Perspectives of Medical Professionals on Change Management

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Abstract

Objective: To evaluate the effectiveness of a lean management approach for a multi-specialty, collaborative quality improvement project in which participating physicians received their maintenance of certification, part IV (MOC-IV) credit.

Methods: I collected data through a medical ethnographic approach that included interviews with physicians and medical assistants, clinic shadowing, and observations at collaborative meetings.

Results: The findings revealed that MOC-IV was a significant motivator for physician participation but it remains unclear as to whether MOC-IV also encourages physician engagement in the improvement process. Traces of hierarchy in medicine exist despite efforts to support a lean management, non-hierarchical work environment.

Conclusion: We need more research to understand the incentive structure that derives from multi-specialty, collaborative quality improvement projects.

Motivations

I chose to study this topic because I was interested in group dynamics within the healthcare system and how this affects quality of care and patient outcomes. I had learned about lean thinking in healthcare from my public health coursework, but I wanted to see how well the theories applied within a large academic medical center. Through my Organizational Studies major, I am working to understand how to develop positive organizational environments and strong leadership to more easily facilitate change within healthcare organizations. I originally intended to survey physicians about their experience with the implementation of a new electronic health record system. However, after I was connected to Grant Greenberg, I discovered this quality improvement project. This project took an innovative approach to cross-specialty collaboration by applying a lean thinking paradigm towards the development of a large scale, quality improvement project which also provided maintenance of certification credit for participating physicians.

As an undergraduate, I had some advantages and disadvantages in conducting this research. I was advantaged in that some physicians felt more comfortable sharing their honest opinions because I did not know any of their colleagues. They assumed that what they told me would be unlikely to become published or shared beyond my advisors. However, I faced challenges in gaining credibility and time from physicians due to my lack of credentials and personal connection. When I began the project I thought that there was a clear "right" side to the story. From my public health background, I supported the utilization of lean practices in healthcare, the standardization of medical care, and collaboration between specialties. However, after interviewing and listening to various physicians express their perspective and frustrations with the project and the organization, I began to understand that the project and the

organizational decisions were much more complex. I saw the perspective of each person I interviewed, which left me with the challenge of organizing these conflicting opinions and perspectives into a clear paper in which everyone's voices are shared.

Introduction

In this paper, I will offer a framework for understanding the effectiveness of a collaborative quality improvement project that took place at the University of Michigan Health System (UMHS). The project aimed to improve the workflow for obtaining an annual lipid panel for patients with Diabetes and/or Ischemic Vascular Disease while enabling the provision of physician credit towards their Maintenance of Certification part IV (MOC-IV) requirement. This is a requirement for physician employment and has various components that this paper will explain. Throughout the paper, I will consider various root causes for the successes and failures that occurred in the project. Some of these include: competing motivations among physicians, power of medical assistant decision-making, and communication between leadership and project participants.

This essay will explore several questions. Is inter-professional and inter-specialty collaboration beneficial in medicine? How does medical standardization affect care? How do efforts to standardize workflow affect physicians? Is MOC-IV an effective motivator for quality improvement collaboration? What are some of the challenges to collaboration and using MOC-IV for quality improvement? To establish the background to measure effectiveness, I provide the context for this research project.

Collaboration in Medicine

Healthcare is a complex industry due to the various forms of regulation and the competing interests among physicians, insurers, patients, medical organizations and

policymakers. The Institute for Healthcare Improvement (IHI) developed a 3-part framework to optimize health system performance, which they call the "Triple Aim." These parts are: improving the patient experience of care (including quality and satisfaction), improving the health of populations, and reducing the per capita cost of health care ("Institute for Healthcare Improvement: The IHI Triple Aim," n.d.). It is challenging to achieve the triple aim because no single organization is responsible for all three aspects. In order to improve quality care, population health and reduce costs, there needs to be integration in healthcare (Berwick, Nolan, & Whittington, 2008).

To enable more integration in medicine, American Board of Medical Specialties (ABMS) allowed organizations working on multi-specialty quality improvement projects to use a single application for maintenance of certification part IV credit ("Integrating Maintenance of Board Certification and Health Systems' Quality-Improvement Programs - HBR," n.d.). The ABMS developed the Multi-Specialty MOC Portfolio Approval Program to offer a "streamlined approach for organizations that sponsor and support multiple well-designed quality improvement efforts involving physicians across multiple disciplines" ("About the Portfolio Program," n.d.).

Allowing a shared application makes it easier for organizations to collaborate because each specialty board has different requirements. Every board requires four main components: Part I: Licensure and Professional Standing; Part II: Lifelong Learning and Self-Assessment; Part III: Cognitive Expertise; and Part IV: Practice Performance Assessment. Specific boards vary in the frequency and amount of work in each of these areas. See appendix 1 for details for Family Medicine and Internal Medicine requirements at the time of this project and the various options for receiving Part IV credit.

The individual physician modules are the most burdensome to complete for MOC-IV credit. The process is highly time consuming, about 20-60 hours, and does not provide the opportunity for sharing best practices between physicians. Additionally, it may not be aligned with ongoing local quality improvement efforts that exist for other purposes such as certification or accreditation, institutional priorities, and pay for performance programs. There is potential for gain if this individual method could be replaced with a collaborative approach that aligns with institutional priorities and works to improve organizational effectiveness and efficiency in order to deliver higher quality of care to a large subset of patients. The ABMS multi-specialty portfolio program enables health care systems and their affiliates to offer MOC-IV credit for a local quality improvement project, which works to align the organization's priorities with the physician requirement for MOC-IV. Optimizing workflows for teams of physicians has the potential to improve care at a faster rate than physicians working individually on a quality measure because economies of scale can impact a larger population of patients. Additionally, physicians can work across disciplines to share best practices to further improve care.

However, oftentimes multi-specialty projects fail because there are many barriers to creating such a collaborative project. Physicians have described "lack of time,' 'no financial compensation,' and 'no support from colleagues' as concerns to establishing collaborative care practices" (Berendsen et al., 2006). However, research demonstrates that successful collaboration between medical specialties and disciplines leads to better chronic disease care management (Wagner, 2000). Collaboration can be improved through interventions and can result in higher quality of care and reduce costs. One intervention demonstrated that a clinic could improve collaborative efforts by adding a nurse practitioner, medical director and practicing daily multidisciplinary rounds (Vazirani, Hays, & Martin, 2005).

