DÉVELOPPER UNE CULTURE DE COLLABORATION EN SALLE D'OPÉRATION :

MIEUX QUE LA COMMUNICATION EFFICACE

***Auteure :** Patricia Wade, IA, M.S.Inf., CSP(C) est infirmière en soins périopératoires depuis 15 ans. Elle a commencé en tant qu'infirmière de soins généraux et, plus tard, est devenue adjointe à l'infirmière-chef en neurochirurgie et ophtalmologie pédiatriques. Récipiendaire du Prix de rédaction Drake-Thompson de l'AIISOC et Johnson & Johnson Medical Products de 2013 et du Prix RMAC pour la sécurité des patients 2013, elle se passionne pour la sécurité des patients et la collaboration interprofessionnelle. Elle a été infirmière-éducatrice dans un bloc opératoire pédiatrique d'un hôpital universitaire à Montréal jusqu'en juin 2013. L'opportunité de participer au sein de comités provinciaux et nationaux sur la sécurité des patients et la collaboration interprofessionnelle l'a amenée à devenir consultante pour le développement professionnel continu (DPC) au sein de la Fédération des médecins spécialistes du Québec. Elle est membre de la Corporation des infirmières et infirmiers de salle d'opération du Québec (CIISOQ).*

RÉSUMÉ :

Le but de cette revue de la littérature était d'examiner l'état actuel des connaissances sur les pratiques collaboratives fructueuses en salle d'opération. À l'aide des déterminants de pratiques collaboratives fructueuses, développés par San-Martin-Rodriguez, Beaulieu, D'Amour et Ferrada-Videla,[1] la littérature actuelle traitant de la collaboration en salle d'opération a été examinée afin d'identifier les lacunes en matière de connaissances ainsi que les avenues futures pour la recherche. La revue a mis l'accent sur le fait que les modèles de communication parmi les membres des équipes en salle d'opération étaient l'aspect du travail d'équipe ayant le plus fait l'objet de recherches. D'autres aspects, comme la volonté de s'engager dans la pratique collaborative, la confiance, le respect, les facteurs sociétaux et culturels, étaient absents de la littérature. La recherche future devra être axée sur ces lacunes en matière de connaissances afin d'optimiser nos ressources limitées en recherche et d'améliorer la sécurité des patients.

REFERENCES

1. San-Martin-Rodriguez L., M. Beaulieu, D. D'Amour et M. Ferrada-Videla, The determinants of successful collaboration: A review of theoretical and empirical studies, J Interprof Care, 2005; supplément 1, pp. 132 à 147.

Les normes de l'AIISOC relatives à cet article figurent dans la publication Normes, lignes directrices et énoncés de positions pour la pratique de soins infirmiers périopératoires autorisés (11e édition) de l'Association des infirmiers et infirmières de salle d'opération du Canada (AIISOC) d'avril 2013, section 4, p. 225 à 228; normes 4.1.1 à 4.1.31.

KEYWORDS: INTERPROFESSIONAL EDUCATION, COLLABORATIVE PRACTICE, OPERATING ROOM TEAMWORK

DEVELOPING A CULTURE OF COLLABORATION IN THE OPERATING ROOM:

MORE THAN EFFECTIVE COMMUNICATION

Author: *Patricia Wade, RN, MN, CPN(C) has been a perioperative nurse for 15 years. She began as a staff nurse and later became an assistant head nurse in paediatric neurosurgery and ophthalmology. Recipient of the 2013 ORNAC/Johnson & Johnson Medical Products Drake-Thompson Writing Award and of the 2013 RMAC Patient Safety Award she is passionate about patient safety and interprofessional collaboration. She was the nurse educator in a paediatric surgical suite at a university hospital in Montreal until June 2013. The opportunity to participate in provincial and national committees on patient safety and interprofessional collaboration has led her to become a consultant for Continuous Professional Development (CPD) with the Fédération des médecins spécialistes du Québec. She is a member of the Corporation of Operating Room Nurses of Quebec (CORNQ).*

The purpose of this article is to explore the determinants of successful collaboration among healthcare teams, review the current literature on collaboration in the operating room, and make recommendations for future research in order to improve patient safety in the surgical environment.

