A Study of Knowledge Sharing Practices Between Healthcare Workers

By

Susan Morrow

BPT University of Manitoba, 1975

A thesis submitted to partial fulfillment of

the requirements for the degree of

MASTER OF ARTS, Interdisciplinary Studies

We accept this thesis as conforming to the required standard

.....
Project Supervisor, Dr. Lesley Degner

…….
Acting Director, School of Information & Society, Dr. Tony Boydell

…….
Director of Interdisciplinary Studies, Dr. Greg Cran

ROYAL ROADS UNIVERSITY

August 29, 2006

ISBN:978-0-494-50419-2

Table of Contents

Chapter One – Study Background

Problem/Opportunity

This project is a study of knowledge sharing within two hospital Units at the Health Sciences Centre [HSC] in Winnipeg, Manitoba, Canada. The HSC currently has a major focus on evidence-based practice throughout the organization, with many ongoing initiatives to move the best research findings into the minds and hands of the health care providers that work in the centre. The concept of knowledge translation is being profiled in the organization recognizing that the transfer of knowledge is multi-dimensional. The Centre is committed to the pursuit and translation of knowledge. The ultimate goal is to ensure safety and improve outcomes for the patients of the hospital.

Over the past decade, there has been an increasing emphasis on evidence-based practice within medical specialties. Evidence-based medicine [EBM] is defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individuals" (Sackett, Rosenberg, Grey, Haynes & Richardson, 1996). Professional organizations as well as health insurers initially embraced the concept as a simple application of research findings to clinical practice to produce the best results for the patient, as evidenced in this example:

> The principle of evidence-based practice is to de-emphasize intuition or observational clinical experience as a basis for making physiotherapy care decisions. Physiotherapists want to be confident they have the latest research, the most thorough understanding of treatment protocols, and the ability to treat a client with the assurance of the backing of solid guidelines (Contact, 2002, p.15).

Of course, the uptake of scientific evidence was not such a simple process, as clinicians discovered that the evidence could be frankly contradictory, and proponents of EBM discovered that simply presenting the best evidence was not sufficient to change clinician behavior (Strauss, 2004). As well, in order to satisfy internal validity requirements for randomized control trials, more complex cases

would frequently be screened out of studies. In fact, more complex cases are the norm rather than the exception in healthcare practices, rendering the research evidence of questionable value to the clinicians in many cases (Knottnerus & Dinant, 1997). Several articles have underscored the difficulties of using research evidence in practice (Retsas, 2000; Niedzwiedzka, 2003; Metcalfe et al, 2001). However, the central hypothesis of EBM is solid. Uptake of current research findings integrated with shared clinical expertise is an essential activity of any healthcare professional, working in a knowledge-based organization.

A hospital is a classic example of a knowledge-based organization, described as "an organization composed largely of specialists who direct and discipline their own performance through organized feedback from colleagues, customers, and headquarters" (Drucker, 1998). When one considers this description in the context of a hospital Unit, the need for knowledge sharing, as well as knowledge acquisition, becomes evident. The capability for increased knowledge within an organization rests both on the receptivity of specialists, and the opportunities to learn within a community of practice. Knowledge is both a "thing" and a "capability" (Snowden, 2005). EBM has provided a focus on the "thing" that is knowledge, but the "capability" is still poorly understood. As well, the study of knowledge assets in organizations tends to focus on the explicit assets like documents, files, charts, reports etc, and ignore the large body of tacit knowledge that is held by the staff of the organization, and how this asset is shared within the organization.

The primary problem addressed in this project is that the HSC currently has no way of knowing how knowledge flows effectively through the organization – from where it is to where it is needed.

The central research question of this study is:

How do the professional, managerial, and support staff of Units RR4 and RR5 of the Health Sciences Centre share knowledge, both explicit and tacit?

The central question is further divided into the following sub-questions:

1. How is explicit knowledge shared within and between disciplines?

2. What are the tacit knowledge sharing practices in each of these Units?

3. What are the barriers and attractors to knowledge sharing on RR5 and RR4?

Conducting this study on RR4 and RR5 at this time provided both a challenge and an opportunity. At approximately the same time as the study was to begin, staff on the two Units were informed by the Regional Health Authority that the Units would be merged, with some patients moved to another site. All staff were required to re-apply for their jobs or "bump" other staff to secure a job in another part of the hospital. Managers needed to downsize and reorganize staffing for the merged Unit. Studying knowledge flow in a time of organizational and personal stress was a challenge. However, there was also an opportunity to study both Units, and potentially assist with transition strategies to minimize cultural clash when the Units were merged.

Impact of the Problem

Managing a group of knowledge workers is very different from traditional "command and control" practice that is popularized in rigidly hierarchal organizations, because knowledge organizations tend to have fewer management layers, and a broad base of knowledge workers. (Drucker,1998). In a knowledge organization, specific contextual knowledge can be found anywhere in the system. In order to make use of that expertise, managers need to know how information is flowing through the Unit – from

where it resides to where it is needed. Barriers to knowledge flow need to be circumvented or eradicated to achieve maximal use of resources. According to Garvin (1998, p. 52), learning organizations are skilled at five main activities: systematic problem solving, experimentation with new approaches, learning from past experience and history, learning from the experience and best practice of others, and transferring knowledge quickly and efficiently throughout the organization. All of these activities require a culture that encourages sharing of information. If the HSC cannot assess the degree of knowledge sharing, then organizational change to enhance or improve the system is not possible.

The impact of knowledge sharing practice is also seen in quality of patient care. The needs of a patient with complex impairments are many, and experts from many different fields are needed to provide treatment, usually simultaneously rather than sequentially for rehabilitation patients. Treatments do not exist in isolation. The need for free and ongoing knowledge sharing between providers is essential to ensure that the patient receives the right mix of the right treatments at the right time. (Hansen et al, 2001). An important issue for the administration at HSC is patient safety in its broadest sense, meaning that an integrated healthcare team, sharing evidence-based information freely, is providing the best care.

The Organization

The 2005 Annual Report of the HSC states:

> The Health Sciences Centre is the largest health care referral, teaching and research Centre serving residents of Manitoba, Northwestern Ontario and Nunavut. Located on 32 acres of land in central Winnipeg, the Health Sciences Centre is one of the largest facilities of its kind in Canada and a major referral centre for complex health problems requiring expert consultation and sophisticated investigation and management. Designated as the Trauma Centre for Manitoba, the Health Sciences Centre is also the Centre for transplants and for most hospital-based pediatric care in the Province. Highly skilled teams of professional staff provide acute care and continuing care to the ill and

injured. (P.1).

In 2005, there were 29,472 patients admitted to the hospital, which has a capacity of 832 beds. There are 6107 staff, 618 medical staff, and 1157 volunteers to care for the patients. (HSC Annual Report, pp. 23-24).

Within the HSC, RR4 is a 22-bed medical Unit for patients recovering from amputations and spinal cord injuries. RR5 is a 28-bed Unit for patients recovering from acquired brain injury and stroke. Staffing for the two Units is composed of the following:

	RR4	**RR5**
Physiotherapists	5	6
Occupational therapists	2	5
Rehabilitation assistants	2	2
Recreation coordinator	1	1
Social worker	1	1
Counselor	1	0
Registered nurses	16	20
Licensed practical nurses	1	0
Unit assistants	12	14
Unit clerks	2	2
Physicians	4	3
Nursing assistant	0	1
Speech language therapists	0	2
TOTAL	**47**	**57**

Shared between the two Units are a manager of patient care, a clinical resource nurse, an administrative assistant, and an ESP scheduler (payroll). The two Units are managed under the umbrella of the Rehab Geriatric program of the Winnipeg Regional Health Authority (Appendix A). Data shows an average length of stay for patients on RR4 of 32-47 days. Average length of stay on RR5 is 37 days. These are much higher that other Units in the hospital, reflecting the nature of the rehabilitation process.

As Drucker points out (1998) a knowledge driven organization typically is composed of a group of specialists who form ad hoc teams in response to the needs of a given problem. There tends to be fewer management layers in a knowledge organization. It is evident that in structure and composition, these two Units strongly reflect that description.

Chapter Two – Literature Review

For this project, the areas of the literature that are relevant to review include:

1. The nature of knowledge and information
2. Theories of knowledge flow
3. The use of social network analysis and identities

The Nature of Knowledge and Information

A common understanding of the relationship between data, information and knowledge holds that information is data that has meaning, or data in a specific context. For example, data such as heart rate and blood pressure becomes information when identified with a specific patient. When a healthcare provider uses that information to direct a specific course of treatment, the information has been converted to knowledge. This project is concerned with both information and knowledge, and the two terms may be used interchangeably at times.

There are generally two types of knowledge discussed in the literature, with different researchers assigning them different names, but I will use the most often cited terms "tacit" and "explicit" to differentiate between them. Furthermore, as I will discuss shortly, "knowledge" is an elusive term, as both an individual and an organization can hold it, and it can be both a "thing" and a "capability".

A review of knowledge literature reveals essential agreement about what constitutes tacit and explicit knowledge. (Connell, 2003; Augier & Vendelo, 1999; Haldin-Herrgard, 2000; Gao & Nakamori, 2002; Johannessen, Oliesen, & Olsen, 2001). Most authors cite Michael Polanyi as the original developer of these two dimensions of knowledge (Polanyi, 1959, in Gao et al. 2002). Explicit knowledge is described as being able to be codified, written, formalized, and easily communicated. Much of the knowledge base in the EBM movement is explicit, scientifically proven knowledge. Explicit knowledge in organizations rests in the policy and procedural manuals and Intranet systems. In healthcare providers,

explicit knowledge resides in the formal training courses, textbooks, and reference manuals that they use.