In an effort to improve collaboration, the University of Michigan Health System has begun to utilize the maintenance of certification part IV as an opportunity for group quality improvement. UMHS recognizes itself as an accountable care organization that has a responsibility to follow the triple aim ("Success and change: U-M Pioneer ACO update | University of Michigan Health System," n.d.). UMHS has completed more than 45 different quality improvement projects, which also provided MOC-IV credit for participating physicians and has many ongoing projects. While the majority of the projects have fewer than 10 participating physicians, the low-density lipoprotein cholesterol (LDL-C) screening project included over two hundred participating physicians and over 29,000 patient encounters were analyzed. This project demonstrates the increasing collaborative focus of UMHS and the potential for growth of the multi-specialty portfolio program.

Description of project to improve LDL-C workflow

The project began as an extension from work within Cardiology on improving rates for annual lipid panel screening. The university health system recognized lipid screening as one of the top three initiatives for 2014 because the organization fell below that of other physician organizations and health care systems and below the benchmark goal. UMHS values the importance of patient outcomes and aims to achieve at least 75th percentile on all Health Effectiveness Data Information Set (HEDIS) measurements. The HEDIS tool is used by over 90 percent of US health insurance plans to measure performance ("HEDIS & Quality Measurement," n.d.). This tool has become a standardized metric for determining where to focus quality improvement efforts.

Grant Greenberg, Associate Medical Director for Quality, University of Michigan Medical Group, and Associate Chair for Information Management and Quality, Department of

Family Medicine, saw an opportunity for improvement, and because the university health system ranked low in rates for annual lipid panels, he decided to partner with the project manager from the work in Cardiology to establish a uniform quality improvement project in which best practices from various specialties and clinics could be shared through collaboration. With the assistance of the project manager, Paul Paliani, the multi-specialty project began and the pair began to search for interested physicians from each specialty to participate in the collaborative meetings and disseminate that information to their respective specialty throughout the clinic.

The project ultimately facilitated collaboration among several medical specialties: Cardiology, Endocrinology, Family Medicine, General Internal Medicine, Geriatrics, and Nephrology. Each of the previously listed specialties valued effective Low Density Lipoprotein-Cholesterol (LDL-C) screening at the time the project was launched. However, after the project launched, the American College of Cardiology and the American Heart Association produced an updated guideline that no longer recommended an annual lipid panel and rather suggested that those with cardiovascular risk should be placed on a statin regardless of their cholesterol level (Stone et al., 2014). After the new guidelines were announced, the project leads discussed the future of the project at a collaborative meeting. They decided the project could still be beneficial if it focused on improving the workflow and working to get physicians and medical assistants more comfortable with using the electronic medical record to pend orders. The project then aimed to increase awareness about the workflow rather than the original goal of ordering a lipid panel for most patients that are flagged as overdue. Medical assistants still pended the lipid panel for patients flagged as overdue, and physicians still reviewed the order before accepting it, but now physicians were particularly cautious because the new guidelines meant ordering the test was less medically relevant for many patients.

In order to better understand the challenges and successes of quality improvement work within a large academic health system, I chose to analyze a particular project that aimed to create a more efficient workflow for obtaining annual lipid profiles. The workflow involved the creation of an electronic alert when a patient is overdue for their yearly LDL-C screening test. The medical assistant reviews all of these alerts when rooming a patient during a visit, and ensure that the alert is correct by reviewing the patient record and talking with the patient to see if they brought test results or have had the test performed by another provider. If the test needs to be ordered, the medical assistant can pend the order (initiate the order but not sign it) so that the physician simply has to review the order, and if in agreement, sign the order during the patient encounter.

Research demonstrates that expanding the role of medical assistants can work to better manage chronic disease and therefore reduce medical costs (Nelson, Pitaro, Tzellas, & Lum, 2010). Additionally, utilizing electronic alert systems—clinic decision support usually improves quality of care. In a meta-analysis, clinical decision support systems improved practitioner performance in 62 of the 97 studies reviewed (64%) (Adhikari, Beyene, Sam, & Haynes, 2005). The project aimed to obtain these positive results and incorporate medical assistants and clinical decision support. Additionally, the project provided physicians with Maintenance of Certification part IV credit to encourage a large group of physicians to participate.

To manage the large scale of this project, the project obtained a project manager, Paul Paliani, who has experience in process engineering and value streams from the auto industry. Healthcare has adopted many ideas from the auto industry in regard to process engineering. For example, healthcare has begun to utilize the Toyota lean management process, which Paliani followed throughout this project. Lean thinking developed in the Japanese automotive industry in

the decades following WWII. During this time, there was intense competition and a scarcity of resources, but Toyota created successful strategies to innovate (Hines, Holweg, & Rich, 2004). In the 1980s, these business strategies became public and other production companies began to utilize them. Much of the lean process focuses on eliminating waste by ensuring that each step of a workflow adds value to the end product. In the 2000s, large research groups such as the US Institute for Healthcare Improvement and the UK Institute for Innovation and Improvement began to take interest in applying Toyota's lean thinking to healthcare (Waring & Bishop, 2010).

Both Paliani and Greenberg have extensive experience with lean management. Throughout the project, the leadership team aimed to follow lean principles and utilize a key tool for lean--A3 documentation. A3 is the name for a paper size, 8 ½ by 22 inches, but in this context, it represents the problem-solving tool that is an essential aspect to lean management. The A3 process begins by writing a proposal on a specific workflow that includes the background, current situation, goals, analysis, counter measures, and plan. This process forces users to implement the scientific method by explaining the present data, proposing a countermeasure, and developing an evaluation system. Additionally, this process helps to meet the criteria for MOC-IV credit. Below I have described some of the background information for the project that Paliani and Greenberg implemented.

Each clinic and medical specialty employs different methods for screening, but many utilize the best practice advisory alerts through the Health System's electronic health record (EHR). The University of Michigan utilizes Epic, a widely used EHR system for large academic health centers, and this program is branded locally as "MiChart." Best practice advisories (BPAs) were developed within electronic health records to provide point of care alerts during a patient encounter with recommendations for medical services. Through MiChart, users can

create a "smartest," which creates a pre-determined checklist with lab orders, diagnoses, and patient education materials to provide decision support to assist the medical assistant and physician. This project created a smartset for lipid panel screening in an effort to improve the usage of the smartset tool and provide an easier workflow for physicians and medical assistants.

Literature Review

Lean Thinking in Healthcare

The lean management process aims to encourage the use of the scientific method by utilizing a problem-solving thought process and tools such as an A3. The process follows the underlying thinking of a PDCA cycle (plan, do check, act). The goal of an A3 is to share a complete story of a problem by linking events that are sequential and causal. There are seven key sections to an A3 as determined by John Shook and David Verble. Each of the sections and their purpose defined by Shook and Verble is listed below.