ABSTRACT:

The purpose of this literature review was to examine the current state of knowledge on successful collaborative practice in the operating room. Using the determinants of successful collaborative practice, developed by San-Martin-Rodriguez, Beaulieu, D'Amour, & Ferrada-Videla,[6] the current literature on collaboration in the operating room was reviewed in order to identify the gaps in knowledge and identify future research avenues. The review highlighted that communication patterns among operating room team members was the most extensively researched aspect of teamwork. Other aspects, such as the willingness to engage in collaborative practice, trust, respect, societal factors, and cultural factors, were absent from the literature. Future research will need to focus on these gaps in knowledge in order to maximize our limited research resources and improve patient safety.

INTRODUCTION:

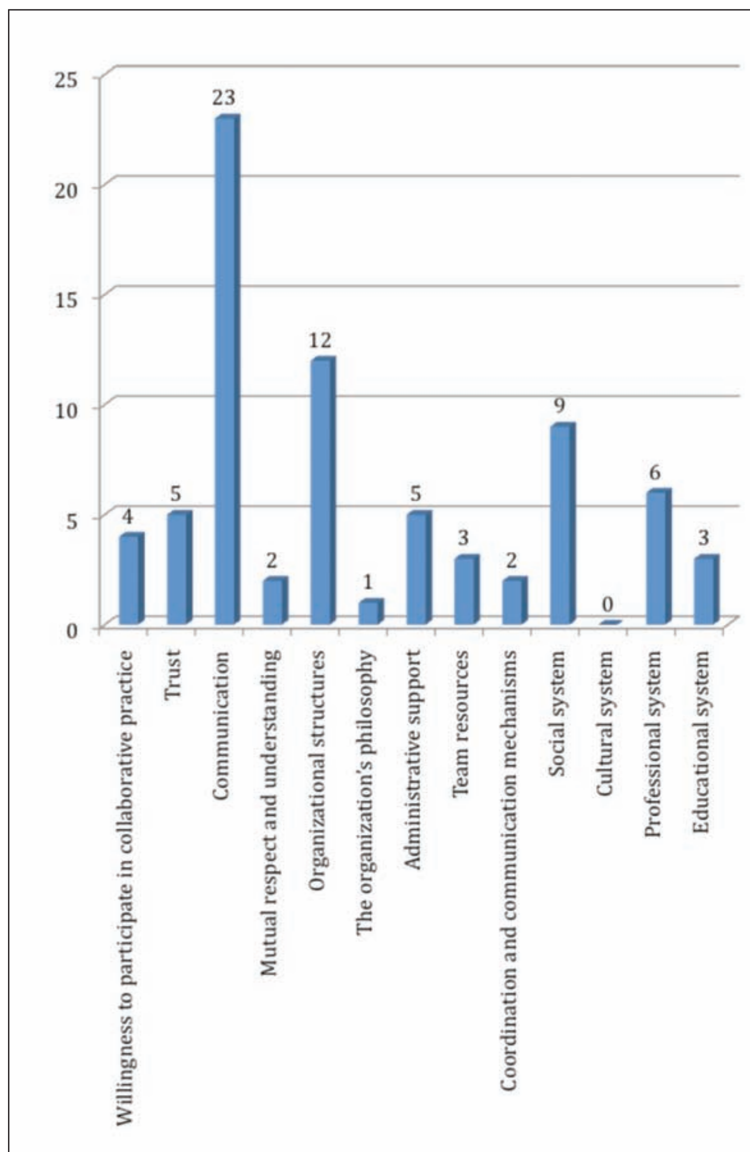
Patients entering the operating room expect positive surgical outcomes and to return to their families and activities. We strive, as professionals, to provide the highest quality and the safest of care. From 1995 to 2005, however, the American Joint Commission sentinel event statistics database ranked wrong site surgery as the second most frequently reported event with 455 of the 3548 reported sentinel events (12.8%).[1]

The need to prevent negative patient outcomes, such as infections, and to decrease medical errors, such as wrong site surgeries, has led to an increased awareness about the importance of collaborative practice among surgical team members. Organizations such as the World Health Organization (WHO) and the Canadian Interprofessional Health Collaborative (CIHC) have, over the past decade, developed frameworks to guide and promote collaborative practice and interprofessional education in the health care setting.[2,3] In North America nursing professional associations, such as the Association of perioOperative Registered Nurses (AORN) and the Operating Room Nurses Association of Canada (ORNAC), have developed position statements and made collaborative practice part of their missions.[4,5]

As collaborative practice becomes an organizational and professional priority, the concept raises many questions. What is it? What determines the success of collaborative practice among healthcare professionals? How is it being understood and developed in the operating room? Resources are being invested in to research in order to attempt to answer these questions. But what have we learned? What are the knowledge gaps? Where can we focus future research efforts and resources so that we can maximize our limited resources and improve the safety of our patients.