Tacit knowledge is recognized as personal, embedded in practice, related to experience, and more difficult to communicate. Many authors have described tacit knowledge in different ways. Dixon (2000, p. 11) coined the term "common knowledge" to describe the knowledge that is gained from doing the work, (the "know how" as opposed to the "know what"). Polanyi emphasizes that tacit knowledge is action oriented, and processed based. He argues that tacit knowledge belongs in the personal domain, but is embodied in the meeting between the individual and the culture that he belongs to (in Johannessen et al. 2001). Snowden (2005, p. 3) calls this narrative knowledge, because "we always know more than we can say and we will always say more than we can write down."

Tacit knowledge is also discussed in the context of sustainable communities, referred to as "active information", and situated it in the culture of a community (Bopp and Bopp, 2001). They refer to it as "the pattern that connects" and emphasize the importance of this information in human systems transformations. Bushe (1998) discusses the concept of "inner dialogue" in a community, which is mainly carried through the sharing of stories. He cites inner dialogue as an important change agent in a community, through the use of appreciative inquiry to mine the stories of the "best that we can be".

Regardless of the definition or the context, it is agreed that both explicit and tacit knowledge is present in every organization and every individual. There is general agreement that attention to tacit knowledge sharing is a key organizational lever to achieve innovation and strengthen the organization. (Mascitelli, 2000; Johannessen, et al, 2001).

In another sense, knowledge can be both a "thing", as in a body of knowledge (usually explicit), and a "capability". Polanyi suggests that the capability to understand and transform information to knowledge resides in the individual, and is based on tacit knowledge he/she already has; hence, tacit knowledge always underlies explicit knowledge. An intriguing ethnographic study of healthcare decision-making

strategies highlights the importance of tacit knowledge. (Gabbay & le May, 2004). They found that doctors and nurses relied on "collectively reinforced, internalized tacit guidelines…once compiled, each individual practitioner's mindlines were adjusted by checking them out against what was learnt from brief reading…"(p. 3). In a knowledge-based organization like the HSC, the successful implementation of EBM is closely related to the tacit knowledge underpinning of explicit knowledge uptake. This is supported by several authors (Metcalfe et al, 2001; Niedzwiedzka, 2003; Retsas, 2000).

Knowledge Sharing and Flow

"Tremendous improvements in innovation and operational efficiency in healthcare systems can be found when knowledge is exchanged between normally separate groups of people." (Canadian Health Services Research Foundation, 2006). This quotation is stated in the context of knowledge sharing between health researchers and health policymakers, but applies equally to separate groups of healthcare workers within one institution.

There has been a trend in organizations to create internal knowledge repositories, or to improve access to Internet resources as a way of assisting employees in utilizing knowledge relevant to their work. Unfortunately, these systems are often underutilized by workers in organizations, because they reinforce the metaphor of the knowledge warehouse where vast amounts of information are stored and retrieved as necessary (Dixon, 2000). In fact, the more important use of knowledge in organizations is through re-cycling, or sharing knowledge between people.

The concept of sharing is described by Dixon as both "giving away" and "holding in common". Giving knowledge away is an inherently voluntary process, and requires a trust relationship with the recipient. In work cultures with low levels of trust, where knowledge holding is the key to advancement, the only information that will be shared will be the essential. In contrast, Snowden describes the practice of "trust tagging" where individuals are introduced to other individuals within the organization through their trusted relationships (Snowden, 2005). The organizational culture that supports trust tagging will have a far greater opportunity to build capacity and innovation through sharing of knowledge. In this project, I have identified the trust relationships that exist between staff.

The ability to hold knowledge in common requires a certain level of receptive capacity of the individuals in the group. In a hospital, specialists share a common language that allows for a receptive capacity within that specialty, and excludes those who do not understand the language. Both Dixon (2000), and Carver (2001) describe knowledge flow processes as a function of the type of knowledge being exchanged (tacit or explicit), the receptive capacity of the receiver (level of abstraction), and the nature of the task being performed (routine or non-routine).

On another level, Nonaka and Konno (1998) describe knowledge flow as "a spiraling process of interactions between explicit and tacit knowledge" (p. 42). Their model, called the SECI model, has application in thinking about knowledge flow within a healthcare Unit. Briefly described, the four steps in the knowledge creation process are socialization, externalization, combination, and internalization.

Socialization refers to the sharing of tacit knowledge between individuals with physical proximity to each other, through observation and informal conversation. The environment of a healthcare Unit provides rich potential for socialization. For example, the activity of caring for a patient jointly with another person creates the context for shared learning.

Externalization is the conversion of tacit knowledge – the expression of knowledge in a form that is comprehensible to others. This is the stage that requires some common language, and lower levels of

abstraction to achieve. This stage involves dialogue, and in the context of this project, may occur most commonly during daily shift reports and regular rounds.

Combination is the stage of converting explicit knowledge into more complex explicit knowledge. In this stage, the dissemination of new knowledge from courses, database searches, and the externalization stage is the prime activity.

Internalization is the conversion of new explicit knowledge into the tacit knowledge base of the organization, with each individual understanding how the new knowledge fits with his/her role within the organization. This stage requires the use of formal knowledge in real-life situations, to create new tacit knowledge. Some practice reflection is needed to successfully internalize knowledge (Locklear, Gondocz, & Thivieerge, 2004).

All of these frameworks for knowledge transfer assume the equal importance of tacit and explicit knowledge sharing. There is also agreement in much of the literature that knowledge sharing which includes making tacit knowledge explicit is important to an organization – Johannessen et al (2001) state "hence, for companies, the challenge is to make tacit knowledge at the personal level explicit at the organizational level [externalization], to ensure collective reflection [internalization]". However, not all experts agree. Snowden (2005) makes a valid argument that not all knowledge should be openly shared, and that the goal of an organization should be to allow informal communities of practice to operate without fear that all of their knowledge will be made public. He argues that the community should be approached to assist with problem solving, and may voluntarily externalize the appropriate knowledge to the larger organization without losing their trusted relationships within the community. Again, he emphasizes the fundamental role of trust in the knowledge sharing relationship. Both Nonaka and Snowden emphasize that knowledge as a resource is most effective when used specifically at a certain time and place, a "just in time" management principle that has been used successfully in other business contexts, specifically the manufacturing sector. This echoes one of the basic tenets of knowledge, that we

only know what we know when we need to know it. In this project, the participants were asked to identify the ease of accessibility to information sources when they need them.

Social Network Analysis and Identities

How do people find the knowledge they need to do their jobs? One might assume that the primary sources would be the Web, organizational manuals, Intranets, files, course notes, and textbooks. In fact, a study of engineers and scientists found that they were five times more likely to use a personal network to access the information they needed. (Cross, Parker, Prusak & Borgatti, 2001). Social network analysis (SNA) or organizational network analysis (ONA) uses a systems analysis approach to map the human relationships within an organization. Krebs states "knowledge networks are mapped that uncover interactions within and across the boundaries of the organization. These visualizations are in effect business x-rays of how things actually get done" (Krebs, 1998, p. 2). Social network analysis is being used in healthcare research and health services delivery, in areas such as infectious disease epidemiology, referral patterns, and service integration (Hawe, Webster, & Shiell, 2004; Lewis, 2005).

Cross and his colleagues conducted a social network research project that has great application to this project (Cross et al, 2001). In their research, they identified four critical aspects of successful network relationships:

Knowledge – knowing what other people know in an organization tells a person who to ask for expert advice.

Access – being able to access that person in a timely way to ask the question.

Engagement – how well the person responds to the question, how well they engage in the problem solving.

Safety – the level of trust in the relationship.

After identifying these characteristics, they applied social network analysis to assess information flow and to map the relational networks of several different groups of managers. Using the data, they

were able to recommend changes to the organizational structure and practices to enhance knowledge sharing opportunities. These four attributes formed the basis of the questionnaire in this project.

Snowden (2005) provides a critical analysis of the SNA methodology, and identifies some weaknesses that were important considerations for this project. Usual SNA asks people to identify *individuals* with whom they have knowledge relationships; even though the names are omitted from the published data, there is significant risk that people will provide gamed responses. For example, they may indicate that they have a strong relationship with a direct manager, or a poor relationship with a rival for political gain. In this project, *identities* rather than *individuals* were used for the questionnaire. The result of using identities was to dilute some of the information available from the network analysis; i.e. rather than visualizing each person's network, the study mapped the networks of groups of nurses, doctors, allied health, Unit assistants, managers, and support staff. For the purpose of this study – to identify how the professional, managerial and support staff share knowledge – this level of detail was adequate. Given the highly charged environment of change within the two Units, the likelihood of gamed answers was lowered when individual names were not being used.

Chapter Three – Conduct of the Research Study

Research Methodology

A quantitative approach was used to identify and analyze current knowledge sharing practices between staff and management. Grounded theory design was applicable to this study because the theory proposed by this study is based entirely on the emergent data from the participants. There was not a strong body of knowledge in the existing literature to support a hypothesis at the outset of this project. The theory emerged through a process of collecting data, evaluation, and identification of themes.

Originally, this study was also designed as a case study, comparing the two Units for similarities and differences. This aspect of the project needed to be eliminated, as staff was in transition during the study from one Unit to another, or to another location entirely.

The qualitative aspect of the study (Knowledge Cafes) originally planned as a follow-up to the questionnaires, could not be conducted. Following the merger of the two Units, the original cafes were modified in duration, from 1 hour to 30 minutes, on the advice of the Unit manager. A total of six different cafés were scheduled over two weeks, and staff was invited to attend the one that best suited their schedule. Unfortunately, no one accepted the invitation to attend, and the cafes were cancelled. In conversation with the Unit manager, she stated that the merged Unit was still experiencing great difficulties in combining the two cultures, and the staffing level was not up to full, so that the staff also felt pressured with their responsibilities on the Unit.

