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A RHIO Struggling to Form: Will it Get Off the Ground?

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Introduction

As Dr. James Gibbs walked through the parking ramp to his car, he could not get out of his mind the meeting he had just attended. The board of directors of the Mid West RHIO (MWR) had just met, and it was a frustrating meeting for all attendees. The cold and rainy evening was a perfect match to Dr. Gibbs' mood.

Dr. Gibbs had been working to create the capability to share patient clinical data for over 5 years. His passion to improve patient care by ensuring that all clinicians have access to complete data about their patients had in fact fueled the effort to create a regional health information organization (RHIO) before the term was even invented. Certainly, Dr. Gibbs had found a lot of help during the past 5 years, and in the past several years, the group had come tantalizingly close to breaking out of the planning phase of the project towards a launch of the capability to share patient data. But each time something had emerged to slow the effort down or create a roadblock to progress.

After months of work with attorneys and leadership from the key stakeholders, the MWR had finally created a nonprofit corporation that was "owned" by the key stakeholders in the healthcare community. While the new corporate structure was a huge step forward, several of the larger hospital systems in the state seemed to be wavering in their support for the RHIO and were questioning if they should share their patient information with competitors. The technology work group had been working for several years to create a technology plan that could support patient data sharing, but a number of the community physicians felt the plan was too "modernistic" and did not take into account the lack of automation in many physician offices and smaller hospitals. The challenge of funding the MWR had never really been resolved, and although member organizations paid annual dues to keep the organization functioning, these payments were nowhere near the level of funding needed to launch data sharing. Several consumer groups had publicly raised concerns about patient's data being shared to the local newspaper, especially in the light of yet another round of virus attacks embedded in emails and reports of identity thefts.

Worst of all, the leader of the State's Health and Human Services (HHS) agency had recently said in several public forums that he did not support the governance approach of MWR and called for a new form of RHIO based on State control to ensure consumer privacy and regulation compliance. They announced a plan to fund a RHIO planning grant to begin what would amount to a RHIO competing with the MWR.

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The seemingly open competition from the State agency had been the most difficult to accept, given the large membership of the MWR throughout the State and the 5 year effort to get the MWR launched.

Perhaps the most frustrating to many of the board members was that the concept of an organization to share patient information made more sense than ever before. The recent disaster from hurricane Katrina had brought home how archaic paper record keeping was in America and how desperately the ability to share patient data on a wide scale was needed. Dr. Gibbs remembered grimly the evening news casts showing how premature infants were transferred out of New Orleans hospitals to other cities, without their parents and without their complete medical records. Evacuees from all across the gulf coast who were waiting for organ donations and those with chronic diseases that required short term medications and follow up struggled to get care in other cities. He remembered reading an article that said that because of the severe flooding, medical records of many of the evacuees were totally destroyed. Even in the Midwest, many miles from New Orleans, a significant number of people had been resettled and many local care providers had seen firsthand the difficulty in recreating medical records from scratch, especially for the elderly or those with chronic diseases.

But the lessons of Katrina had already been learned and relearned by local clinicians for many years. Patients showed up in emergency rooms on a daily basis needing care. A copy of recent history & physicals, current medications, problems lists, recent clinical results, or other basic patient clinical information would be invaluable to ER physicians in providing better and more cost effective care in these settings. Patients constantly move through the healthcare system from primary care physicians to specialists, from clinics to hospitals, and hospitals to home care or nursing homes, but rarely did their clinical information follow along with them.

The lack of shared patient data means that costly clinical tests are repeated and diagnosis takes longer time. The board of the MWR had reviewed the reports from the Center for Information Technology Leadership (CITL). The board felt that CITL's study of the potential economic impacts of information exchange at the community and national level was the most extensive one performed to date. CITL predicted that net savings for HIEI would be $77.8 billion annually, or about 5% of total US healthcare annual expenditures. An element of the CITL study that had made a dramatic impression to board members was that payers – health insurance companies – were by far the most significant economic beneficiaries from HIEI, with an estimated $22 billion per year in savings.[1] Several physicians active in the MWR felt that this analysis of savings rang true and that these national costs savings predictions would translate into real savings to local stakeholders. Given the potential to both improve care and reduce healthcare costs, it seemed that all healthcare stakeholders should strongly support the MWR and help move it forward.