The purpose of this article is to explore the determinants of successful collaboration among healthcare teams, review the current literature on collaboration in the operating room, and make recommendations for future research in order to improve patient safety in the surgical environment. The determinants of a successful collaborative practice, developed by San-Martin-Rodriguez, Beaulieu, D'amour, & Ferrada-Videla,[6] will be used as the framework for this paper. A review of the current literature, discussing these determinants in the operating room, will be presented in order to identify the current knowledge gaps in effective operating room team collaboration and to guide future perioperative nursing research.

Figure 1
Number of articles addressing the specific determinants



Patient safety and collaborative practice: Definition of terms

The concept of patient safety and collaborative practice are often discussed when organizations or professional associations want to improve the quality of a healthcare system. It is important, in order to understand these concepts, to examine the current definitions as presented in the literature.

The Canadian Patient Safety Institute (CPSI) defines patient safety as "the reduction and mitigation of unsafe acts with the healthcare system, as well as through the use of best practices shown to lead to optimal patient outcomes".[7] Although, CPSI does not provide a definition of what constitutes optimal patient outcomes they do define harm as "an outcome that negatively affects the patient's health and/or quality of life".[7]

International healthcare stakeholders are also participating in patient safety initiatives. The World Health Organization (WHO), in an effort to standardize the definition of the concept, defines patient safety as "the reduction of the risk of unnecessary harm, associated with healthcare, to an acceptable minimum. An acceptable minimum refers to the collective notions of given current knowledge, resources available and the context in which care was delivered weighed against the risk of non-treatment or other treatment".[7] For the purpose of this paper, patient safety will be defined as per the CPSI definition[7] as it best reflects Canada's access to technology and other healthcare resources in comparison to underdeveloped countries.

The Canadian Interprofessional Health Collaborative (CIHC) defines collaborative practice as something that occurs when "healthcare providers work with people from within their own profession, with people outside of their profession, and with patients/clients and their families"[3] (p.1). This definition,

although adequate, is too vague to apply to the complex interprofessional relationships that exist among surgical team members. The WHO defined collaborative practice as "when multiple health workers from different professional backgrounds provide comprehensive services by working with patients, their families, caregivers and communities to deliver the highest quality of care across settings".[2] This definition was obtained from an extensive review of the literature[2] and is appropriate for the purpose of this paper as it relates to health care professions. Collaborative practice, in the operating room, is also referred to as teamwork and so this synonym will also be used in this literature review.

The operating room is a highly technological, technical, and dynamic environment that is in a constant state of evolution. Despite continuing efforts by health organizations and the advances in research surgical site infections remain, in Canada, the most common health care associated complication for surgical patients.[8] Effective and safe patient care requires complex interdisciplinary interactions between surgeons, nurses, anaesthetists, and other allied health professionals.[9] In 2005 and 2010 studies involving perioperative and critical care nurses highlighted the role of poor teamwork and ineffective communication in contributing to patient harm.[10] 2013 evidence indicates, furthermore, that this past decade's efforts and financial investments have not succeeded in systematically improving patient safety and some American hospitals actually demonstrated higher rates of preventable harm.[11] Surgical teams, in order to ensure a reduction of unsafe acts in the operating room, need to develop a culture of patient safety centered on effective collaborative practice.

What determines successful collaboration?