Data Gathering Tools

A questionnaire was used to gather the data for the study (Appendix B). The questionnaire was designed to use SNA to study knowledge flow. The questionnaire was distributed with a consent form to all staff on both Units. The initial time frame for completion of the questionnaire was two weeks, but was

extended to four weeks as the challenge of convincing staff to complete the questionnaire became evident. There were low levels of trust communicated to the researcher, who was seen as an "outsider" at a time when other "outsiders" had created great stress. Despite this, responses were obtained from 40 staff and management, with representation from all groups.

There were five questions to answer. In each question, the participants placed a valued answer, ranging from 0 to 3, to indicate the frequency of their communication. The questions were based on the qualities that promote effective knowledge sharing in organizations, as described by Cross et al. (2001). These four qualities were: knowledge, access, engagement, and safety.

Question 1 asked, "Which of these groups have individuals that *you turn to for information you need to do your job?*" This question attempts to identify how strongly the participants feel that they know "experts" to go to for the knowledge they need. The term "expert" is used loosely – not in the sense of "medical specialist", but simply as someone who has knowledge that you need to get your job done.

Question 2 asked: "Which of these groups have individuals that *you would seek to help you understand the meaning of information* you need to do your job?" This question deals with the aspect of engagement – whether staff knew of individuals who would take the time to engage with them in understanding information.

Question 3 asked: "Which of these groups have people that *you can easily access for information* when you need it? This question deals with the aspect of "just-in-time" accessibility of knowledge.

Question 4 asked: "Which of these groups have *individuals that you feel comfortable discussing work issues with?*" This question addressed issues of trust relationships.

Question 5 asked: "Which of these groups have individuals *with whom you regularly communicate (not including written communication)?*" This question was posed to assess the frequency of tacit knowledge exchange on the Units.

The "groups" that the participants were asked to consider included all of the staff – support staff, Unit assistants, allied health, doctors, and nurses, as well as patients and other Units. Patients were included to assess the role of the patient as knowledge broker on these Units. Other Units were included to assess the degree of knowledge sharing outside of the immediate work community.

In addition, participants were asked to indicate which group they belonged to, and how long they had worked in the Unit. Regarding explicit knowledge sharing practices, apart from the individual written patient files, the staff communicates in a number of formally scheduled meetings and rounds. The Unit managers, in consultation with the staff, listed these scheduled meetings. (Appendix D). There was not an opportunity to study these meetings/rounds, or to study the written communication in the patient files. These would both be excellent subjects for future studies.

Study Conduct

Following the collection of the questionnaires, the data was analyzed using Ucinet and Netdraw software (Borgati, Everett & Freeman, 2002) for the analysis of the SNA, and for drawing diagrams of the networks. In this type of analysis, "actors" are defined as "network members that are distinct individuals or collective Units" (Hawe et al, 2004). In this study, actors are both *groups* of nurses, doctors, allied health, support staff, etc and *individuals* within these groups. However, the intent of the study was to examine the relationships between groups of actors, and, as such, the individual actors responses were grouped for comparison. The term "relational tie" is used to describe the links between actors within a network. For each question, and for each group of individual actors, the valued data was entered into a matrix. Then, the data was dichotomized for analysis, so that a valued response of 0 (never) or 1 (rarely) = 0, and a response of 2 (sometimes) or 3 (frequently) = 1. (See example in Table 1)

Table 1

Question 1 - Relational Ties for Unit Assistants

Valued Data → Dichotomized Data

	RN	MD	AH	UA	SS	MGR	P	OU
UA1	3	1	2	3	0	0	0	0
UA2	3	0	0	0	0	0	0	0
UA3	3	2	1	2	1	2	2	1
UA4	3	0	0	3	0	0	0	0
UA5	3	0	0	3	3	2	2	1
UA6	3	1	0	3	0	2	2	0
UA7	3	0	2	0	0	2	0	0

→

	RN	MD	AH	UA	SS	MGR	P	OU
UA1	1	0	1	1	0	0	0	0
UA2	1	0	0	0	0	0	0	0
UA3	1	1	0	1	0	1	1	0
UA4	1	0	0	1	0	0	0	0
UA5	1	0	0	1	1	1	1	0
UA6	1	0	0	1	0	1	1	0
UA7	1	0	1	0	0	1	0	0

Note. Rows represent individual respondents; columns represent identity groups. RN = nurses, MD = doctors, AH = allied health, UA = Unit assistants, SS = support staff, MGR = managers, P = patients, OU = other Units.

The data for each group of individual actors (nurses, doctors, allied health, support staff, managers, Unit assistants) was then joined into one matrix for each question.

The joined matrices for each question were then studied using three criteria:

- **Centrality**: Measures of centrality identify the most prominent actors (groups) in the network, or the "key" players. In this study, two measures of centrality were calculated, and visualized using Netdraw.
    1. Degree centrality is the total of all the other actors connected to a particular actor. This is basically a popularity measure, with the highest scores representing many incoming and outgoing ties.
    2. Betweenness centrality is the measure of the number of times an actor connects other actors, who would otherwise not be able to reach each other. This is essentially a gatekeeper role, and a high score indicates higher power in the network as these actors control the flow of information between other actors.
- **Density**: Calculation of network density identifies the proportion of all possible relational ties that are actually present. This is a measure of how loosely or tightly the network is connected, and may yield information about how quickly information might diffuse through the network, and the amount of social capital present between the members of the network.
- **Connections:** An analysis of connections between actors identifies the degree to which the different actors are *sources of relational ties* (information sending), and *recipients of relational ties* (information receiving). This data can reveal which actors may be more prone to "information overload", and which actors are most influential in the community.

Chapter Four – Research Study Results

Study Findings

Degree centrality.

The following diagrams show the degree centrality maps for each question, generated by Netdraw. The lines in each drawing represent the relational ties reported by the respondents in the questionnaires. The nodes represent the groups with whom they share information, and the size of the node is representative of the number of relational ties – a proportionately larger node indicates more ties.