I. Background: Why are you talking about it?

II. Current Conditions: Where do things stand today? What is the problem?

III. Goals/Targets: What specific outcomes are required?

IV. Analysis: What is the root cause(s) of the problem?

V. Proposed Countermeasures: What is your proposal to reach the future state, the target condition? How will your recommended countermeasures affect the root cause to achieve the target?

VI. Plan: What activities will be required for implementation and who will be responsible for what and when? What are the indicators of performance or progress?

VII. Followup: What issues can be anticipated? Ensure ongoing PDCA. Capture and share learning.

Because each of the steps to an A3 are sequential, it is highly important that the current conditions and root causes are accurate because if not, it will result in an inaccurate countermeasure. For this reason, the A3 management style focuses on Gemba—the Japanese term for "actual place." It concludes that improvement must begin with a front-line focus based on direct observation.

Medical Ethnography

Ethnography is a research method that gathers data through natural observation and/or informal conversations. This type of qualitative research can provide rich data to explore a variety of research questions (Goodson & Vassar, 2011). Some uses defined by LeCompte and Schensul include defining a problem, clarifying a problem, or documenting a process (2010). Typically, ethnography focuses on a single organization and involves enough observation time to understand the culture and differing perspectives the members of the organization hold (Leung, 2002). Medical ethnography is emerging as a field of study and has been utilized in medical education but primarily in nursing. An article from the United Kingdom suggests the need for increased ethnography in physician education because it enables the researcher to understand the culture of a group and capture any difference between what a group says they do and what they actually do (Leung, 2002). Ethnography does not enable general conclusions but draws conclusions about a specific group on a particular topic (Savage, 2000).

Methods

To evaluate the project, I attended an initial planning meeting with an external consultant who reviewed the workflow, each of the collaborative meetings and conference calls, a medical assistant training, and shadowed two physicians at two separate clinics. Additionally, I interviewed the physicians representing their specialty in the collaborative meetings, physicians

participating for MOC-IV credit, eight medical assistants, a member of the electronic health record reporting team, and a member of the Project Support Information Technology program. For each of these interviews, I recorded the session and took notes, which I later transcribed. To protect confidentiality, pseudonyms are used for each of the interviewees.

Interviews

To gather insight about how various stakeholders viewed the project, I conducted interviews at a variety of clinics within the University of Michigan Health System. I contacted each of the persons that participated in the collaborative meetings and each person agreed to an interview. I contacted participating physicians by asking my mentor, Grant Greenberg, for a list of physicians that he knew personally so that I could provide his name for added credibility. Additionally, I asked two physicians through personal connections. Many physicians accepted my interview, and of those that did not accept, many did not reply to my email so I am unsure whether it was received and opened. Two physicians replied that their schedules were too busy to allow for an interview. I obtained interviews with medical assistants by asking physicians at interviews if I could speak with a medical assistant. Some physicians introduced me at the end of the interview and for others I set up a separate appointment for a return visit.

Shadowing

In order to see the workflow in-person, I asked physicians if I could shadow them in clinic. Many expressed concerns that the best practice advisory for the lipid panel would likely not happen during a typical clinic day, so they didn't see the value in me shadowing or simply provided this as a reason to avoid adding another student to the nearly constant presence of shadowing students at academic medical centers. However, I shadowed my mentor, Grant Greenberg and Luis Espinosa.

Results

Collaborative Meeting Participants

I interviewed each of the physicians who participated in the collaborative meetings with the exception of the Cardiologist, Sachin Gupta and General Internal Medicine, Jerry Kohler. Dr. Gupta did not attend any of the in-person meetings and called in to a few meetings. The cardiologist quality improvement manager, Elizabeth Taylor attended and participated in the meetings on behalf of the Cardiology department. I contacted Jerry Kohler through email, but he did not respond. Each of the participating physicians had slightly differing views about the project. These differences are shown through the differences in motivations to participate in the project.

Catherine Bonotto, a family medicine physician and clinic director of the University of Michigan Chelsea Health Center participated in the project because she was on the lipid guidelines committee and thought it "would be good synergy to be involved in both initiatives." Elizabeth Taylor is a quality data manager in the Cardiology department with a background in nursing. She was motivated to participate because she noticed poor measures for LDL monitoring and screening over the last three years and felt that it was an area that UMHS "could try to improve the most." Mark Lightman is a physician in Nephrology who was frank about his motivations. He provided two reasons: (1) increased revenue for his division due to the financial incentive from faculty group practice and (2) The maintenance of certification credit is much easier as a group rather than the individual quality improvement project. In reference to the individual QI, he says, "everybody sort of recognizes that doing these individually doesn't really lead to any change and so it's a lot of work that doesn't really get anywhere, and so the opportunity to actually participate in a meaningful QI project where we might actually do

something different and do it better was a drawing point." Alison Leary, an endocrine specialty physician was motivated to participate because she had been working to improve LDL compliance for years and she said that being a "competitive, type A personality that most physicians are, I want to have good scores for my clinic." Additionally, she mentions that she is in charge of "keeping the maintenance of certification in place, so this is sort of any easy way to get that done as well, so there are sort of many motivations, general competiveness, pay for performance, re-imbursement, maintenance of certification." She concludes by explaining that provided the updated American Heart Association guidelines, she doesn't think this is the most medically important quality improvement project, but because it was already "put together and handed to me, there is no way I was going to turn it down." After saying this, she lets out a laugh, assumingly about how when someone is this busy, everyone would accept someone's offer to complete work for them. Lastly, Nancy Martin from Geriatrics joined the project after the others, but was motivated firstly by the "maintenance of competence" by which I am sure she is referring to the maintenance of certification. She says that the "requirements are more stringent, and they get more stringent all the time, so there is a certain amount of activity that you have to document and show some analysis of your practice, so that was why I got involved." She also adds that she is one of the two team leaders in her clinic, so she is involved in the clinic process for implementing new things. She concludes that she is impressed that they just "decided to do it in such a way that it would really help us to get our maintenance of competence sorted, because that's actually the most time consuming, difficult thing to do."