San-Martin-Rodriguez et al.[6] conducted a literature review of the elements that affected successful collaboration among health care teams. Using keywords, such as "collaboration", "interprofessional team", "interdisciplinary team", "determinants", and 'factors", they searched the Medline, CINAHL and Sociological Abstracts Database for the period 1980-2003. They included only empirical studies and excluded anecdotal articles and editorials.[6] Only ten articles, meeting the inclusion criteria were identified which demonstrates the lack of empirical studies at the time. In the analysis three determinants of successful collaborative practice were identified (interactional, organizational, and systemic factors) which were then subdivided into thirteen sub-elements (see Figure 1).[6] Systematic reviews of empirical studies are considered to be the highest form of evidence[12] and thus support the use of this review, by this author, despite the limited amount of literature available.

All the factors and sub-elements developed by San-Martin-Rodriguez[6] must be examined when organizations and healthcare professionals attempt to foster collaborative practice.[6] This is particularly important in complex

If it's too good to be true...
There must be a reason why!

This short sentence properly summarizes a reality we are regularly faced with. Instruments available at ridiculously low prices, repair services without workshops or specialists, stainless steel of uncertain quality, questionable manufacturing quality, unreputed businesses without experience, cheap products…

Do you really feel like taking such risks? Can you afford it?

There's a price to be paid for quality, and often "inexpensive" means that costs will be higher on the long-term.

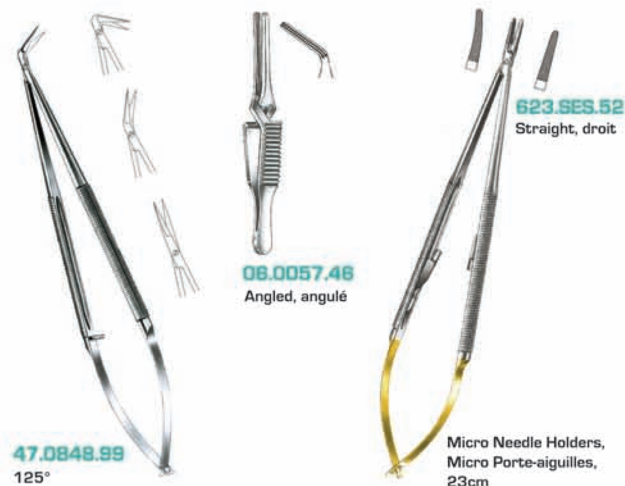
Si c'est trop beau pour être vrai...
c'est vrai

Cette courte phrase résume bien une réalité à laquelle nous sommes régulièrement confrontés. Des instruments à des prix ridiculement bas, un service de réparation qui n'a pas d'atelier, ni de spécialiste, de l'acier inoxydable de qualité incertaine, une qualité de fabrication douteuse, une entreprise sans histoire et d'une réputation inconnue, des produits pas chers….

Croyez-vous vraiment avoir le goût et les moyens de prendre de tels risques?

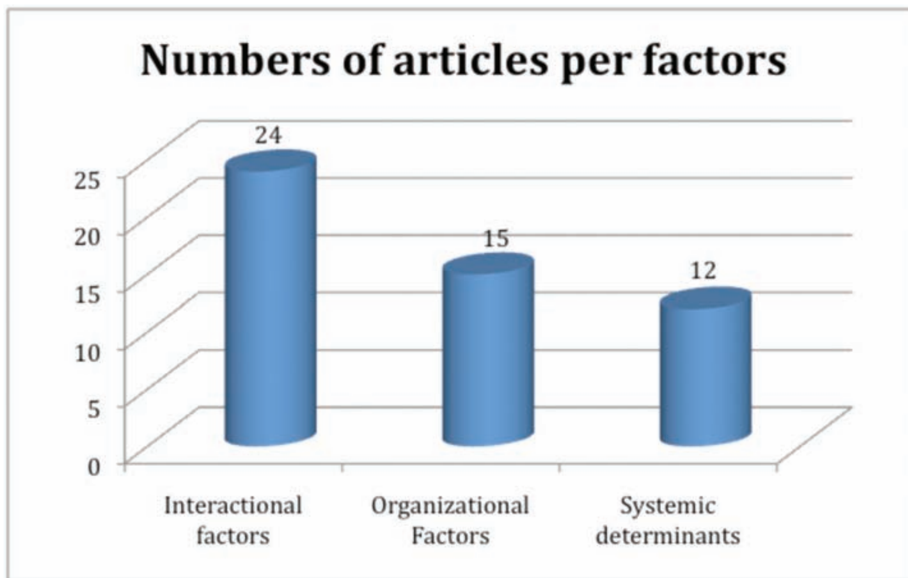
La qualité a un prix et souvent « pas cher » signifie des coûts importants à plus long terme.