Diagram 1

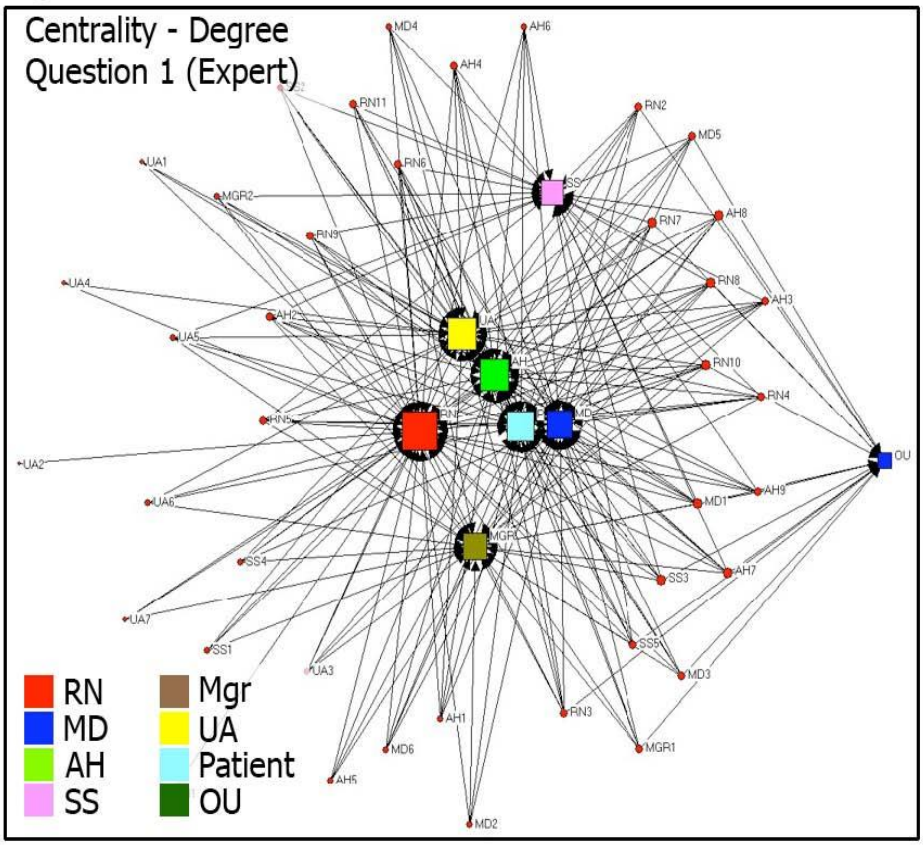


Diagram 2

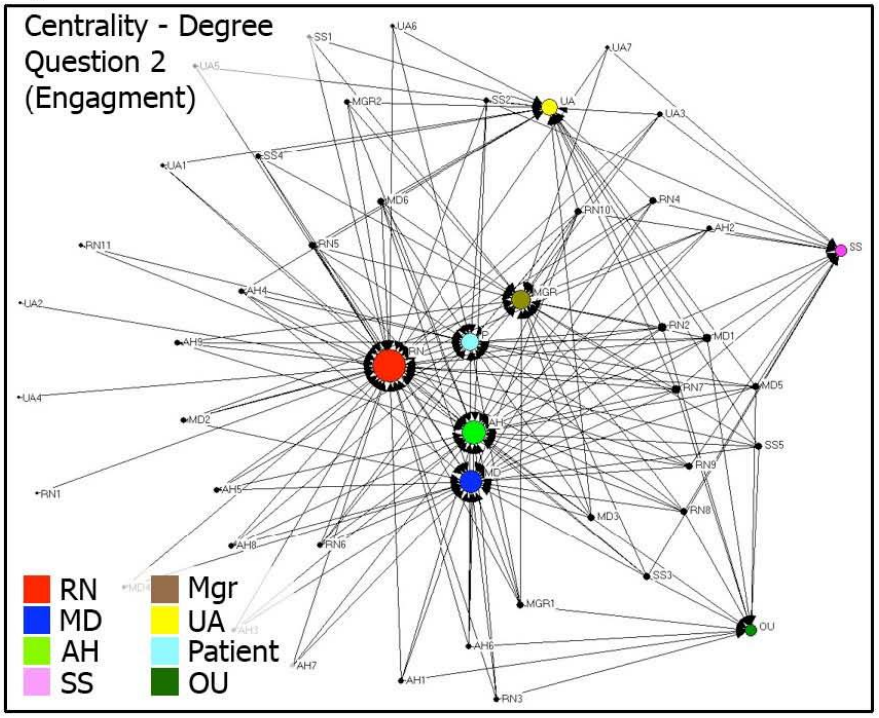


Diagram 3

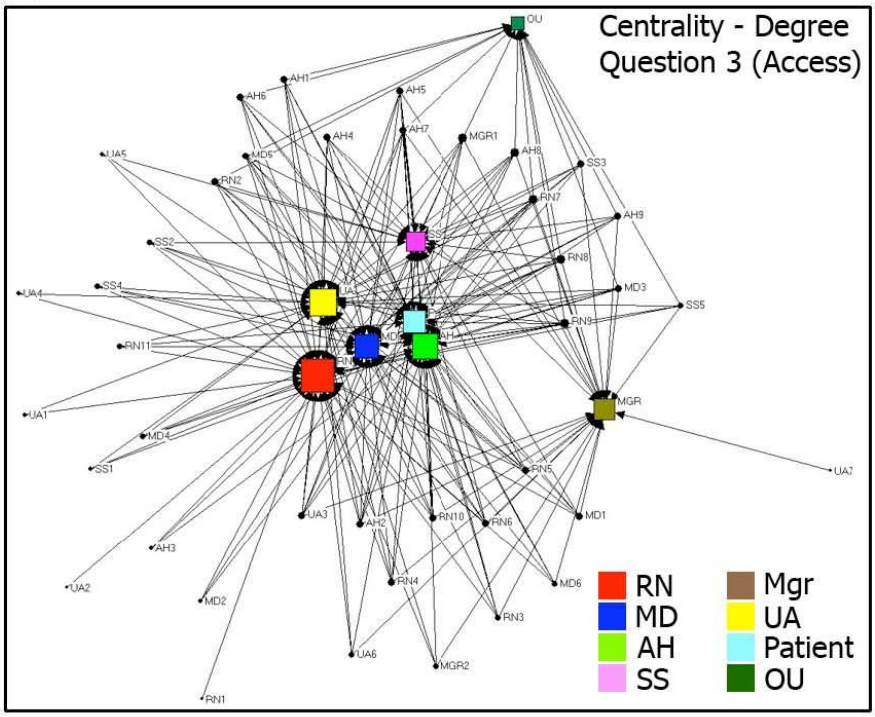


Diagram 4

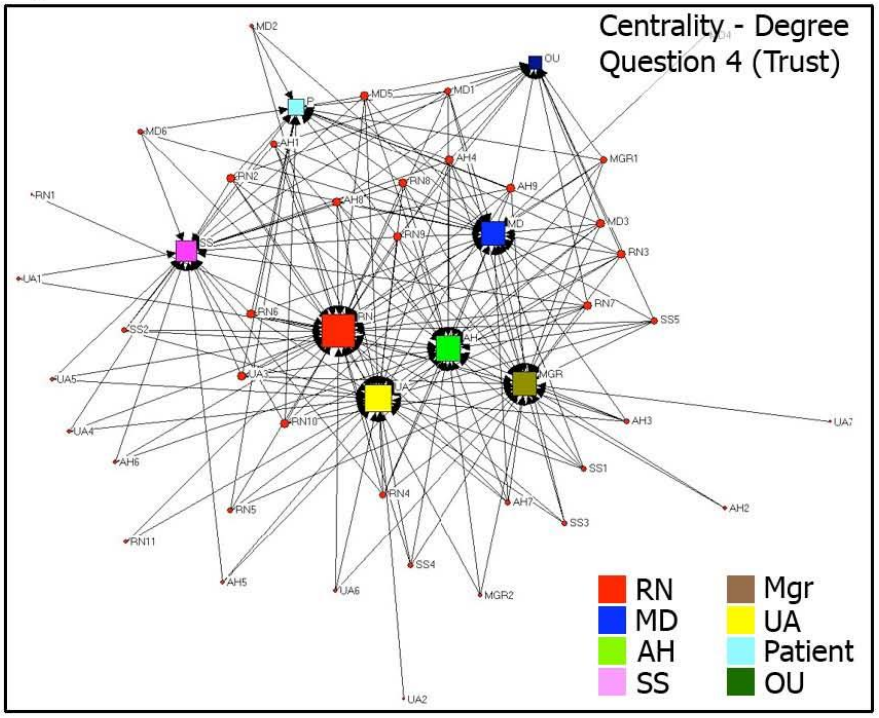
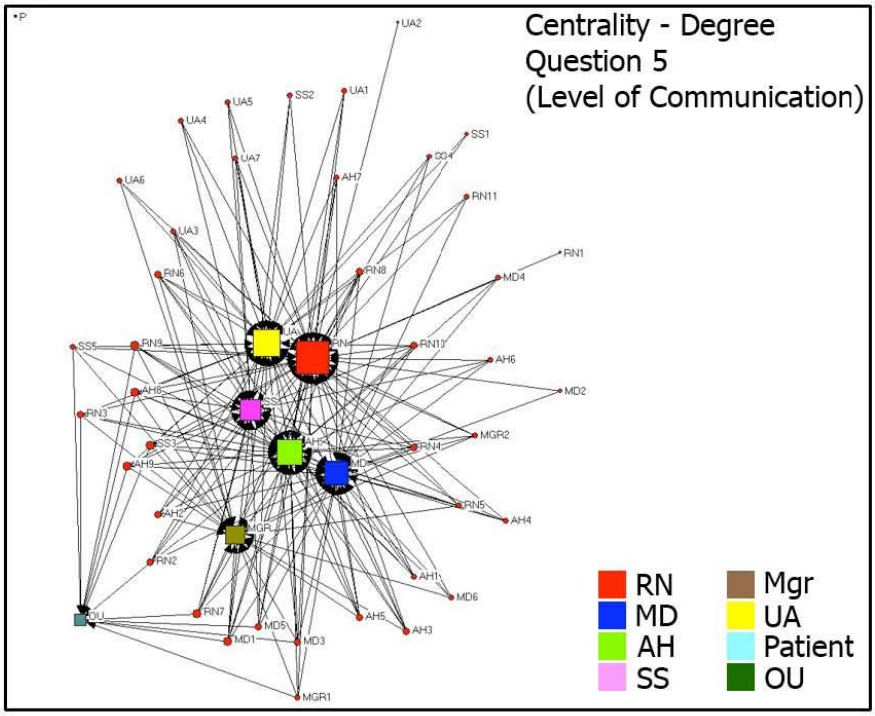


Diagram 5



Degree centrality is a measure of popularity, and several observations are clear from these visual representations of the network. Firstly, there is generally a strongly connected network, with few people in positions of isolation (examples are the single lines on the right of Diagrams 3 and 4). Secondly, there are a number of groups sharing reasonably equal degree centrality (RN, MD, AH, UA, MGR). A high level of degree centrality means that actors are well connected to a variety of other actors; hence they have a number of options in terms of seeking information, or finding someone to share a work issue with. Thirdly, from Diagram 1, it appears that all groups are relatively strong sources of expert information, but from Diagram 2, groups other than nurses are not as strong in engaging with their peers to interpret that information. And fourthly, the role of the patient is interesting – the patient is seen as an expert, as a source of engagement, as accessible, and as a trusted resource for some staff to discuss work issues with.

Betweenness centrality.

The betweenness centrality maps generated by Netdraw highlight the relative strength of each actor group as a connector of people who would not otherwise be in touch. These diagrams use the same joined datasets for each question as the degree centrality, and the size of the nodes indicates the relative number of ties.

