. The slope was calculated to be -0.18. No relationship is seen with this graph.

### Emergency Department Visits

**Commercial ER Rate: R2=0.004; SLOPE=-22.128**

**Medicare Advantage ER Rate: R2=0.054; SLOPE=115.28**

Figure 9. Emergency Room Rates Compared with the Care of Continuity Indexes for each Provider Practice

This figure graphs the Commercial Emergency Room Rate and Medicare Advantage Emergency Room rate for each provider practice compared with care of continuity indexes. For commercial ER rate, the R2 calculated was 0.004 and the slope calculated was -22.128. For Medicare Advantage ER rate, the R2 calculated was 0.0054, and the slope calculated was 115.28. For Commercial Emergency Room Rate, there is a relationship that as commercial emergency room rate increases, so does patient continuity. For Medicare Advantage Emergency Room Rate, there is a relationship that, as Medicare Advantage Emergency Room Rate increases, so does patient continuity.

### Patient Experience

**R2=0.006; SLOPE=-12.485**

Figure 10. Overall Standard Compared with the Care of Continuity Indexes for each Provider Practice

This figure graphs the overall patient experience standard compared with care of continuity indexes for each provider practice. R2 was calculated to be 0.006. The slope was calculated to be -12.485. There is no relationship shown.

**R2=0.018; SLOPE=-18.635**

Figure 11. CGCAPHS Rank Compared with the Care of Continuity Indexes for each Provider Practice

This figure graphs CGCAPHS Rank compared with care of continuity indexes for each provider practice. R2 was calculated to be 0.019. Slope was calculated to be -18.635. There is a minor relationship. It shows that as CGCAPHS rank decreases, which means better patient experience, patient continuity increases.

### Ease of Scheduling Appointments

**R2=0.036; SLOPE=25.282**

Figure 12. Ease of Scheduling Appointments Compared with the Care of Continuity Indexes for each Provider Practice

This figure graphs the ease of scheduling appointments with care of continuity indexes for each provider practice. R2 was calculated to be 0.036. The slope was calculated to be 25.282. There is a positive relationship. As the ease of scheduling appointments increase, so does patient continuity.

### Access

**R2=0.039; SLOPE=-5.975**

Figure 13. Rank of Access Compared with the Care of Continuity Indexes for each Provider Practice

This figure graphs the ranks of access compared with care of continuity indexes for each provider practice. R2 was calculated to be 0.039. The slope was calculated to be -5.975. The relationship shows that as rank of access decreases, which means it is more accessible to reach the provider, patient continuity increases.

## Discussion

Results indicate, figure one showed the wide range of patient continuity providers ranging from 0.325 to 0.998. 0.325 is on the low end of patient continuity whereas 0.998 is on the high end of patient continuity. With these index scores, a multitude of factors that affect patient continuity were compared. These factors include Average Age, Chronic Conditions, Payer Mix, Emergency Department, Patient Experience, Ease of Scheduling Appointments, and Access.

Figure two showed there was a positive relationship: as average age increased, patient continuity also increased. R2 calculated to be 0.146 and the slope calculated to be 0.013. This means 14.6% of the variation of the care of continuity index can be explained by average age. The impact average age has is 0.013.. This supports the research literature that as age increases so does patient continuity (Alazri et al, 2007).

Next, figure three showed there was a negative relationship between chronic conditions and patient continuity. R2 was calculated to be 0.103. The slope was calculated to be -1.67. This means 10.3% of the variation of the care of continuity index can be explained by chronic conditions. The impact chronic conditions has is -1.67. This is very surprising because the literature supports the opposite: as chronic conditions increase, patient continuity should increase as well (Alazri et al, 2007). This intriguing result is an area in which AHN should further examine to determine why patient continuity is decreasing when chronic conditions are increasing.