Contact us for all your **THORACIC VASCULAR** needs
*Contactez-nous pour tous vos besoins **VASCULAIRES THORACIQUES***



1273, St-Louis, Terrebonne, QC,
J6W 1K6, Canada
T : 450.471.1379 • 1.800.361.1502
F : 450.471.1030
instrumentarium-online.com
info@instrumentarium-online.com

Figure 2



environments such as critical care areas and the operating room where multisource approaches must be developed in order to change behaviours.[13]

Collaborative practice & teamwork in the OR

Although much is being written about collaborative practice[2,3,4,5,7] the author of this paper set out to retrieve and analyze the literature available for the perioperative setting that specifically addressed the determinants discussed by San-Martin-Rodriguez et al.[6] The review of the literature was conducted using a multisource database search (Ovid, PubMed, CINAHL and Google Scholar) with the keywords "collaborative practice and operating room", "teamwork and surgical environment", and different combination of these terms. Search terms were later expanded to include the specific determinants of "collaborative practice" and the "operating room/surgical environment". Relevant articles, dating from the 2000-2013 period, were first examined by reviewing their titles, abstracts, and key words. Articles' relevancy was established using the specific determinants of collaborative practice and with the criteria that they address, specifically, operating room or surgical teams. If the article specifically mentioned one or more of the determinants then the full text article was retrieved and reviewed. The key findings, relevant to the purpose of this paper, were then extracted and summarized. Research articles, including limited randomized control studies, were reviewed first but, due to the lack of such studies, the inclusion criteria were broaden to include other types of evidence such as observational or comparative studies and review articles.[14] Books, letters to editors, opinions, editorials and literature addressing patient safety, but not the specific determinants, were excluded.

The screening process yielded 22 articles that were divided into the three factor groups (interactional, systemic, and organizational) and then categorized according to the specific elements they addressed. Some articles addressed more than one factor or element.(See Figure 2) Each element or factor was addressed separately in the body of the review. The next section of this paper will present the summary of the author's findings. A discussion of the main findings, and recommendations for future practice, will follow.

DETERMINANTS OF SUCCESSFUL COLLABORATIVE PRACTICE IN THE OR

INTERACTIONAL FACTORS

The first determinant addressed by San-Martin-Rodriguez et al.6 was the Interactional factors. They are the positive and constructive interpersonal relationships upon which successful collaborative practice is dependent.[6] These are the human factors that must be developed and fostered in order to promote effective collaborative practice and improve patient outcomes.[6] These interactional factors were sub-divided into the following four elements: the willingness to participate in collaborative practice; trust; communication; and mutual respect and understanding.

Willingness to participate in collaborative practice

How many more reasons do you need to switch to Mega Soft®?

55,000,000

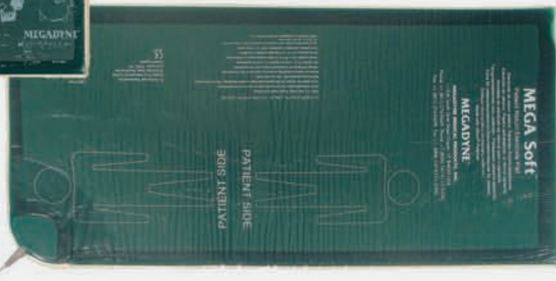
Procedures Using Mega Soft®

zero

Pad-Site Burns

MEGA SOFT® PATIENT RETURN ELECTRODE

** Mega Soft® Pediatric Patient Return Electrode*



** Mega Soft® Patient Return Electrode*

MEGA SOFT® IS PROVEN SAFER THAN "STICKY PAD" ELECTRODES

Patient safety is your top priority and Mega Soft® has been proven safer for patients than REM® "sticky pads". If you are still using sticky pads, switching to Mega Soft can help make your O.R. a safe zone.