Diagram 6

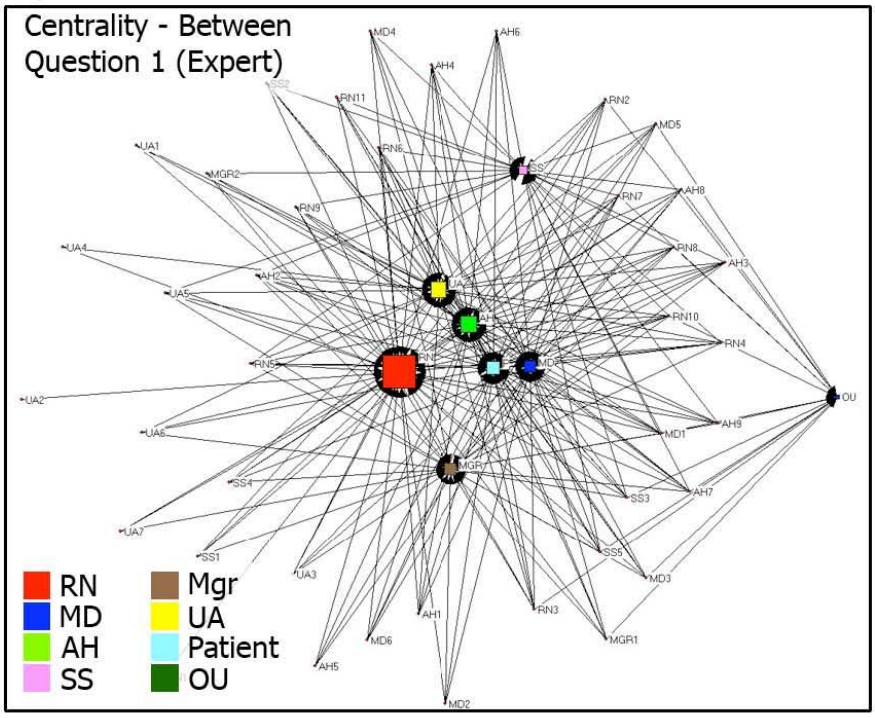


Diagram 7

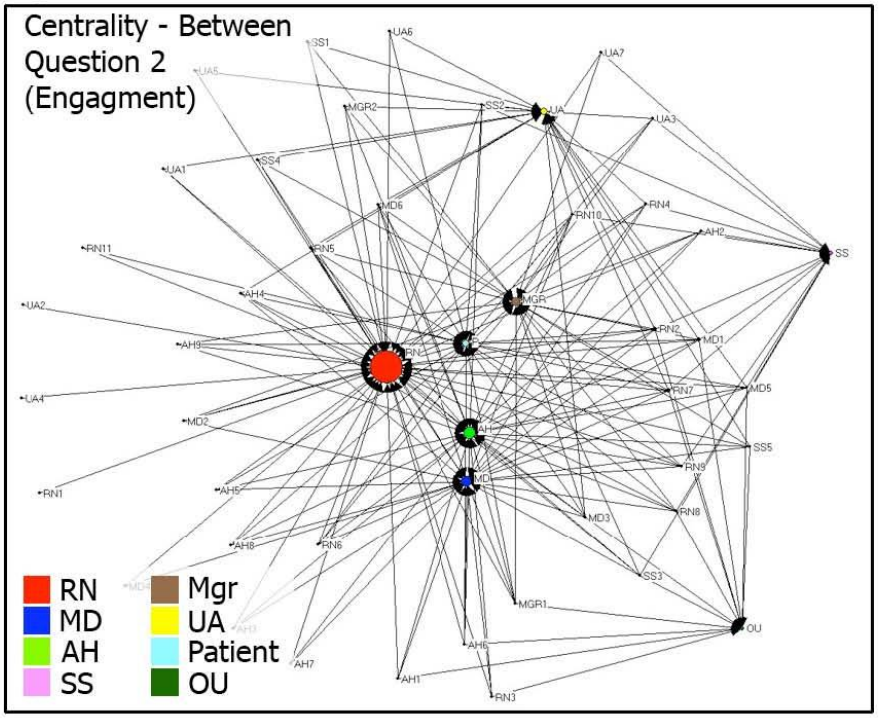


Diagram 8

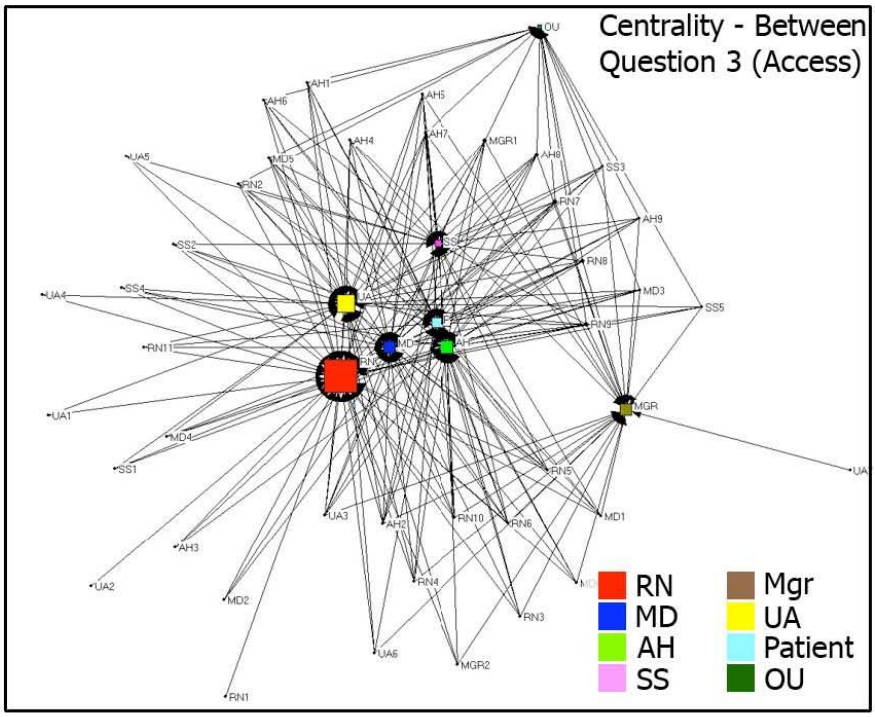


Diagram 9

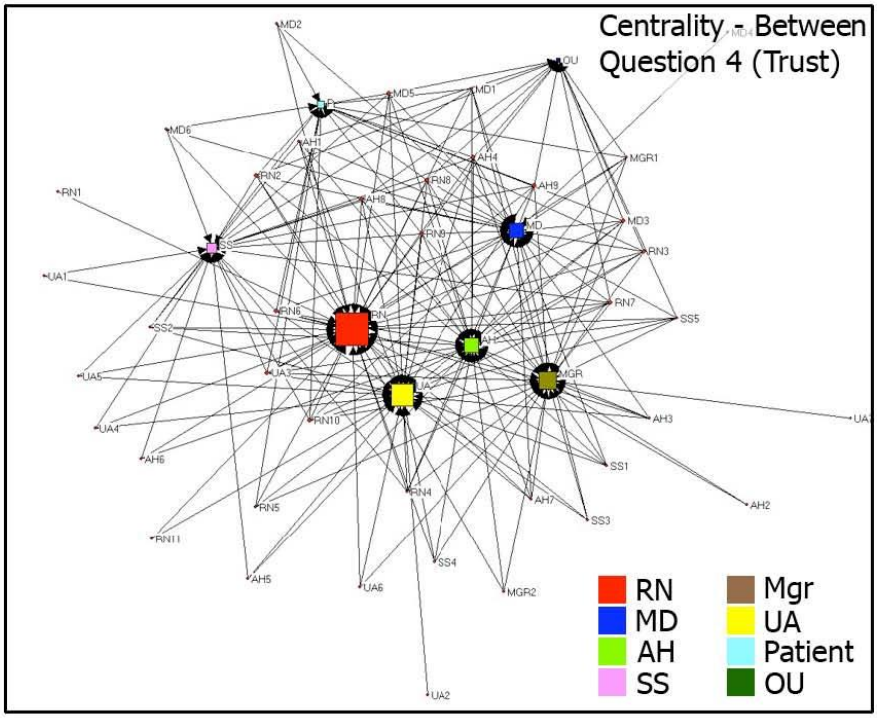
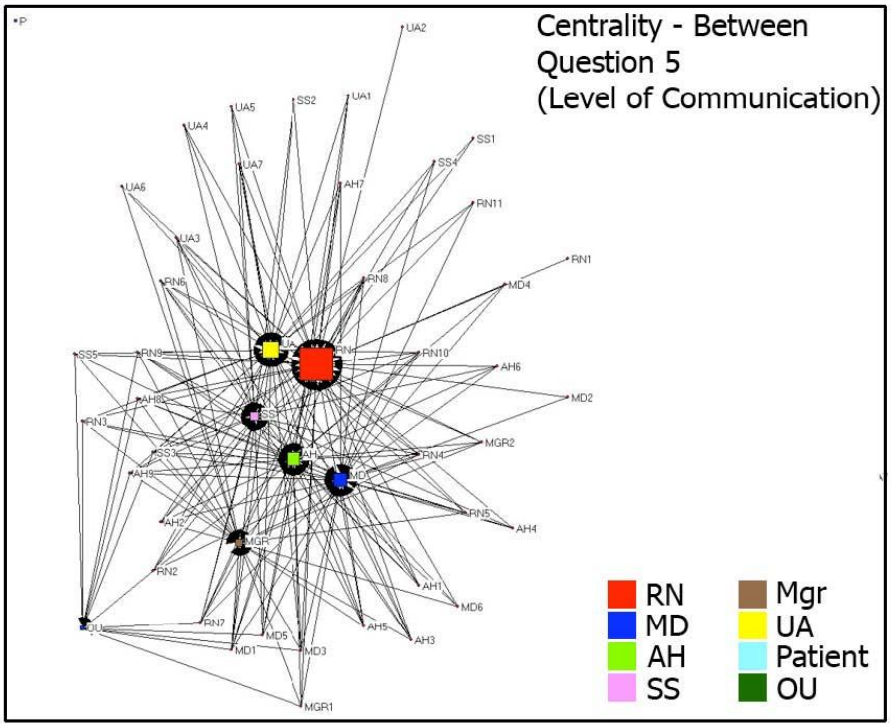


Diagram 10



The most striking observation in these visual representations is that in all questions, the nursing actor nodes are significantly larger than any of the others. This indicates that the nurses have by far the greatest control of information flow on these Units, because they connect other people who would not normally communicate. This is a powerful position in a knowledge-sharing network; they are the brokers of knowledge flow in this Unit. The nurses have a significant role as facilitators and connectors, but also can be bottlenecks to knowledge flow. There is the risk that much of the tacit knowledge on these Units is passing through the nursing worldview filter, and entrained thinking may prevent any knowledge that does not fit this view from effectively circulating through the Unit.

Density measures

These are the comparative density measures for each question, calculated by the Ucinet program. Density is defined as the number of relational ties as a percentage of the total number of possible ties. A higher score indicates a more densely connected network.