Now it is felt that all the work of so many people for the past 5 years may have been in vain. The board meeting ended with a resolution that unless the funding, privacy, and governance challenges from the State were not resolved within 3 months, the MWR should consider disbanding. Dr. Gibbs knew time could be running out for the MWR and his dream of sharing patient data.

Organizational Background

Early in 2000, Dr. Gibbs had arranged a meeting of key stakeholders to initiate discussions on the formation of the MWR. Prior to that, Dr. Gibbs had engaged with various groups and individuals that he had identified as key stakeholders. His main

objectives were to understand current perceptions and to start building support for the creation of the MWR. Dr. Gibbs had consulted with some prominent physicians groups in the area, some local academic and community hospitals, health plans, and payer organizations. His early discussions revealed that there was considerable interest in the creation of the MWR. It was apparent even at that early stage that the motivations of the stakeholders were very different. Dr. Gibbs did not see this as an issue as everyone seemed to be committed to the "common good."

In May 2000, the various stakeholders met for the first time. Present at this meeting were representatives from the key stakeholder group of physicians, both primary care and specialty practices, CIOs from the local academic and community hospitals, and CEOs from the health plan and payer organizations. In addition to these key stakeholders, also present were representatives from professional societies, consumer interest groups, large employers, and various government organizations. Dr. Gibbs was really encouraged by the enthusiastic support demonstrated by the participants and strongly believed that this initiative was going to succeed.

As an immediate next step the membership of the MWR was outlined. On the basis of his prior experience, Dr. Gibbs was acutely aware that in order to ensure success, all parties should have a voice. He therefore became a strong proponent of including professional societies, consumer interest groups, and government organizations as part of the core membership.

As its first objective, the current membership set about identifying the organizational structure. Since RHIOs were relatively new and there were not many industry examples, the membership decided to form an organizational structure that mirrored the various activities that would need to be completed to support the creation of the MWR. On the basis of this, six workgroups were established.

- The steering workgroup
- The provider workgroup
- The technology workgroup
- Data standards and usability workgroup
- The patient privacy and security workgroup
- The public health and outcomes measure workgroup
- Economic outcomes workgroup

The steering workgroup included representatives from all the stakeholders. They were tasked with providing overall leadership and ensuring that the objectives and timelines were established and that each workgroup activity was in concordance with these objectives. The decision making process would be by consensus. The group firmly believed that this approach ensured the greatest buy-in.

On the basis of his discussions with colleagues in other areas and some cursory reading, Dr. Gibbs was aware that building relationships among the various participants in this initiative would be very important. To set the stage for this process, a retreat was arranged where the members of the various workgroups could come together. Dr. Gibbs noticed that although the idea was well received, participation in the retreat was not as high as he would have hoped for. He surmised that this might be related to the timing, and that the enthusiasm that the group displayed was more representative of their commitment.

He was also reminded of the fact that although the group unanimously agreed that the mission was improving patient safety and quality through the effective exchange of information, the motivations of the various stakeholders were very different. For example, the physician groups were largely interested in improving general

productivity by having relevant patient information available at the time of care. This would eliminate the need to try and locate patient's records and instead allow the physician access to comprehensive, integrated records that included all facets of a patient's care. The consumer groups were motivated by the possibility of patients now being able to have a more proactive role in their medical management that would hopefully eliminate the need for the numerous office visits. Both the academic and the community hospitals were encouraged by the idea that information exchange would improve efficiency by eliminating the need to track down records from other hospitals, physician practices, and laboratories. There were also other economic motivations of decreasing if not eliminating duplicative testing, enhancing disease management capabilities, and improving claims processing. Not too surprisingly, the payers were by far the most motivated as they would be able to realize benefits on numerous fronts, i.e. better utilization management, increased patient compliance, disease management, and decreased costs associated with duplicative laboratory and radiology tests. Over the course of time, the different motivations of the group would present some of the most challenging aspects of moving the project forward.

As the MWR involved so many stakeholders, the team participated mostly as a virtual team. In order to maintain effective channels of communication, most of the workgroups decided to meet on a monthly basis via conference calls. This approach was augmented by in-person meetings on a quarterly basis. Dr. Gibbs had noted that this approach was not without challenges. Some of these were amplified by the fact that the members came from different cultural backgrounds. It had been years since the inception of this project, and there were still some days when communication among the members seemed to be the biggest challenge.