Provided below is a summary of motivations for physicians participating in the collaborative meetings:

Name	Title	Motivations
Sachin Gupta	Physician, Cardiology	N/A – did not accept interview request
Jerry Kohler	Physician, Internal Medicine	N/A – did not accept interview request
Catherine Bonotto	Physician, Family Medicine, Clinic Director	Member of lipid guidelines committee, wanted synergy between this project and committee
Elizabeth Taylor	Quality data manager	Poor performance for LDL monitoring and screening
Mark Lightman	Physician, Nephrology	Increased revenue, MOC-V
Allison Leary	Physician, Endocrine	Working on LDL compliance and competitive with other clinics about scores, manages MOC credit for clinic, does not view as most medically relevant
Nancy Martin	Geriatrics	MOC-IV

All of the physicians in the collaborative meetings agreed that the maintenance of certification part IV added to their motivations but many provided additional reasons that differed. The physicians that participated in the collaborative meetings still found that this structure for maintenance of certification was easier than the traditional MOC-IV modules because the project manager, Paul Paliani, managed all of the scheduling and organized education materials and training sessions. Additionally, the project lead, Grant Greenberg, organized and distributed the data and provided the written documentation necessary to receive MOC-IV credit. Physicians in the collaborative meetings needed to attend monthly meetings, distribute materials to their specialty, and facilitate communication between clinics. Even

including the additional responsibilities of these physicians, they still agreed that it was a better process for obtaining MOC-IV credit. With the direction of a project manager and a project lead, collaborative quality improvement projects can be feasible by providing physicians with MOC-IV certification.

Physicians Participating for MOC-IV

The physicians that participated in the project to receive their maintenance of certification part IV credit had slightly differing views of the project compared to those involved in the collaborative meetings. Overall, many of the physicians were highly motivated by maintenance of certification part IV. Zachary Davis, a physician who specializes in Endocrinology and was elected Chief of Staff four years ago described the MOC-IV process as a "cumbersome and time consuming process" for individual practitioners, but expressed his support for collaboration. He stated "we are lucky being at an academic health center that we can combine our resources and make maintenance of certification truly meaningful for patients while not forcing them to do an inordinate amount of busy work to make that happen." Given Davis's background in a high-level leadership position, I think he was particularly interested in the organizational process of creating a collaborative project. Additionally he included that he was motivated altruistically because he believed the initiative made things better for patients. At the conclusion of the interview, he asked me to share my results from this project with him. Due to his commitment to leadership and improvement, I think he provided an interesting insight and appreciation for working within an academic medical institution.

In contrast, Luis Espinosa disagreed that the initiative improved patient care and acknowledged that he was only participating in the project to receive MOC-IV credit. He works at a UMHS clinic in the neighboring poorer town of Ypsilanti and focuses his care on value-

added aspects of healthcare. He felt that this project was the only option for MOC-IV credit this year and that he had to participate because he did not have time to conduct an entire project himself. He expressed his frustration with the MOC-IV process because he believes it is focused on metrics that insurance companies value rather than patient care. He resented the focus on insurance re-imbursements and commented that the project began due to their "obsession with numbers."

Additionally, I interviewed Flyn Brown, an Internal Medicine physician, who was entirely motivated by MOC-IV credit and the convenience of the project. Peter Ferrehi, a cardiologist, expressed his motivation of maintaining certification but also mentioned a self-interest in making sure that his patients are meeting goals. He discussed the importance of data evaluation and commented, "you may think you are always doing well, but until you actually analyze your own data, you don't know that for sure." However, at the beginning of the meeting he expressed that I was the first person to contact him about this project and not until he searched his email did he find the distributed clinic level data. He then printed this data for review, but this experience stressed the importance of communication beyond simply email-sharing data. Lastly, there was one physician, Adela Johnson, who did not mention MOC-IV as a motivation for participation. She mentions that she is "just trying to help out the cause and see what everyone's perspectives are."

Lastly, Veronica Chan, an internal medicine physician and Medical Director of the Northville Health Center, described her motivation as an individual physician and as a member of the lipid guidelines team. She said that the maintenance of certification was her main motivation but that it is also "nice to know what impact you are having and see with the project how well you are doing with your numbers."

Medical Assistants and the Existing Hierarchy

While the medical assistants (MAs) do not require the same certifications as physicians, this project changed their normal workflow, and they adapted to the change as part of their routine job responsibilities. The project created a workflow that utilized the MAs by pending the order for a physician. The lead MA at Chelsea Health Center and the lead MA at Domino Farms Endocrinology were the only two MAs that described the updated workflow as a collaborative decision with the physicians. The three MAs I interviewed at Ypsilanti Health Center and the three MAs at Canton Health Center all said that they followed the physician's orders. This difference in collaboration between physicians and MAs may represent the varying culture of the clinics but may also be attributed to selection bias in medical assistants.

At Ypsilanti Health Center, I interviewed the three MAs together as they sat at their work station. I asked them about the best practice advisories, and one of them said that they do them for most physicians but some have asked that they don't utilize the BPAs so they follow the physician's request. However when another MA in the group heard this response, they disagreed and said that they are supposed to utilize the BPA and pend all orders regardless of the physician. The first MA then immediately followed up saying that the physicians he was talking about were a few residents and they no longer work at the clinic so he now pends all orders. It seemed as though the MA got nervous that he was being called out for breeching policy, so he felt pressured to change his story to clarify that he wasn't doing that anymore. However, one MA at the Canton clinic provided a similar perspective and stated that their BPA usage differed by physician and they too followed the physician request.

While medical assistants work under the supervision of physicians, they also must balance institutional policies. Navigating the territory when physician orders deviate from the institutional workflow can be challenging. Historically, nurses were submissive to physicians

because they had to prove that they were helpful to physicians during the Crimean War in the mid-seventeenth century. In this time period, the success of a nurse was measured by the proficiency in which she followed the physician's orders rather than patient care (Keddy, Gillis, Jacobs, Burton, & Rogers, 1986). Over time, the nursing profession has developed its own role within healthcare, but traces of the traditional medical hierarchy still exist. A case study at one academic medical center demonstrated that although all medical professions supported collaborative leadership, it was not attained. "The participating physicians indicated a belief that their teams functioned non-hierarchically, but reports from the non-physician clinicians and the authors' observation data revealed that hierarchical behaviors persisted, even from those who most vehemently denied the presence of hierarchy on their teams" (Lingard et al., 2012).

While nursing has developed its own training and role separate from the physician, the medical assistant profession was created in the 1950s and serves many functions within the healthcare industry. Medical assistants (MAs) work under the direct supervision of a physician by performing routine administrative and clinical tasks such as updating patient medical records or preparing patients for examination ("AAMA - What is a Medical Assistant," n.d.). Because physicians directly supervise MAs, it becomes more natural to revert to the traditional medical hierarchy in which the performance of the MA is measured by how closely he or she follows the physician's orders, regardless of the organization and clinic guidelines.