Table 2 Density Measures by Question

QUESTION	DENSITY
1 – Expert	0.7156
2 – Engagement	0.5719
3 – Access	0.6687
4 – Trust	0.5969
5 – Volume	0.5875

From assessing this data, it is clear that there is relatively high level of density in this network. The highest level occurs in Question1, indicating that people know who to go to for expert advice. The lowest level of density (Question 2) suggests that people have most difficulty finding someone to engage to help them understand the knowledge that they need. Also, in comparing Question 5 to Question 1, it appears that although 71% of respondents know where to go for expert information, only 58% say that they are regularly sharing knowledge. This suggests that although people know where to go for information, there are some barriers to acting on that.

Connections between actors.

Two sets of data were generated from the joined matrices for each question, to understand the actors as sources of information, and as receivers of information.

The role that each actor plays as a "source" of ties is also called the "out-degree", and is basically a measure of influence of that actor in the network. High scores in the out-degree analysis suggest that actor is sending information to many other actors in the network. For the purposes of this study, the individual out-degree for each actor in a group was summed, and then the average score for that group was calculated. As well, a comparison was made between the data in Question 1 (who do you know that has information that you need to do your job?), and Question 5 (who do you regularly communicate with?) This comparison will show any discrepancy between the "knowing" (Q1), and the "doing" (Q5). It is represented in the graph by a percentage – higher indicates a close relationship, lower indicates a greater discrepancy.

Table 3
Univariate Statistical Mean by Group: Out-degree

Actor	Question					
	1	2	3	4	5	Q1 /Q5 %
RN	**0.829**	0.681	0.722	0.727	**0.522**	63
MD	**0.750**	0.708	0.666	0.583	**0.583**	77
AH	**0.791**	0.513	0.805	0.541	**0.680**	85
UA	**0.410**	0.321	0.357	0.357	**0.392**	95
SS	**0.725**	0.600	0.600	0.600	**0.500**	50
MGR	**1.687**	0.625	0.625	0.056	**0.625**	91

The interesting finding here is that the nurses have the highest average score as a source of ties in Question 1 (knowing whom to access), but one of the lower scores in Question 5 of actually accessing others for information. Doctors and support staff also have low correlation scores between "knowing" and "doing". The groups with the highest correlation are the Unit assistants, the managers, and the allied health groups. In terms of volume of sending ties, the allied health and management actors were the highest. Unit assistants have a markedly lower score of sending information than all other groups.

As receivers of information (in-degree), group averages were calculated similarly (Table 4). In the SNA literature, high receivers of information may be seen as those with high prestige, or more powerful in the network "…to the extent that 'knowledge is power'. But, actors that receive a lot of information could also suffer from 'information overload' or 'noise and interference' due to contradictory messages from different sources". (Hanneman, Riddle)

We can see that nurses have the highest level of in-degree connections (Q5) followed in

Table 4
Univariate Statistical Mean by Group: In-degree

Actor	Question				
	1	2	3	4	5
RN	1.000	1.000	0.975	0.875	1.000
MD	0.725	0.675	0.700	0.600	0.725
AH	0.825	0.700	0.750	0.675	0.750
UA	0.800	0.425	0.725	0.725	0.800
SS	0.600	0.325	0.500	0.525	0.575
MGR	0.675	0.575	0.600	0.625	0.550
P	0.750	0.525	0.650	0.425	0.000
OU	0.350	0.300	0.350	0.325	0.300

descending order by Unit assistants, allied health, doctors, support staff, and managers. Patients were not included in the response category for Question 5; however, it is interesting to note that in Question 1 responses, patients were seen as potentially stronger sources of "expert" information than doctors, support staff or other Units.

When both in-degree and out-degree data are jointly considered, several points are highlighted:

- Managers scored highly as senders of information to the other groups, but have far lower scores as receivers of information from the other groups.
- Both nurses and Unit assistants score lower than others in sending information, but very high in receiving information.
- The allied health and physician groups appear to manage moderately high degrees of both sending and receiving information, enhancing their prestige and influence in the Unit.

Study Conclusions and Recommendations

Drawing conclusions from the data generated by this social network analysis, without further engagement of the respondents, is premature, and easily skewed by the entrained thinking of the researcher. As noted in the previous section, some of the findings suggested by the data can be interpreted in completely contradictory ways (nurses as conduits to knowledge flow? Or nurses as bottlenecks?) In writing about social network analysis, Snowden (2005) states: "…the expert [researcher] should as far as possible be removed from interpretation of results; instead the process should produce results which are susceptible of accurate interpretation by the target population itself". The conclusions for this study should therefore be drawn by the staff and management of RR4, and not by the researcher or senior management.

However, it is reasonable to formulate some questions that arise from the patterns presented by this data, to be used as potential items for discussion in a subsequent facilitated session with the staff:

1. Nurses are highly central to this network, and hold a powerful gatekeeper role in that they connect many people who would not otherwise communicate with each other. They also score high as receivers of information, and low as senders of information. Are the nurses enhancing knowledge flow, or acting as bottlenecks to knowledge flow?
2. The knowledge flow in this network is largely focused internally, with very little connection to other Units in the HSC. Does this pattern promote entrained thinking practices on this Unit, making it difficult for those with new perspectives and ideas to be heard? Is there any benefit to the staff of RR4 to be more connected to other Units at HSC?
3. How does the staff understand their roles on RR4? Do they understand and accept their roles as senders and receivers of information? Do the nurses understand their role as gatekeepers of knowledge flow on the Unit? Given the density of the network, does the staff acknowledge the time and energy required to participate in the information flow network? There is a very

interesting study (Larsson, Holmstrom, & Rosenqvist, 2003) which showed that anesthetists understand their work in qualitatively different ways – from "servant" to the hospital system, "co-coordinator" in the surgical context, "Samaritan" to an anxious patient, and "professional artist" in the medical process of anesthesia. Is the role of "knowledge broker" part of the understanding of the staff on RR4?

4. What is the ideal role of the managers on RR4? From the data, it appears that the managers are primary senders of information, and poor receivers of information from the staff on the Unit. They are not seen as experts to access for information about the work of the Unit, but are trusted sources of information. Which roles are most important in managing knowledge workers? Davenport (2005, chap. 9) suggests that organizing communities, building knowledge skills, and retaining workers are a few of the activities that managers will need to focus on in a knowledge based business.
5. How do the HSC Human Resources job descriptions fit with the actual work activities of the Unit, given the density of the information-sharing network? For example, can the nurses effectively do both their clinical jobs and their information-brokering role? Is this a source of frustration and burnout for the nurses? Is there a way to relieve some of the pressure on the nurses as gatekeepers? Would the nursing staff support attempts to share this role?
6. The patients on RR4 play an important role in information flow, including communicating information between staff. Staff sees the patients as experts to turn to for information about how to do their jobs. What is the appropriate role in knowledge sharing for patients on a Rehabilitation Unit? What are the risks and benefits of this role?
7. Is the relatively dense network demonstrated by the data a sign of needless "noise", or a sign of valuable tacit knowledge sharing and a healthy dose of social capital between staff on this Unit?
8. The Unit Assistants are primary recipients of information on these Units, but report very low scores as senders of information. Is there a potential risk due to loss of important information

transfer? What are the barriers identified by the Unit assistants to sending information?

9. This Unit is not strongly connected with other Units at the HSC in terms of tacit knowledge exchange. If this is a common pattern at HSC, what is the effect on the organization of a structure of silos, connected only through upper management? Dixon (2000) discusses the strategic imperative of leveraging knowledge across organizational boundaries. In a large acute care hospital like the HSC, what type of knowledge should be leveraged across practice silos for maximum organizational benefit? What potential organizational efficiencies could be realized?

These questions are fuel for further discussion of knowledge sharing practices on RR4, and highlight some strengths and weakness on the Unit. Following the guidelines established in the World Café (Brown & Isaacs, 2005), staff and managers of RR4 should come together to find answers to these questions for themselves. Without this discussion, the information gained from this study can only provide a snapshot of "things as they are", and will not assist in moving toward positive change. In order for the facilitated discussions to take place, strong support from senior management will be needed, as experience from this study has shown that staff feel overwhelmed by their daily work, and are not easily persuaded to participate in discussions that appear abstract.

Chapter 5 – Research Implications and Lessons Learned

If the HSC is truly a learning organization, then RR4 is a Unit of knowledge sharing within the larger organization. As described previously, five activities characterize a learning organization:

1. Systematic problem solving
2. Experimentation with new approaches
3. Learning from past experience and history
4. Learning from the experience and history of others
5. Transferring knowledge quickly and efficiently throughout the organization

Using evidenced-based knowledge from the research community is an important component of achieving these five activities, but harnessing tacit knowledge through effective information flow is a critical element. Using the information from the SNA conducted on RR4, the staff and management can begin to identify and strengthen the attractors to effective knowledge flow, as well as identify and minimize the barriers. All five of the activities listed above rely on an efficient social network for success. Using RR4 as a test case, the HSC may begin to conduct SNA studies in other Units, and gradually build a picture of the relationships that exist outside of the formal organizational charts. The organization may be able to identify reasons to enhance knowledge flow between highly abstracted silos, to improve organizational efficiencies and effectiveness.

Further research needs to be done to assess the appropriateness of the specific questions asked, and the level of response that is needed to confidently declare the outcomes to be representative of the population. For example, the size of this study sample does not affect the stability of the measures of centrality, but may impact the measures of density (Costenbader & Valente, 2003). This study used traditional SNA methods in a non-traditional way, and further research into the value of this approach in a healthcare organization would be helpful. There were many lessons learned during this project. Primarily, they are:

1. The concept of tacit knowledge sharing is very abstract in healthcare workers. There is an

understanding of the need for knowledge acquisition through continuing education in various forms, but very little appreciation for the power of tacit knowledge sharing as an important source of evidence on which to base decisions. There is an intriguing paradox in that this was a dense network of shared knowledge, with a very low level of understanding of, or appreciation for the practice, by the staff on the Units.