Also, payer mix was analyzed. The payers that were focused on were Highmark Medicare, Gateway Medicare, Medicare, Highmark, and UPMC. All of these except for figure four and figure six showed there were no relationships with patient continuity. Figure four had a positive relationship with the care of continuity index. R2 was calculated to be 0.114. The slope was calculated to be 1.614. This means 11.4% of the variation of the care of continuity index can be explained by Highmark Medicare. The impact Highmark Medicare has is 0.114. Figure six had a positive relationship with the care of continuity index until the 0.12 percentage point for Medicare patients. R2 was calculated to be 0.040. The slope was calculated to be 1.177. This means that 4% of the variation of the care of continuity index can be explained by Medicare. The impact Medicare has is 1.177. Figure five, figure seven, and figure eight did not have a trend with spurts up and down. Figure five had a R2 calculated to be 0.010. and a slope calculated to be -1.425. This means 1% of the variation of the care of continuity index can be explained by Gateway Medicare. The impact Gateway Medicare as is -1.425. There were two significant observations. Figure seven had a R2 calculated to be 0.089 and a slope calculated to be -0.452. This means 8.9% of the variation of the care of continuity index can be explained by Highmark Insurance. The impact Highmark Insurance has is -0.452. Figure eight had a R2 calculated to be 0.001 and slope was calculated to be -0.18. This means 0.1% of the variation of the care of continuity index can be explained by UPMC Insurance. The impact UPMC Insurance has is -0.18. The impact chronic conditions has is -1.67. Out of the payers, more patients were enrolled in Highmark. This is not surprising because Allegheny Health Network is owned by Highmark, which means there are more cost benefits for patients if they have Highmark insurance. Surprisingly, however there were a significant number of patients with UPMC insurance. As UPMC is Allegheny Health Network/Highmark’s main competitor and patients may be paying more for healthcare rather than switching to Highmark.

The payer mix data did not support research literature. Literature supports that with certain insurances, patient continuity should increase (Alazri et al, 2007). This is another aspect that Allegheny Health Network should further look into. There may be reasoning into different plans for why there is no trend for patient continuity.

Next, figure nine showed there was a positive relationship. There were two categories of emergency department visits, commercial emergency room visits and Medicare Advantage emergency room visits. For both categories, as the number of visits increased, patient continuity increased as well, with commercial emergency room visits having a stronger relationship than Medicare Advantage emergency room visits. For commercial ER rate, the R2 calculated was 0.004 and the slope calculated was -22.128. This means 0.4% of the variation of the care of continuity index can be explained by commercial ER rate. The impact commercial ER has is -22.128. For Medicare Advantage ER rate, the R2 calculated was 0.0054, and the slope calculated was 115.28. This means 0.54% of the variation of the care of continuity index can be explained by Medicare Advantage ER rate. The impact Medicare Advantage ER has is 115.28. This does not support the research literature either. As patient continuity increases, emergency room visits should decrease (Alazri et al, 2007).

Also, patient experience is vital to patient continuity. Patient experience was analyzed with overall standard of patient experience and CGCAPHS. As demonstrated in figure ten, there was no relationship with patient continuity. R2 was calculated to be 0.006. The slope was calculated to be -12.485. This means 0.6% of the variation of care of continuity index is due to the overall standard of patient experience. The overall standard of patient experience has an impact of -12.485. However figure eleven showed that as rank decreased, which means better patient experience, the patient continuity increased. R2 was calculated to be 0.019. Slope was calculated to be -18.635. This means 1.9% of the variation of the care of continuity index was due to CGCAPHS. The impact CGCAPHS has is -18.635. The CGCAPHS data supported the research whereas, the overall standard did not support the research. The research literature states that as patient experience improves so does patient continuity (Alazri et al, 2007). To improve the overall standard, Allegheny Health Network could do further analysis to see what aspects of the overall standard to improve upon.

Next, figure twelve showed there was a positive relationship between the ease of scheduling appointments and patient continuity. R2 was calculated to be 0.036. The slope was calculated to be 25.282. This means 3.6% of the variation of the care of continuity index was due to the ease of scheduling appointments. The impact ease of scheduling appointments has is 25.282. This supports the research literature that as it becomes easier to schedule patients for appointments, patient continuity increases as well (Alazri et al, 2007).

Lastly, figure thirteen showed that as rank decreased, which means better access to providers, patient continuity increased. R2 was calculated to be 0.039. The slope was calculated to be -5.975. This means that 3.9% of the variation of the care of continuity index is due to access. The impact access has is -5.975. This supports the research literature that states as patient access improves so does patient continuity (Alazri et al, 2007).