However, for the MA to avoid the situation of managing competing demands from their supervising physician and the organization, the project allowed for variation between clinics and physicians. The key issue is about following a standard process vs. allowing for individual level variation despite the broader process and how that impacts the quality improvement effort. For example, in lean, a lack of standard process (or in this case, lack of engagement with the

theoretical standard process) leads to a failure in achieving the improvement goal more often than not. With a huge project, consensus is harder, but the barrier is likely that the physicians who direct their MA to ignore the BPAs. These physicians have not engaged and have not come to consensus on the overall project.

The goal of lean management and quality improvement work is to create a more collaborative team instead of a hierarchical system. The role of the medical assistant is to help physicians provide higher quality care and work more efficiently. However, physicians directly supervisor their MAs in clinic, and therefore the allegiance of an MA can likely go firstly to the physician over the organization because MAs must work regularly under the supervision of the same physicians.

MOC-IV credit strong motivator for participation

Overall, Maintenance of Certification part IV credit was a strong motivator for physician participation. Physicians felt that this collaborative aspect was easier and faster and allowed for greater impact. Mark Lightman reflected that this project enabled him to have a much greater impact than if he worked by himself. He said “it’d be much more difficult if I wanted to go to the MiChart team and ask them to build a BPA or turn on some flag or whatever, the chances of going at that and getting it done would be slim to none.” Given the amount of work that the project manager, MiChart team and project lead contributed to this project, I think that many physicians would agree. Additionally, each of these initiators had prior relationships prior to this project, which greatly impacted its ignition and success.

The informal networks that exist within organizations are highly important. This project developed primarily on prior relationships, which is successful for those who have worked at the system for many years and have had the opportunity to network and collaborate with colleagues.

However, as a new employee, it might be much more difficult to become involved in these projects because there is not a centralized quality improvement office for UMHS as an organization, but rather the quality improvement roles are typically developed within a Department or Division. There is no coordinated infrastructure that is strategic, but rather collaborations occur as a reaction or in response to a particular quality improvement need.

Communication breakdown

By interviewing a select few physicians, I found communication failures. Due to the limited sample size, it is unclear how extensive these communication breakdowns were, but likely many physicians had confusion about the process considering that I found misunderstandings at multiple clinic locations. For example, Veronica Chan, Medical Director of the Northville Health Center said "after it was implemented I went to touch base with all of my MAs and no one had any idea that it was implemented or what to do. So I had to tell them." This was a communication failure from the general internal medicine representing physician, Jerry Kohler, who was the only physician from the collaborative meetings that failed to respond to my interview requests. The fact that Dr. Chan took ownership of the project and had the knowledge and willingness to explain the change to her MA demonstrates a communication success.

Additionally, another physician, Julia Snider, was unclear about the workflow and the process that her MA was using for the BPA for the lipid panel. Dr. Snider said that when her MA pends the order "I can't see it and then I have to sign it after I saw the patient. So I think there is a problem, my MA is not doing it the way it should." For this physician, she felt that the MA did not have the proper training for this intervention, but she was unsure herself how to explain the change to her medical assistant. Additionally, the crossover between this lipid panel project and other useful BPAs was apparent when Dr. Snider states that "it's not just the LDL, it's the same

that's happening when she orders the mammogram, the same is happening when she's ordering other stuff." This demonstrates that the project is transferrable to other BPAs, because once a medical assistant successfully understands one it is much easier to add more. The project leadership relied on this assumption when continuing with the project despite the change in the medical guidelines. By focusing on the workflow, this LDL project could still be beneficial to physicians and patients.

Incentive Structure for Future Plans

This MOC-IV Portfolio project aimed to "develop more effective and efficient care processes that are shared across several specialties treating patients with diabetes and IVD" ("QI Project Report for Part IV MOC Eligibility," n.d.). At the conclusion of the project, the best practice advisory (BPA) was removed because the LDL-C screening test is no longer medically relevant due to the new AHA guidelines. Therefore, the project worked to ensure that "physicians and medical assistants better understand the benefits of standard workflow for addressing a MiChart BPA. Physicians have become more accustomed to MA initiating the process by addressing the BPA, and have found this valuable to their efficiency" ("QI Project Report for Part IV MOC Eligibility," n.d.). This workflow can then translate to a variety of screening tests for which a MA can improve the efficiency.

However, to understand the complexity of adopting a standard workflow and the incentive structure, I will utilize a framework for understanding incentives, "On the folly of rewarding A, while hoping for B." In this article, Steven Kerr describes the challenges of aligning incentives and goals by providing theory and examples for when an organization may reward A, but actually hope for a different outcome, B. In the situation with medical assistants pending orders for physicians, the hope is that MAs feel comfortable expressing their feedback

to the physicians they work with, particularly when the institutional policy differs from a physician request. However, the reward for MAs may be to follow physician orders for a more pleasant work experience. This may apply to the select MAs that shared that they perform BPAs for some physicians but do not for the physicians that request against pending BPAs. The incentive to maintain positive relations with your supervisor is important to many employees. For example, in a field study of 327 nurses, David Pincus found that supervisor communication and communication climate were strongly related to job satisfaction and performance (Pincus, 1986). This demonstrates the importance of the relationship between medical assistants and physicians and the need to align incentives so that medical assistants feel comfortable expressing feedback to physicians.

Lean Thinking

By reviewing the project materials, it is clear that the A3 written process was followed throughout the project. A copy of the A3 used for this project is attached in appendix 2. However, implementing the A3 management style is more challenging to evaluate because I cannot gain the perspective of each of the involved employees. Successful A3 management requires leaders to avoid dictating tasks and also to prevent laissez-faire disengagement.

In order to better understand physician and medical assistant perspectives on lean management in healthcare, I asked them in my interviews. One physician in a leadership position, who has extensive training in lean describes himself as a lean skeptic and that "much of lean is just jargon." He says that while most physicians are familiar with lean, most "do it because it's expected in the job, but if you get them outside work and say the word 'lean' everybody laughs." I interviewed each person in their professional setting, and therefore, I cannot guarantee that each physician was as honest and frank, but I heard a variety of

perspectives. Another physician that has experience with lean courses said that he likes the lean ideas and working to eliminate waste, but is concerned that the senior managers are trained in lean but few MAs have knowledge of lean. A contrasting physician explained that lean was important to remove waste and felt that the cholesterol screening was a layer of waste that should be removed but felt overwhelmed by the standardization in the clinic. She states that from her perspective "it will take me less time if I let my MA be in charge of every BPA than it will if I say well you can't do this one, because then she's going to get confused and she's going to forget which ones she needs to do, and so my looking at it is to go, let you guys have your cholesterols." This physician views lean as a method of eliminating unnecessary treatments and tests rather than a management process and while she supports lean she became disengaged with this particular lean project due to her disagreement with the medical relevance of the lipid panel screening. Another physician describes herself as vaguely familiar with lean and states that there will always be waste to eliminate and better workflows. Only one of the seven MAs that I interviewed was familiar with lean thinking and discussed it positively by describing the lean in everyday work model and the current project her clinic was working on which included 4 measurable metrics. Overall most physicians viewed lean as an opportunity to eliminate waste, but there were mixed opinions on how to best apply it to healthcare.