Just as the coalition was on the verge of bearing the fruits of its efforts, Dr. Gibbs was forced to face the reality that the very tenet on which the organization had been formed was being challenged. He remembered well the early days when the key stakeholders were lobbying for a self governance approach. The culture of the group was very much one of self determination and taking control. Over time, this had become a strong magnet to keep the various stakeholders at the table. With the recent announcements by the leadership of the States' HHS agency that the RHIO should be state governed, Dr. Gibbs had significant doubts as to whether they would overcome this obstacle.

Viewpoints

The barriers to the nationwide establishment of RHIOs as the grassroots of national health information infrastructure are not terribly different from those to the failed creation of CHINs in the early 1990s. However, there is a marked difference in the motivation and leadership that exist in the current era. The stakeholders have broadened to include physicians, hospitals, skilled nursing facilities, home health agencies, laboratories and pharmacies, patients, vendors, payers, and the federal government.[2,3]

Lack of trust is the major barrier at almost all stakeholder levels. Patients have voiced their fears about who will have access to their most sensitive and private health information. They have insisted upon their personal ability to access their records, while insisting upon authorization for sharing, capacity to easily verify who has viewed their records, and emphatically refused to allow employer access of any kind.[4] This reassurance is not only expected from the provider guardians of their

healthcare documentation but also from the vendors who are responsible to create the technology to monitor and administer this information. Additionally, the CHINs of the 1990s lacking the internet were forced to use aggregate data repositories, further intensifying distrust and lack of control. Profiling physicians, as well as hospitals, raised the early issues about being competitively disadvantaged.[5] Only by satisfying trust, the industry can potentially hope to avoid the added complexity of "opting in" or "opting out" which could occur at the patient or the provider level.

The entire health-care industry is facing major expenditures for information technology and communication (ITC) equipment during the coming decade. Chief ITC officers are struggling to find the financial capacity to provide electronic medical records (EMRs) to their own organizations,[6,7] let alone additional funds to coordinate external sharing of information. It is estimated that approximately 80–85% of healthcare information on patients exists in small practices. The vast majority of these environments do not have EMRs. Organizations that are ITC operable question whether they should share information with organizations that will not reciprocate.[8] The development of managed care throughout the United States, as well as for-profit hospital networks and insurance underwriters, has compromised the cultural concept of sharing. The current health-care industry thrives on competition and sharing proprietary information is contrary to their bottom line.[8] Further reduction in fee-for-service visits by the expected enhanced quality of care management by the investment and implementation of ITC systems is almost a disincentive for this investment.[6] There are estimates of huge savings from RHIOs, primarily benefiting insurance underwriters, with the establishment of a national integrated delivery network. However, there are neither guarantees that employers will see reductions in premiums nor enhanced funding for healthcare provider's ITC needs. It is yet to be determined whether the pay for performance concept is a big enough incentive to overcome provider's financial hurdles.

Leadership which has been more local in nature needs to change to a national perspective. "Experience teaches us that the private sector does not have sufficient centralized power or the resources to lead an integrated NHII effort."[6] Isolated pockets of regional health information sharing are good demonstrations to justify public–private partnerships as the paradigm of the future. Local, state, and national politics must be put aside to avoid the problems that Dr. Gibbs has experienced. The federal government through funding of research and development has finally created a communications network, "the Internet," that may make data repositories of the early 1990s unnecessary. However, many enterprises may reject a collaborative strategy of "Co-opetition"[2] because they see "their e-health initiatives as a means to competitively distinguish them."[2] The American healthcare industry must look across the Pacific Ocean to Japan to understand that public–private partnerships and co-opetition can benefit competing health-care providers and promote the public good. In response to the Japanese public–private co-opetition in 1975 through 1985 overtaking United States in semiconductor industry, the United States created its own Cooperative Research Act of 1984. As a result of this act the United States regained its leadership in semi conductor research, development, and production. Currently the federal government is leading by example, as well as deterrence, as a result of the implementation of HIPAA. Major hallmarks of HIPAA include the establishment of standards for billing and coding, and penalties for breach in management of personal health information. The establishment of the Office of National Coordinator of Health Information Technology, as well as promotion by the Department of Health and Human Services

of a National Health Information Integrated Network (NHIN), is a prime example of leadership at the national level. The only issue that remains is how much leverage must be applied to the providers of health care so that they and the rest of the stakeholders fall in line with the concept of co-opetition. As distasteful as further unfunded mandates have been in the past this may be the necessity for the future.