2. Even in a knowledge organization, where individual workers are largely responsible for their own work, management needs to play a strong role in supporting new initiatives. In hindsight, this project required a much stronger role from management to obtain higher levels of participation from the staff. Managers did not just have to "buy in" to the project, they also needed to actively "champion" the project to the staff – a difficult job to do, given the stress that management was experiencing with the reorganization of the Units.
3. Every diagnostic is also an intervention. Asking staff to complete these questionnaires required that they think in a more abstract way about their jobs. Some responded with interest and curiosity, but many others reacted with barriers and fears. A high degree of sensitivity is needed to approach healthcare workers, many of whom feel overwhelmed by their jobs.
4. A high level of trust is needed between the researcher and the participants. Other researchers in this area have used an ethnographic approach, embedding themselves in the group for a long period of time, to enable trust relationships to develop. In the HSC, developing internal leaders within programs and Units who could use questionnaires and conduct facilitated sessions with their peers might be a more effective way to conduct SNA research.

In conclusion, the Health Sciences Centre is a classic example of a learning organization, where knowledge sharing is as important as knowledge acquisition in supporting the work of the organization. The process of evaluating knowledge flow begins with diagnostics such as SNA to provide the picture of the way things are, drawn by the staff. To understand the meaning of the analysis, and to identify attractors and barriers to more positive outcomes, the staff must be the primary interpreters of the data.

The role of the expert is to facilitate the process and design the environment where meaningful questions will be fully explored. This project began the process by identifying both patterns of tacit knowledge sharing between healthcare workers, and the requirements for explicit knowledge sharing on the Units. The next step is to create the space and energy in the system to begin to facilitate discussion of these patterns.

References

Augier, M., & Vendelo, M. (1999). Cognition and management of tacit knowledge. *Journal of Knowledge Management*. Volume 3-number 4, 252-261.

Bopp, M., & Bopp J.(2001). *Recreating the world: A practical guide to building sustainable commUnities.* Four Worlds Press, Calgary, Alberta.

Borgati, S.P., Everett, M.G. & Freeman, L.C. (2002). *Ucinet for Windows: Software for Social Network Analysis*. Harvard, MA. Analytic Technologies

Brown, J., & Isaacs, D., (2005). *The world café: Shaping our futures through conversations that matter.* Berrett-Koehler Publishers, San Francisco.

Bushe, G. (1998). *Five theories of change embedded in appreciative inquiry*. Retrieved June 10, 2005, from http://www.gervasebushe.ca/ai5.htm

Canadian Health Services Research Foundation. *Knowledge transfer and exchange.* Retrieved January 4, 2006, from http://www.chsrf.ca/knowledge_transfer/index_e.php

Carver J., (2001). Knowledge flow. Retrieved December 15, 2005, from http://www.seradigm.com/research.html

Connell, N., Klein, JH, & Powell, P.L. (2003). It's tacit knowledge but not as we know it: Redirecting the search for knowledge. *Journal of the Operational Research Society* 54, 140-152.

Contact. Canadian Physiotherapy Association, Nov/Dec 2002.

Costenbader, E., & Valente T.W**.** (2003). The stability of centrality measures when networks are sampled. Social Networks, 25, 283-307.

Cross, R., Parker, A., Prusak, L., & Borgati, S. (2001). Supporting knowledge creation and sharing in social networks. *Organizational Dynamics*, Vol. 30, no.2.

Davenport, T. H. (2005). *Thinking for a living*. Harvard Business School Press

Davenport, E, Cronin, B. (2000). Knowledge Management: Semantic Drift or Conceptual Shift? ALISE

Conference Proceedings. Accessed January 2, 2006 from http://www.alise.org/conferences/conf00_Davenport-Cronin_paper.htm

Dixon, N. (2000). *Common knowledge*. Harvard Business School Press, Boston, Massachustts.

Drucker, P. (1998). The coming of the new organization. *Harvard Business Review on Knowledge Management*. Harvard Business School Press. Boston, Mass., p.7.

Gabbay, J., le May, A. (2004). Evidence based guidelines or collectively constructed mindlines?" Ethnographic study for knowledge management in primary care. *British Medical Journal.* 329;1013

Gao, F., Li, M., & Nakamori, Y. (2002). Critical systems thinking as a way to manage knowledge systems. *Research and Behavioral Science Syst. Res*. 20 3-19.

Garvin, D. (1998). Building a learning organization. *Harvard Business Review on Knowledge Management*. Harvard Business School Press. Boston, Mass.

Haldin-Herrgard,T. (2000). Difficulties in diffusion of tacit knowledge in organizations. *Journal of Intellectual Capital*, Vol 1 No. 4 357-365.

Hawe, P., Webster, C., & Shiell, A. (2004). A glossary of terms for navigating the field of social network analysis. *Journal of Epidemiology and CommUnity Health*. 58:971-975

Johannessen, J., Olaisen, J., & Olsen, B. (2001). Mismanagement of tacit knowledge: The importance of tacit knowledge, the danger of information technology, and what to do about it. *International Journal of Information Management* 21 3-20.

Knottnerus,A.,& Dinant, G. (1997). Medicine based evidence, a prerequisite for evidence based medicine. *British Medical Journal*, 315:1109 – 1110 (1 November).

Krebs, V. (n.d.) Knowledge networks: mapping and measuring knowledge creation, re-use, and flow. Orgnet.com. Retrieved 10/11/2005 from http://www.orgnet.com/IHRIM.html

Kurtz, C., & Snowden, D. (2003). The new dynamics of strategy: Sense-making in a complex and complicated world. *IBM Systems Journal*, Vol 42, NO 3.

Larson, J., Holstrom, I., & Rosenqvist, U. (2003). Professional artist, good Samaritan, servant and co-ordinator: four ways of understanding the anaesthetist's work. *Acta Anaesthesiol Scand*: 47: 1-7

Lewis, J. (2005). A network approach for researching partnerships in health. *Aust New Zealand Health Policy.* 2: 22. Accessed March 6, 2006 http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1276782

Locklear, J,, Gondocz, T., & Thiverge, R. (2004). Knowledge translation: the role and place of practice reflection. *The Journal for Continuing Education in the Health Professions*. Vol24: pp 50-56.

Leedy, P.,& Omrod, J. (2005). *Practical Research.* Pearson Prentice Hall, eighth edition, Upper Saddle River, New Jersey.

Mascitelli, R. (2000). From experience: harnessing tacit knowledge to achieve breakthrough innovation. *J Prod Innov Manag.* 17; 179 – 193.

Metcalfe, C., Lewin, R., Wisher, S., Perry, S., Bannigan, K., & Moffett, J., (August 2001). Barriers to implementing the evidence base in four NHS therapies. *Physiotherapy, vol 87*, no 8.

Niedzwiedzka, B.M., (May 2003). Barriers to evidence-based decision making among Polish healthcare managers. *Health Serv Manage Res*. 16(2): 106-15.

Nonaka, I., & Konno, N., (1998). The concept of "Ba": Building a foundation for knowledge creation. *California Management Review; Vol. 40* Issue 3. [Electronic Version] Retrieved January 18, 2005 from http://weblinks1.epnet.com.ezproxy.royalroads.ca.

Reilly, B. (2004). The essence of EBM. *British Medical Journal*, 329:991-992 (30 October).

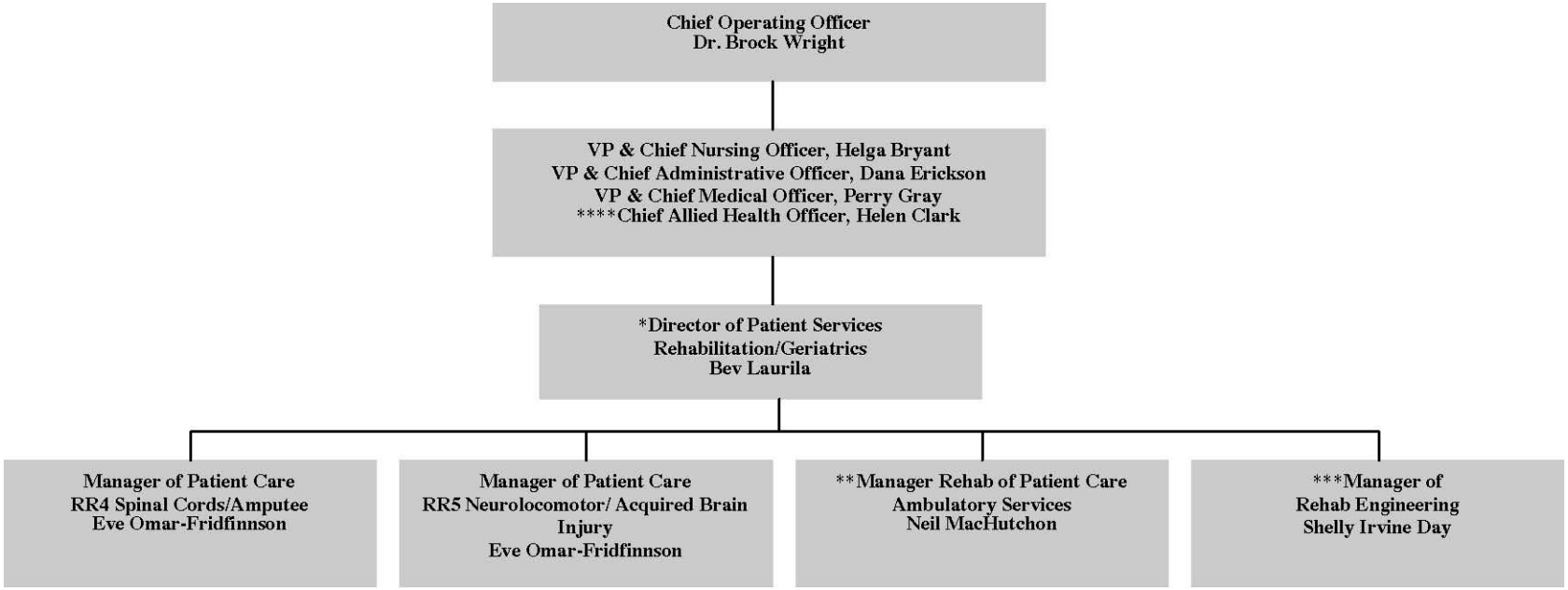
Restas, A., (March 2000). Barriers to using research evidence in nursing practice. *J Adv Nurs*. 31(3): 599-606

Sackett, D.L., Rosenberg, W., Gray, J., Haynes, R., & Richardson, W. (1996). Evidence based medicine: what it is and what it isn't. *British Medical Journal,* 312:71-2

Snowden, D. (2005). From atomism to networks in social systems. *The Learning Organization, Special Issue "Knowledge Sharing",* Vol. 12, No. 6

Strauss, S. (2004). What has evidence-based medicine done for us?. *British Medical Journal,* 329:987-998 (30 October).