Perspectives on Change

To better understand how physicians valued change in their work, I asked them their thoughts on change in general. I received a variety of responses from people of varying levels of leadership responsibility. The former chief of staff stated that "change is the essence of all things and I believe our institution has not embraced change the way it should. You know bureaucracies have tremendous inertia and meaningful change becomes difficult." He expressed challenges that

he faced with employees and joked that "all of the house officers want things to get better but they don't want anything to ever change." This describes the challenges many people have with change. For example, one physician described honestly that change makes him anxious and he finds comfort in routine. While this physician recognized his challenge with handling change, he recognized it as critical at both an individual and organizational level.

Many physicians expressed specific stipulation about change. For example, "as long as it's better I'm okay with it" and "I am all for change… it is just a matter if you can influence how the changes occur so it's more helpful instead of hindrance" and "I don't mind change as long as it is thought through and seems to have a purpose" and "change is good if it makes a difference in patient's health." Each of these physicians will support change but only in particular circumstances. It is important to see the added value of the change and for one physician it was particularly important that she had influence in the change.

When I asked medical assistants about change, most were indifferent and said they were okay with change because adapting to change was part of their job. However, one MA noted that large organization changes were not successful when it is a "MiChart tell all for the entire UMHS system." She describes that change is more successful when she receives a personal email and the change is on the clinic scale. This medical assistant valued ownership of change and participation in the process. However, I think most MAs were indifferent to change because they did not have as much participation in the change process.

Discussion

Limitations

This study includes interviews with 23 people from a variety of positions within the project: physicians, medical assistants, and support staff. However, this sample may not be

representative of all of the participants involved in the LDL-C project and does not represent the physicians, medical assistants, and staff that are not involved in the project. Over 400 physicians, medical assistants, and staff were involved in this project. Additionally, most people whom I interviewed knew my mentor, Grant Greenberg personally and were aware that I was working on the project under his direction. This may have influenced the depth of information that interview participants were willing to share and have led to selection bias in which people agreed to the interview.

Additionally, I had only two shadowing experiences, which limits my ethnographic conclusions. I was able to observe some differences through my short visits, however, these conclusions are tentative because I only visited each clinic once and was not immersed long enough to understand the detailed nuances of the clinic culture and employee interaction. While there were key differences in how clinics trained their medical assistants, and the physician perspectives differed by clinic, it is not possible to make generalizations about an entire clinic or system from my observations.

I attempted to focus my research on the US healthcare system, however a significant portion of the literature on lean thinking within the health care sector originates from the United Kingdom (UK). I acknowledge that the healthcare system in the UK differs significantly from the US in terms of incentive structures, physician and insurance re-imbursements. However, many of the challenges that the UK faces in applying lean thinking to a medical workflow would likely overlap to the US, because the medical practices are similar even though the payment structures and insurance policies differ between the two countries.

Workflow transferred to Chlamydia screening

Because of the change in AHA guidelines, this project focused instead on the workflow process rather than the medical relevance of obtaining the yearly test. Therefore, it is difficult to measure the success of the initiative because increased lipid panels orders and completed tests were not necessarily the goal of the project after the change in the guidelines. However, the success of the project focused instead on the workflow and transferring this to other initiatives. For example, this year, the Chlamydia project began with a similar approach. It has been highly successful. UMHS went from Healthcare Effectiveness Data and Information Set (HEDIS) rate of Chlamydia testing for women ages 16-24 of below the 10th percentile to over the 90th percentile.

There are many factors that may contribute to the success of the Chlamydia project: prior focus on best practice advisories within the electronic health record, widely recognized medical relevance and importance, physician engagement from those receiving MOC-IV credit. While there are a variety of factors that could have contributed to these levels of increased Chlamydia screening, likely the prior focus on workflows with the LDL-C contributed because the structure of the project could be easily transferred. The Chlamydia screening project utilized the same functions within the electronic medical record, so Dr. Greenberg could continue to collaborate with his contacts within the MiChart technical support team. Additionally, the requirements to receive MOC-IV credit remain the same, and the project also qualifies as a multi-specialty MOC portfolio project.

Additionally, Chlamydia screening has stronger evidence supporting Chlamydia screening for women ages 16-24. “Chlamydia trachomatis infection is the most common bacterial sexually transmitted disease (STD) in the United States, with more than 2.8 million new cases estimated to occur each year and more than half are 15-24 years (Data, 2009). In addition,

untreated Chlamydia can have severe consequences including pelvic inflammatory disease (PID), infertility, ectopic pregnancy, and chronic pelvic pain. Therefore, the incentive structure aligns with the reward with improving screening rates, because there would be consequences for when a doctor fails to diagnose a person with Chlamydia. When a doctor misses a diagnosis, they likely face guilt, embarrassment and the threat of a malpractice suit. Due to the high incentive to diagnose and treat Chlamydia, it becomes more understandable that physicians sharply increased their Chlamydia screening rates especially when it becomes an organizational priority in addition to the medical relevance and MOC-IV credit. Overall, the dramatic improvement is unprecedented for quality improvement projects and likely reflects a multitude of root causes.

Conclusion

There needs to be further research to understand the incentive structure that derives from multi-specialty, collaborative quality improvement projects. Additionally more research must be done on hierarchy structures within medicine and how to align incentives so that both physicians and other clinicians are incentivized to support a non-hierarchical medical system. Research demonstrates that team-based work in medicine leads to higher quality of care, so improving the incentives for both physicians and clinicians can help these professions better achieve their mission to provide better medical care. For many participants in this project, there was physician engagement, which led to a greater understanding of best practice advisories and enabled physicians to become more comfortable with the workflow of having MAs pend orders. The success of Chlamydia screening project demonstrates the ability for a quality improvement project to transfer ideas to another project.

Overall, MOC-IV portfolio projects offer a great opportunity to cross-disciplinary collaboration, but the challenge for establishing physician engagement persists. By enabling a

streamlined approach to providing MOC-IV credit for existing, local quality improvement projects, physicians can save time and contribute to a project that aligns with a greater institutional goal. However, developing the infrastructure and communication for such large quality improvement projects is challenging, and highly important for its success. For lean to be successful, managers need to work to get 100% consensus that the project goal is value-added. For this specific LDL-C project, it was challenging to gain full consensus because the national lipid guidelines had changed after the project began. However, this project was successful because the workflow and organization could transfer to other best practice advisories such as the Chlamydia screening project.