Information Technology Environment

The creation of the Technology Plan for MWR was a daunting task. While most clinics, pharmacies, and hospitals have desktop computers that connect to the internet, few connect to integrated EMR systems. Like most other RHIO projects across the country, a key factor that exists even today, only around 25% of hospitals have implemented EMR systems while another 40% have contracted or just started their implementations.[9] Most of these systems are not full EMR implementations, typically utilizing just the clinical data repository (CDR), controlled medical vocabulary (CMV), and clinical decision support systems (CDSS) and inference engine. They are very basic and only provide partial solutions, i.e. stage 2 of the 7 stages of a full EMR system.[10] The EMR systems themselves are often different requiring new user training when going from one hospital's system to another.

Even though RHIOs are being rolled out, because of many perceived and real barriers, hospitals and physicians have not readily adopted EMR systems.

> "In general, physicians have known for some time that they will have to go to electronic records," says [C Kerry] Stratford [MD partner in St. George (Utah) Clinic, an eight-member family practice, who automated his practice 2 years ago] "The question is if they go willingly or put it off as long as possible. There is not a universal feeling among physicians that electronic records are the Holy Grail that will solve all of their problems. A lot of fear remains that electronic records will make the practice of medicine harder."[11]

These basic EMR challenges compound the issues that the leaders of the MWR needed to overcome to achieve its goals.

To help Dr. Gibb achieve his dream for the MWR, the technology work group utilized the implementations of an Israeli RHIO[12] built by Clalit Health Services and the guidelines setup by CAL-RHIO for the state of California[13] to build its technology plan and architecture. The key goal for MWR was to allow stakeholders to quickly and safely share patient clinical data, to improve healthcare, and reduce healthcare costs. The first thing that the group did was to insure that there was a clear line of communication among the member organizations. One of the basic tenets of a RHIO is its ability to share data by the use of electronic record and delivery systems. The problem was that many of the clinics and some of the hospitals did not have or only utilized the most basic features of an EMR system. Their primary mode of communication was faxing. The long term plan will be to convert these organizations to electronic medical record systems, but this will take time and money. The bridge gap solution until this is achieved will be procurement and distribution of vendor applications (examples such as DataFax and ProviderLink) which organize and maintain fax images. With hospitals receiving hundreds of faxes a week from other organizations, converting these faxes to indexed images allow any clinician to find the information on an available workstation. More advanced features of virtual fax services include the ability to automate transcription of clinician

hand-written notes via optical character recognition (OCR) This information would now be legible and easily added into the patient records of a hospital's EMR.

Having established the capability to communicate and organize clinical summaries between organizations without electronic records, the next issue that needed to be addressed was the how the stakeholders systems could understand each others data. To do this, the workgroup focused on data integration. Working together with the hospitals and clinics within the MWR, the workgroup created a data subcommittee that determined exactly what set of data (e.g. laboratory results, patient notes, x-ray scans, etc.) had to be shared among the MWR participants. The committee determined what standards were followed to insure that the data format from one member organization was the same as that from another. Examples of this include the usage of HL7 for the exchange of administrative data, use of SNOMED to define clinical terminology, and the HL7 RIM to provide a framework for describing clinical data. Additionally it utilized the internet as its communication infrastructure to leverage existing technological infrastructures.

Security and privacy of the patient data followed all of the HIPAA guidelines however there were still many questions that needed resolution by the patient privacy and security workgroup. This workgroup determined the authorization (who is allowed to review the data) and authentication (insuring the person is who s/he says s/he is) models to be implemented. This became more complicated as each hospital has its own authorization/authentication models internally for its interactions with partnering clinics. Therefore, a new set of models was applied on top of the existing hospital/clinic security. But MWRs models did not supersede the existing processes already in place. At the same time, access included a single log on and log off from the systems, which both enhanced usability and minimized security breaches. The plan insured that the data were properly encrypted and that all requests and transfers were logged and monitored, as well as retaining a full audit trail of data and their movements. The committee also determined the type of anti-malware (anti-virus, anti-phishing, firewalls, etc.) utilized and agreed on a common set of standards. This allowed the disparate IT groups within MWR the ability to leverage one another's work and to allow for easier deployment of secure systems.