# Conclusion

In conclusion, Primary Care is the health promotion, disease prevention, health maintenance, counseling, patient education, diagnosis, and treatment of acute and chronic illnesses in various health settings. Primary care is important because it is the care that is the first point of contact of care for patients with undiagnosed health symptoms and concerns.

Patient continuity is a vital component of primary care. Patient continuity can decrease costs, rates of hospitalization, increase satisfaction, and overall improve the quality of care. Continuity of care is when the physician led care team has ongoing care management towards high quality, cost effective care. Continuity of care creates a long-term patient physician partnership which the physician knows a long span of the patient’s history and can introduce new decisions with the background information. The care of continuity index is calculated by looking at how many times a patient visits the same provider over a period of time. There are many factors that affect patient continuity. These include demographic factors, patient and healthcare professional factors, patient healthcare professional relationship, inter-professional factors, role of receptionists, and organizational factors.

Allegheny Health Network is one of the major health systems in Western Pennsylvania. The primary care service line wanted to see if any of the factors based upon research played a part for patients when deciding which provider to see.

With all the various aspects that affect patient continuity, the factors that were evaluated were average age, chronic conditions, payer mix, emergency department visits, patient experience, ease of scheduling appointments, and patient access. Data was analyzed by calculating care of continuity index scores for each provider. Then, data regarding the various factors was extracted from various Tableau dashboards and spreadsheets. Graphs were then made comparing the care of continuity index scores with these factors trying to see if there was a trend that the research stated.

As a result, average age, Highmark Medicare, Medicare, emergency department, and ease of scheduling appointment had a positive relationship. Chronic conditions had a negative relationship. Gateway Medicare, Highmark Insurance, UPMC Insurance, and overall standard for patient experience had no relationship. As CGCAPHS rank and rank of access decreased, which means stronger scores, there was increased patient continuity.

Moving forward, Allegheny Health Network can take steps to investigate why chronic conditions had a negative relationship and why payer mix and overall standard had no relationship. Evaluating these aspects can determine the underlying reasons behind what is inhibiting patient continuity. This will also lead improvement in the quality of healthcare for AHN.

**APPENDIX STAFF WORKING TOGETHER**

Another factor that affects patient continuity is staff working together. Research supports as staff is more trained, patient continuity increases.

Figure 14 Staff Working Together

This figure shows that there is no relationship between staff working together and patient continuity of patients at Allegheny Health Network. This is different than what the research supports.

bibliography

1. American Academy of Family Physicians. (2017, October 04). Primary Care. Retrieved from <https://www.aafp.org/about/policies/all/primary-care.html>
2. Penn Medicine. (2014, March 06). The Importance of Primary Care Physicians – Penn Medicine. Retrieved from <https://www.pennmedicine.org/updates/blogs/health-and-wellness/2014/march/the-importance-of-primary-care-physicians>
3. Primary Care Progress. (2019). Importance & Value: Why Primary Care Matters. Retrieved from <https://www.primarycareprogress.org/primary-care-case/>
4. Haggerty, J., Reid, R. J., Freeman, G. K., Starfield, B. H., Adair, C. E., & McKendry, R. (2003, November 20). Continuity of care: A multidisciplinary review. Retrieved from <https://www-bmj-com.pitt.idm.oclc.org/content/327/7425/1219.short>
5. American Academy of Family Physicians. (2017, October 04). Continuity of Care, Definition of. Retrieved from <https://www.aafp.org/about/policies/all/definition-care.html>
6. Pollack, C. E., Hussey, P. S., Rudin, R. S., Fox, D. S., Lai, J., & Schneider, E. C. (2016, May). Measuring Care Continuity: A Comparison of Claims-based Methods. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4101051/
7. American Academy of Family Physicians. (2014, April 08). Modest Changes Lead to Better Quality, Lower Costs in Health Care. Retrieved from https://www.aafp.org/news/practice-professional-issues/20140408continuityofcare.html
8. University of Manitoba. (2015, March 25). Measuring Continuity of Care. Retrieved from <http://mchp-appserv.cpe.umanitoba.ca/viewConcept.php?printer=Y&conceptID=1443>
9. Alazri, M., Heywood, P., Neal, R. D., & Leese, B. (2007, December). Continuity of Care: Literature review and implications. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3074883/#b12-squmj-07-197