Appendix 1: Maintenance of Certification Requirements

In 1933, representatives from specialty boards built a national system that determined standards for recognizing specialists. These representatives created the American Board of Medical Specialties. This board works to ensure that physicians are "knowledgeable and skillful in their disciplines and are attentive about providing save, evidence-based, and compassionate care to patients" ("ABMS History," n.d.).

The ABMS offers certificates in two categories: general certificates and subspecialty certificates. The general certificates included in this project are the American Board of Family Medicine and the American Board of Internal Medicine. Additionally the project included members from these subspecialties: Cardiovascular Disease, Endocrinology, Diabetes and Metabolism, Geriatric Medicine, and Nephrology. For both Family Medicine and Internal Medicine, specialty training is required prior to Board Certification every three years.

The chart below is taken directly from the ABMS website and describes the differences between specialties with regards to the Part IV Practice Performance Assessment.

ABMS Member Board	Maintenance of Certification Part IV Practice Performance Assessment
American Board of Family Medicine	• Diplomates must complete either a Performance in Practice Module (PPM) or an approved alternative module in each 3-year stage
American Board of Internal Medicine	• Earn a total of 10 self-evaluation points every five years - 20 points in Self-Evaluation of Medical Knowledge - 20 points in Self-Evaluation of Practice Performance • 60 points from either Self-Evaluation of Medical Knowledge, Self-Evaluation of Practice Performance or a combination of both

http://www.abms.org/media/1317/abms_memberboardsrequirements_moc_partiv_10_14.pdf

For Family Medicine, there are multiple options for MOC-IV. The Performance in Practice Modules (PPMs) in which physicians monitor data for a subset of 10 patients. The Alternative

Part IV Activities Approval Program provides credit to physicians that already participate in quality improvement activities. The Approved Alternative Part IV Activities include the Multi-Specialty MOC Portfolio Approval Program and provide a way for physicians to receive credit through collaborative projects. Lastly there are two activities that do not require continuous patient care: Methods in Medicine Modules (MIMMs) and Hand Hygiene ("Part IV—Performance in Practice," n.d.).

FACULTY GROUP PRACTICE
QUALITY MANAGEMENT PROGRAM
UNIVERSITY OF MICHIGAN

FGP/QMP Priority Quality Improvement Focus Areas for FY 2014

Date: November 11, 2013

Sponsors: Steve Bernstein M.D., M.P.H., FGP

Authored by: Grant M Greenberg M.D., M.A., M.H.S.A

ckground

Overall minimum goal is to achieve 75%[tile] HEDIS (All Lines of Business) and optimally 90%[tile]

Three areas have been identified for focused QI intervention as not at goal:

1. LDL-C : annual screening test for adult patients (age ≥18) with a diagnosis of "Diabetes" or "Ischemic Vascular Disease" (Coronary Artery Disease or Cerebrovascular Disease)
2. Chlamydia Screening: Annual Chlamydia testing for sexually active women ages 16-24 years old
3. Well Child Visits (0-15 months): ≥ 6 well child exams between birth and *before* 15 months of age

2012-2013 UMHS Performance vs. HEDIS

			UM performance		Benchmarks[1]			UM vs. Benchmark	
easure	Disease	Age Group[2]	FY2013	FGP Trend	HEDIS 90th Percentile	HEDIS 75th Percentile	BPA Available	HEDIS 75th Percentile	HEDIS 90th Percentile
C Screening	CAD/VD	18-75 yo	75%	↓	92%	90%	Y	-15%	-17%
C Screening	Diabetes	≥ 18 yo	75%	↓	90%	87%	Y	-12%	-14%
lamydia Screening	Preventive Care	16-24	25%		57%	50%	Jan-14	-25%	-32%
ell Child Visits: 0 - 15 months	Preventive Care	0-15 months	79%	↑	89%	85%	Planned	-6%	-10%
ell Child Visits: 3 - 6 years	Preventive Care	3-6 yo	78%	↓	85%	80%	n/a	-1%	-7%

EDIS 2013 National All Lines of Business Average
port prepared for internal use only by the Quality Management Program/N. McBean on 10/23/2013.
uality Assurance Document: MCLA-333.23535.2013S.

ective

Improve to at least 75%[tile] HEDIS and optimally 90%[tile] through collaborative quality improvement efforts across FGP areas including: Department led efforts, QI steering committee led efforts, and Ambulatory Care/ACU led efforts.

lysis of Root Causes

The reasons for sub-optimal performance vary by measure; several suspected causes include:

LDL-C: Misconception by physicians about need for fasting labs, lab turning away non-fasting patients, poor capture of outside lab records, sub-optimal workflow/process for clinical decision support tool (Best Practice Advisory/BPA)

Chlamydia Screening: Lack of clinical decision support (BPA), lack of knowledge regarding the clinical need and population benefit for testing, misconception about ability to test without a pelvic exam through urine test.

Well Child Exam (WCE) 0-15 months: Variable primary care access, scheduling errors, lack of knowledge of which infant is due for WCE at time of visits for non-WCE concerns, limits on numbers of WCE per clinic session.

People	Sub-optimal use of BPA. Lack of Knowledge/misconceptions
Machine	Access to lab testing, no current BPA for chlamydia screening or WCE
Materials	Patient information regarding LDL, chlamydia, and WCE. Non-capture of outside Lab tests
Methods	Workflow development for use of BPA, standardizing scheduling to address access

Known or Planned Countermeasures

Measure	Current countermeasure(s)	Planned countermeasure(s)
LDL-C	Cardiology	Diabetes, Chronic Kidney Disease, and Ischemic Vascular Disease QI steering committees working with Gen Med, Fam Med, Cardiology and ACU's. Broad project which will involve both primary care and specialty areas responsible for ordering LDL-C tests. Gap Report to identify patients due, update of BPA, workflow improvement around BPA utilization, and improved capture of external labs.
Chlamydia Screening	Taubman General Medicine Pilot working with MDCH, BCN and Blue Cross Complete	Women's Health QI group sub-committee focus. MOC-IV project for both Fam Med and Pediatrics (collaborative) for 2014. BPA developed and ready for use by Jan 2014. Gap report in development
WCE	Briarwood Pediatrics Lean Project through Michigan Quality System ITT program	Pediatric Preventive Care QI group focus. Collaborative QI for MOC-IV by Fam Med and Pediatrics for 2015 credit being discussed. Development of BPA and gap report in planning stages.