The next step of the plan was to ascertain the performance and usability of the system. The key here was the ability to quickly access a patient's records. The technology chosen to deploy across MWR needed to respond to all requests for information in under 10 seconds so that medical professionals were not playing a waiting game for vital health information. While the performance/usability workgroup easily established performance metrics, usability was a more difficult issue. The workgroup started by creating concept and use cases that described how participants would utilize the systems within the RHIO. For example a new patient entering into a hospital requiring a record transfer from another hospital as well as a pharmacy electronically sending the patients's prescription history. These scenarios and use cases described how the system would be used. In turn, this insured that users were able to implement, test, and re-implement any part of the system as most medical professionals expected. Service level agreements were created among the participating organizations to clarify the performance and usability expectations within MWR.

Ultimately, the technology work group wanted to build a scalable (ability to handle large volume of data and requests for the data) and extensible (ability to add new features or applications) system. Meeting these goals the system handled the large volume of data and rapid increase in patient record information requests, and easily integrated new participants. The strategy was to build MWR utilizing a federated

model instead of a centralized one. As noted above, there were many stakeholder organizations within the MWR, which had already heavily invested in their own EMR systems. No one can afford to give up this investment in order to build a centralized repository of information. As well, the large volume of data spread out among the organizations within the mid-western region would not make it feasible to have only one central repository housing thousands of patients' data. Therefore, MWR had to be able to leverage the large number of existing disparate hospital, clinic, pharmacy, and other participant technology investments. While this made things slightly more complicated for data integration, it insured that the member organizations' own environments were minimally impacted. A centralized model would theoretically achieve a more global view of health information for a community, but the MWRs primary goal was more patient-centric, providing a patient's information irrespective of where it is stored across the network. A federated model achieved the goal of supporting universal data access while leveraging existing stake holder's technology infrastructures and investments.

When the workgroup originally modeled the sharing of data it was relatively easy to insure the accuracy of the patient data. But as more stakeholders were added and data volumes grew it became increasingly difficult to insure the accuracy of the data. For example, if hospital A has "Jon Smith," clinic D has "Jon P Smith," and hospital X has "Jonathan Smith," are they the same person? Accuracy of the data is vital for any RHIO in that mistakes may result in the wrong decision due to incorrect patient history linkage. To resolve this issue, it became clear a master patient index and record locator was needed. This service holds information authorized by the patient about where information can be found but not the actual information itself. This service improved the performance of patient record requests because now the system would only make requests to locations that have the patient's data as opposed to making requests to all participating organizations. This also allows for better security, privacy, and autonomy of participant institutions because it separates the task of identifying where the information is located from the actual releasing and transferring of information to authorized organization that is subject to participating institution regulations.[14]

By creating the above technology plan, the technology work group has created a RHIO architecture that can be leveraged by any State or National Health Information Network. To allow for clear lines of communication, MWR included virtual fax services to treat sheets of paper as portable digital images and utilized standards to allow for clear digital forms of communication. The latest technology is used to insure security and privacy with performance and usability in mind. By using a federated model, we would be able to utilize existing systems and distribute the workload across the entire network. With a master patient index and record locator, we would more accurately and more quickly access patient information and yet keep things more secure Just as the MWR has planned to leverage the existing infrastructures of the member health organizations, any State or National network will be able to do the same.

Focus of the Case

The Midwest RHIO is experiencing many of the same challenges as faced by many emerging RHIOs across the country. While the vision of the RHIO is powerful, there are many barriers that must be resolved prior to the successful level of data sharing that must be achieved to realize that vision.

Even though the MWR has been incorporated, it has most of the attributes of a virtual organization. What makes any RHIO unique is that to meet the goals of data sharing, it must bring together competitors and organizations of many different types and motivations to accomplish a very difficult goal. There are few success stories on how to effectively share patient data across an entire community. There may be significant legal risk to members who share patient data or decide not to share patient data, or if the data is shared in a flawed manner; the RHIO concept is too new to have a clear sense of the degree of risk absorbed by stakeholders.