HSC – Rehabilitation and Geriatric Program Organizational Chart



*joint appointment with SOGH Rehab Geriatrics – Mental Health Programs **joint appointment with WRHA Regional Director Physiotherapy, HSC Physiotherapy Discipline Director and Manager of Child Health Physiotherapy ***joint appointment with WRHA Regional Manager of the PCH SLP Service, Department of Communication Disorders and the CESL (Assistive Devices) program ****joint appointment with WRHA Regional Director of Respiratory Therapy, Patient Transport and EMS Liaison

QUESTIONNAIRE ON KNOWLEDGE SHARING PRACTICES

This short questionnaire has been developed to find out how information flows through your Unit. I am interested in your thoughts about who you know to go to for information, how easy it is for you to access these people, who helps you understand the information, and who you feel comfortable discussing work with. All of your responses are totally anonymous. Although there are only a few questions, please spend some time thinking carefully about your answers to each one – the information that you provide to me will form the basis for the next part of the project.

Everyone who completes and returns a questionnaire within the 2-week period will be eligible for a draw for a gift certificate at a restaurant of your choice.

Instructions:
For questions 1 through 5, please indicate the frequency of your communication by placing a letter inside the circle:

R = rarely O = often F = frequently

Leave the space blank if none of the above apply.

1. **Which of these groups have individuals that you turn to for information you need to do your job?**

○ Nurses	○ Doctors	○ Allied Health	○ Unit Assistants
○ Support Staff	○ Managers	○ Patients	○ Other Units

2. **Which of these groups have individuals that you would seek to help youunderstand the meaning of information you need to do your job?**

○ Nurses	○ Doctors	○ Allied Health	○ Unit Assistants
○ Support Staff	○ Managers	○ Patients	○ Other Units

3. **Which of these groups have people that you can easily access for information when you need it?**

○ Nurses	○ Doctors	○ Allied Health	○ Unit Assistants
○ Support Staff	○ Managers	○ Patients	○ Other Units

4. Which of these groups have individuals that you feel comfortable discussing work issues with?

○ Nurses ○ Doctors ○ Allied Health ○ Unit Assistants

○ Support Staff ○ Managers ○ Patients ○ Other Units

5. Which of these groups have individuals with whom you regularly communicate (not including written communication)?

○ Nurses ○ Doctors ○ Allied Health ○ Unit Assistants

○ Support Staff ○ Managers ○ Patients ○ Other Units

6. Which group do you belong to?

○ Nurses ○ Doctors ○ Allied Health ○ Unit Assistants

○ Support Staff ○ Managers ○ Patients ○ Other Units

7. How long have you worked in the unit?

○ Less than 6 months ○ 6 months to 5 years

○ 5 – 15 years ○ More than 15 years

Thank you for your time to fill out this questionnaire. Please return it to the nursing station, and pick up your entry form for the "Dinner Draw"!

Consent Form

UNDERSTANDING HOW KNOWLEDGE FLOWS THROUGH A HOSPITAL UNIT

You have been asked to participate in a study to find out how knowledge is shared on this Unit. This study is part of a degree requirement for my Master of Arts in Interdisciplinary Studies at Royal Roads University. I am hoping that the results of this project will underscore the importance of enabling knowledge flow throughout the HSC, to support the current focus on Evidence Based Practice.

I am studying the processes that you use to share information, including meetings, charts, reports etc, as well as your beliefs and attitudes about sharing knowledge with your coworkers. It doesn't matter how long you have been working here on the Unit, or whether or not you plan to stay – this study will be useful for all healthcare workers.

The project will take place between February and June 2006. By participating in this study, you will be asked to complete two activities:

1. A short questionnaire – about 20 minutes to complete.
2. A knowledge café – an hour-long discussion in the Rehab cafeteria with about 20 of your fellow workers. You will be provided paid time to enter into the knowledge café.

There is very little risk to you by participating in this study. Your responses in the questionnaire will be completely anonymous; you will only be identified by your role in the Unit and the length of time you have worked there. In the Knowledge Café, you will be in a safe and supportive discussion forum, with conversation limited to specific questions about knowledge sharing. The group will generate the themes that are identified in the Café, and there will be no audio recording of the discussions.

Your participation in this project is completely voluntary, and if you wish to withdraw at any time you are free to do so. The final report will be housed at RRU and will be publicly accessible.

If you have any questions about the project at any time, please contact:

Susan Morrow, BPT – principal investigator, at _____, or email _____

Helga Bryant, RN, B.Sc.N., M.S.A. – project sponsor, at _____

My credentials with Royal Roads University can be established by telephoning Dr. Tony Boydell at _____

AUTHORIZATION: I have read the preceding information, and understand the nature of this project on knowledge sharing. I agree to participate in the project as outlined above. I understand that I am free to withdraw from the study at any time without prejudice.

Signed: _____ Date: _____

Regularly Scheduled Meetings/Rounds

Rehab Managers Meeting – 10:00-11:00 a.m. every second Monday

Monthly Meeting Eve and Bev – 9:00-10:00 a.m. 1st Tuesday of every month

Monthly Meeting Neil and Bev – 9:00-10:00 a.m. first Friday of every month

Monthly Meeting Shelly and Bev – Not a standing meeting

Monthly Meeting Christine and Bev – 11:00 a.m.-12:00 p.m. 1st Monday of every month **Rehab**

Geriatrics/Clinical Programs Leadership Team Meetings – 2:30-4:00 p.m. 4th Wednesday of every month

RR4 Staff Meeting – 2:30-3:30 3rd Thursday of every month

RR4 SCI Program Team Meeting – 12:00-1:00 p.m. 2nd Thursday of every month

RR4 SCI Rounds – 10:30-11:30 a.m. every Tuesday

RR4 SCI Lunch and Learn – 12:00-1:00 p.m. 3rd Monday of every month

Inpatient Amputee Program Planning Meeting – 12:00-1:00 p.m. 1st Tuesday, every 2nd month (alternates with Joint Amputee Service Meeting)

Joint Amputee Service Meeting – 12:00-1:00 p.m. 1st Tuesday, every 2nd month (alternates with Inpatient Amputee Program Planning Meeting)

AMP Inpatient Education Group Sessions – 11:00 a.m.-12:00 p.m. every Thursday

SCI Inpatient Education Group Sessions – 4:00-5:00 every Thursday

RR5 Staff Meeting – 2:30-3:30 p.m. 4th Thursday of month

RR5 Dr. Daniel's Rounds – 9:30 – 11:00 a.m. every Wednesday

RR5 Lunch and Learn Program – 12:00 – 1:00 p.m. 4th Thursday of every month

ARQUIT (Adult Rehab Quality Improvement Team) Meeting – 8:00 – 10:00 a.m. every two months.

Discipline Directors/Rehab Managers Meeting – Call of the chair

RR1 & RR2 Joint Clinic Meeting – Quarterly, meetings not standing

Physio Workload Stats – End of each month, record submitted data in form

Bed Management Meeting – Every Wednesday at 8:45-9:15 a.m.

OT Meeting – 8:00-9:00 1st Thursday of every month

Overtime/CA/Agency/Sick Call Summaries – Monthly, correlate data of previous month and

submitted for beginning of each month

DOPS/MPC Meeting – 8:15-10:15 a.m. 3rd Thursday of every month

Sick Time Report – Record data daily and submit previous month at beginning of each month

LOS Stats – Quarterly yearly – correlate data and submit quarterly

Kea Payroll – 10:00 a.m. Thursday, timecard submissions

ESP Payroll – 10:00 a.m. every Friday, time card submissions, also provide back up when staff scheduler away

PSC (Patient Service Committee) Meeting – 10:00-12:00 p.m. ever other Thursday **Quarterly Nursing Vacancy Survey –** Quarterly report, sent from HR

Grand Rounds – 11:30-1:00 p.m. 1st and 3rd Monday of every month

Section Meeting – 5:00-6:30 p.m. 1st Monday of every month

Section of Physical Medicine & Rehabilitation -Journal Club – 4:30-6:30 p.m. 2nd Tuesday of every month

Rehab Day Program Rounds – 1:00-2:00 p.m. every Tuesday

SWAT (Skin and Wound Assessment Team) – 1:00-2:00 a.m. every 2-3 months on Wednesday

Daily Nursing Report at Shift Change (RR4/RR5) – 7:00 a.m., 3:00 p.m. (RR4 only), 7:00 p.m.

Dr. Engel's Rounds and Team Rounds – Every Monday A.M., (team) Tuesday P.M., and Wednesday A.M.

Dr. Galimova's Rounds – Tuesday P.M.