Selected Next Steps/Follow Up

NEXT STEPS	WHO	WHEN
Monthly Data/Opportunity Report for: Chlamydia Screening WCE LDL-C	QMP	Feb-March 2014 (estimated)
Develop and Pilot new BPA for Chlamydia Screening	MI-Chart, Population Management Committee, ACS, PHO, QMP	January 2014
Management of Lipids Ambulatory Guideline update to reflect lack of need for fasting for LDL assessment	FGP Clinical Guidelines: Ambulatory Lipid Guideline Team	May 2014
Facilitate initiation of various QI projects to insure clinical focus and to insure MOC-IV credit for physicians as added incentive	Grant Greenberg MD MA MHSA FGP (QMP, PHO, ACS)	Now

Works Cited

AAMA - What is a Medical Assistant. (n.d.). Retrieved February 22, 2015, from http://www.aama-ntl.org/medical-assisting/what-is-a-medical-assistant#.VOoTTEK4kcg

ABMS History. (n.d.). Retrieved February 15, 2015, from http://www.abms.org/about-abms/history/

About the Portfolio Program. (n.d.). Retrieved February 15, 2015, from http://mocportfolioprogram.org/about/

Adhikari, N. K. J., Beyene, J., Sam, J., & Haynes, R. B. (2005). Effects of Computerized Clinical Decision Support Systems on Practitioner Performance. *Journal of American Medican Association*, *293*(10), 1223–1238.

Berendsen, A. J., Benneker, W. H. G. M., Schuling, J., Rijkers-Koorn, N., Slaets, J. P. J., & Meyboom-de Jong, B. (2006). Collaboration with general practitioners: preferences of medical specialists--a qualitative study. *BMC Health Services Research*, *6*, 155. doi:10.1186/1472-6963-6-155

Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: care, health, and cost. *Health Affairs (Project Hope)*, *27*(3), 759–69. doi:10.1377/hlthaff.27.3.759

Data, E. (2009). Chlamydia screening among sexually active young female enrollees of health plans--United States, 2000-2007. *MMWR. Morbidity and Mortality Weekly Report*, *58*, 362–365. doi:10.1001/jama.292.21.2569

Goodson, L., & Vassar, M. (2011). An overview of ethnography in healthcare and medical education research. *Journal of Educational Evaluation for Health Professions*, *8*, 4. doi:10.3352/jeehp.2011.8.4

HEDIS & Quality Measurement. (n.d.). Retrieved February 24, 2015, from http://www.ncqa.org/HEDISQualityMeasurement.aspx

Hines, P. A., Holweg, M., & Rich, N. L. (2004). Learning to Evolve: A Review of Contemporary Lean Thinking. *International Journal of Operations & Production Management*, *24*(10), 994–1011. doi:10.1108/01443570410558049

Institute for Healthcare Improvement: The IHI Triple Aim. (n.d.). Retrieved January 09, 2015, from http://www.ihi.org/Engage/Initiatives/TripleAim/pages/default.aspx

Integrating Maintenance of Board Certification and Health Systems' Quality-Improvement Programs - HBR. (n.d.). Retrieved January 09, 2015, from https://hbr.org/2013/11/integrating-maintenance-of-board-certification-and-health-systems-quality-improvement-programs/

Keddy, B., Gillis, M. J., Jacobs, P., Burton, H., & Rogers, M. (1986). The doctor-nurse relationship: an historical perspective. *Journal of Advanced Nursing*, *11*, 745–753.

LeCompte, M. D., & Schensul, J. J. (2010). *Designing and Conducting Ethnographic Research* (p. 356). Rowman Altamira. Retrieved from https://books.google.com/books?hl=en&lr=&id=xa7oIOlCUGwC&pgis=1

Leung, W.-C. (2002). Why is evidence from ethnographic and discourse research needed in medical education: the case of problem-based learning. *Medical Teacher*, *24*(2), 169–172. doi:10.1080/01421590220125268

Lingard, L., Vanstone, M., Durrant, M., Fleming-Carroll, B., Lowe, M., Rashotte, J., … Tallett, S. (2012). Conflicting Messages. *Academic Medicine : Journal of the Association of American Medical Colleges*, *87*(12), 1762–1767. doi:10.1097/ACM.0b013e318271fc82

Nelson, K., Pitaro, M., Tzellas, A., & Lum, A. (2010). Practice profile. Transforming the role of medical assistants in chronic disease management. *Health Affairs (Project Hope)*, *29*(5), 963–965. doi:10.1377/hlthaff.2010.0129

Part IV—Performance in Practice. (n.d.). Retrieved February 15, 2015, from https://www.theabfm.org/moc/part4.aspx

Pincus, J. D. (1986). Communication Satisfaction, Job Satisfaction, and Job Performance. *Human Communication Research*, *12*(3), 395–419. doi:10.1111/j.1468-2958.1986.tb00084.x

QI Project Report for Part IV MOC Eligibility. (n.d.). Retrieved February 24, 2015, from http://ocpd.med.umich.edu/sites/default/files/Project report-LDL 11 6 14 FINAL with specialties masked.pdf#overlay-context=moc/approved-umhs-projects

Savage, J. (2000). Ethnography and health care. *BMJ (Clinical Research Ed.)*, *321*(December), 1400–1402. doi:10.1136/bmj.321.7273.1400

Stone, N. J., Robinson, J. G., Lichtenstein, A. H., Bairey Merz, C. N., Blum, C. B., Eckel, R. H., … Wilson, P. W. F. (2014). 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: A report of the american college of cardiology/american heart association task force on practice guidelines. *Circulation*, *129*. doi:10.1161/01.cir.0000437738.63853.7a

Success and change: U-M Pioneer ACO update | University of Michigan Health System. (n.d.). Retrieved January 10, 2015, from http://www.uofmhealth.org/news/archive/201307/success-and-change-u-m-pioneer-aco-update

Vazirani, B. S., Hays, R. D., & Martin, F. (2005). E FFECT OF A M ULTIDISCIPLINARY I NTERVENTION ON C OMMUNICATION AND C OLLABORATION A MONG. *American Journal of Critical Care*, *14*(1), 71–78.

Wagner, E. H. (2000). The role of patient care teams in chronic disease management. *BMJ*, *320*, 569–572.

Waring, J. J., & Bishop, S. (2010). Lean healthcare: rhetoric, ritual and resistance. *Social Science & Medicine (1982)*, *71*(7), 1332–40. doi:10.1016/j.socscimed.2010.06.028