Beyond the challenges they have faced to date and the challenges in common with other RHIOs, the MWR is now facing a competition for the future of data sharing in the State. The State HHS agency is intent on creating a RHIO in the State under its control. Even worse, the agency has started a bid process to create a competing RHIO. It is also clear that the State agency is seeking commercial firms to bid for the planning grant. The end result could be a RHIO managed and governed by a commercial for profit firm, or a RHIO governed by the State with a contract to a commercial vendor to manage the operations of the RHIO. In either scenario, the care providers and payers would not have any input and participation in the governance of data sharing in the State.

As it is unlikely that both the MWR and a State sponsored RHIO could exist, only one RHIO is needed. Therefore, the MWR must not only find a way to put its plans into motion but also deal with the challenge from the State agency.

The leaders of the MWR understand that they have reached a critical juncture in their effort. Dr. Gibbs and the other leaders of the RHIO need to create and execute a strategy in the short term to overcome the challenges.

Summary

Achievement of Dr. Gibb's dream of creating the Midwestern RHIO would allow the sharing of important patient data among the clinics, hospitals, pharmacies, and organizations within it. Five years of hard work has created the organizational structure to support the creation and maintenance of MWR with its primary goal to improve patient safety and quality through effective information exchange. With all of the different motivations and viewpoints, the key aspect is to resolve the lack of trust among all of the different stakeholders. Through leadership and expounding the return on investment of the RHIO, the benefits of "co-opetition" and breaking down of the barriers of trust can be achieved. The MWR has designed a technology plan and architecture to insure that health information can be accurately and effectively exchanged. Like many RHIOs, the MWR is at a critical juncture and needs to address both the expected challenges to sharing data and the unexpected challenge from a State agency.

Case Analysis

Politics

The MWR is a nonprofit organization created to achieve clearly defined goals. The leaders of the MWR have been very political, in the sense they have committed themselves to activities that are not necessarily part of their formal job. They have

acted in this political manner to accomplish something that had not been done before, i.e. get many organizations to work together and share patient clinical data for the benefit of patients. The State government is totally a political entity, and it is using political means to achieve its goal of controlling the sharing of patient data in the State.

Power

Power is the capacity to influence behavior. The State agency is clearly attempting to use its power to influence the MWR. Certainly, the leadership of the MWR is hoping to use its power, and perhaps create more power, to counter the efforts of the State and bring the vision of the MWR into fruition. Both the leaders of the MWR and the State agency feel it is important to have power and some level of appropriate control over the sharing of patient clinical data in the State.

Stakeholders Satisfaction and Retention

Just as employee satisfaction can be measured and impacted, the stakeholders of the MWR have measurable satisfaction in how the MWR is meeting their needs and goals. The MWR itself was formed to meet a need, the sharing of patient data; as it was not strictly required to share patient data, and care providers got no revenue from sharing, all stakeholders had a more intrinsic reason to share data leading them to support and participate in the forming of the MWR. Each stakeholder's satisfaction will ebb and flow, given the progress the MWR makes towards its goals. It would appear that the efforts of the State agency may negatively impact current stakeholder satisfaction in the MWR.

Strategic Planning

Strategic planning is the process of developing strategies to reach a defined objective. Compared to tactical planning, strategic plans focus on a major goal that often is a dramatic change from the status quo. While the leaders of the MWR must pay attention to many tactical goals, it is critical that they continue to focus on their core strategic goal of the state-wide sharing of patient data. As most strategic goals are, the MWR is trying to achieve something new, difficult, and intensely challenging. The leaders of the MWR have worked hard for 5 years to achieve their strategic vision, and until they reach their goal, they must continue to aggressively pursue their strategic plan, and modify it as needed to deal with new issues and challenges.

Trust

With the delay that is expected from the State's desire for control fabricated on the concern for privacy and regulation compliance, it is essential that the RHIO members embark on some type of small project. Just a small success can demonstrate to the State that what exists is HIPAA compliant and can help maintain momentum. Finding medical homes for emergency department patients or acting as clearing house to see if the uninsured might be eligible for insurance could be considered. Either would be good candidates for funding from health plans or employers.

Change Management

The organizations that are already technology sophisticated need to realize that providing and viewing integrated patient information will be another phase of change. Organizational resistance manifested by structural inertia and resource allocation cannot be minimized. Ability to view all data internally, including information merged from outside sources (labs, x-rays, primary offices, etc.), ideally should be transparent within the existing EMR. Integrating data with needed highlights and/or annotation to identify their external source is no small task. The option of an interim but less seamless process would have information viewed as an "External Data Button Web Page." This would be less burdensome technologically to the organization but require physicians to open a second document which may be less than ideal. Moving forward, organizations can and should place this responsibility upon the vendors of EMRs as the interoperability standards for the CCR (Continuity Care Record) are published.

Leadership

The standards from the public private partnerships and consortiums are more than enough to throw back at the State that another layer of regulations and leadership is unnecessary. The current concept of RHIOs or LHIOs (Local Health Information Organizations) as the leaves on the tree feeding the National Health Information Network (NHIN), that is a much higher node than the State, is our national healthcare system's long term goal.

Culture

From the aspect of organizational culture, MWR is a cosmos of differing characteristics. Some organizations are team oriented while some are innovative and risk taking. Because of this multiplicity, it was important that we all leveraged each other's differences instead of requiring similarity. This understanding of cultures allowed us to achieve a key goal before we were able to exchange health information, the ability to trust each other.

Project Management

Because of the many organizations that had worked together and our multitude of tasks, it was extremely important that the MWR created and utilized a strong project management process to the creation and maintenance of MWR. This would include realistic schedules and plans to implement the planned technology in phases, yet flexible in our implementations. It was especially important that our project management team had built consensus among all of our stakeholders so that we could deliver a framework for specific, measurable, and time-bound goals.

Virtual Teams

In the context of the MWR, the various stakeholders are geographically dispersed. In order that the various working groups get their tasks accomplished, they formed a virtual team that would meet monthly via conference calls. Virtual teams offer a lot of flexibility in how people can come together, but establishing rapport and

communication among the various participants is a challenge. Members of the team have to come to know and trust each other in a virtual framework. Building trust is magnified in this context as trust is such a key component of making the RHIO a success.

Communication

Effective communication is the basis of all relationships. There are various different ways in which communication features in the MWR. Firstly the various workgroups had to establish clear means of communication within their respective groups. Secondly they had to establish channels of communication with the Steering Committee. Thirdly the various stakeholders had to communicate back to their various constituents to ensure that they had the support of their member organizations. Because the teams functioned mostly in a virtual context they had to ensure that key information was not lost in translation. Retreats were organized to ensure that there was some opportunity for the Human Moment as described by Hallowell[15].

Motivation

By definition, motivation is the willingness to exert high levels of effort toward organizational goals, conditioned by the efforts' ability to satisfy some individual need. In the MWR there were various stakeholders and the motivations of the various stakeholders were very different. Although everyone was committed to the overall mission of patient safety and quality, many of the stakeholders were motivated by how their respective organizations would benefit from the effective exchange of information. As many of the organizations were competitors, they had to buy-in to the idea of "co-opetition." Working to ensure that individual motivations aligned with those of the organization was one of the key challenges of the MWR.

Groups vs. Teams

A group by definition consists of two or more individuals who interact, are interdependent, and have come together to achieve a particular goal. Some characteristics of groups are that they share information, they generally lack synergy, and they may have a mix of skills that may not be complementary. Teams on the other hand consist of individuals whose efforts result in a performance that is greater than the sum of the individual inputs. Some characteristics of team are that they stimulate creativity, they depend on a collective performance, and they are accountable to both themselves and the team.

On the basis of the criteria highlighted above the MWR is a group. Fundamental to the success of the RHIO is the effective exchange of information among the various stakeholders. The various stakeholders are therefore interdependent as they all have some information that the other organizations could potentially benefit from. The various stakeholders were brought together to pursue the common goal of information exchange. The skills of the various participants are not necessarily complementary and because of their disparate motivations the groups often lacked synergy. By their nature, RHIOs lend themselves to the formation of groups rather than teams.

Question

1. What should Dr. Gibbs focus on next?

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