AMT:ELECTROSURGERY
INTEGRATING SAFETY AND PERFORMANCE

TO LEARN MORE CALL: 1-888-803-6799

Trust, in the context of the operating room, is built by working with the same people over an extended period of time and developing a feeling of belonging to a competent team.[21]

Collaborative practice, though shown to be beneficial, remains a voluntary process where each professional may choose whether, or not, to participate.6 Although positive attitudes about teamwork have been associated with improved patient outcomes and greater job satisfaction, nurses and surgeons' individual perceptions of teamwork vary greatly.[15]

The literature does not explore which aspect of teamwork, in the context of the operating room, needs to be improved.[16] Discussion regarding the willingness of professionals to work as a team is no exception to this knowledge gap. The willingness to share information and learn new things, both in the academic and practical settings, is, however, discussed as a possible facilitator to teamwork.[17,18]

Trust

It requires time, effort, patience, and positive past experiences to build trust in a team. Trust is required, in the context of team work, not only in relation to others' competency but also of one's own abilities.[6] Self-efficacy beliefs (the belief in one's ability to succeed) can increase a nurse's ability to cope with a dynamic and stressful environment and potentially lead to increased team commitment and improved collaborative practice.[19,20]

Trust, in the context of the operating room, is built by working with the same people over an extended period of time and developing a feeling of belonging to a competent team.[21] This is consistent with the findings of the literature reviewed by San Martin-Rodriguez et al.[6] Novices from many health professions come to observe, and learn, in the surgical theater and the clinical supervision of these learners is a professional responsibility.[22] This implies a certain level of trust among team members that remains unexplored by the literature. Time and resources can be a source of tension in nurse-surgeon communication and an interpersonal relationship that includes trust could possibly reduce this tension.[23]

Communication

Effective and respectful communication is an important aspect of collaborative practice[2,18] Qualitative and quantitative studies have been conducted on nurse/surgeon communication[18,23,24], organizational and individual factors that affect communication during surgery[9,25], and on the most current types of communication failures and their effects on patient safety and the socialization of novices.[22,26] Other studies have also demonstrated that the operating room team's perception of "good or positive" and "bad or negative" communication patterns was very subjective. Nurses most often perceived communication patterns as negative while the surgeons perceived the same communication patterns as more positive.[16,18,24,28] These studies have reported that nurse/surgeon communication patterns were affected by multiple complex factors. Hierarchical power structures, professional socialization, gender, stereotyping, and different professional priorities of patient care are all barriers that inhibit communication.[22,23,29,30] Others have also studied the effects of tense communication on the clinical education of novices and the role it plays in the development of professional identities.[31]

The most recent studies on communication focus on the relationship between effective communication and patient safety in the operating room.[21,32,33,34] The implementation of a surgical safety checklist is proving beneficial by creating a culture of patient safety through improving communication and collaboration among operating room team members.[35,36]

Mutual Respect and Understanding

Respect is a part of all positive human exchanges. In collaborative practice it is essential for all team members to recognize others' competencies as well as their contribution to patient care in order to create a respectful working

Equipment Drapes.
Ecolab Covers Every Need.

With one of the broadest product portfolios in the industry, the Microtek® brand has long been a leading name in draping across multiple categories such as Surgical Microscope, C-Arm, Endoscopic Video Camera, Microscope Laser Arm, Ultrasound and other accessories. Supported by dedicated sales and customer service teams, including on-site assistance, Microtek® Brand Equipment Drapes help reduce risk of infectious disease transmission and contribute to improved clinical outcomes.

Microtek brand innovative surgical equipment draping is trusted worldwide. Ecolab has you covered.

For more information: 800 824 3027
www.microtekmed.com
www.ecolab.com/healthcare

ECOLAB®
Everywhere It Matters.™

environment.[4] A lack of such recognition is a real barrier to collaborative practice.[6] This degree of mutual respect is inherent to effective teamwork.[9] The operating room environment is, however, highly dynamic and professionals must adapt quickly to new technologies. In a meta-analysis, of sixteen qualitative and quantitative researches, it was found that mutual respect, coaching, and the ability to speak up played an important role in the successful implementation of new technology in cardiac surgery.[37] The use of rapidly changing, highly technological, surgical equipment can be challenging for team members. A lack of respect can be evident during the stressful times involved in introducing new equipment. The relationship between the work climate, during periods of change, and patient safety issues has not yet been fully explored in research.

ORGANIZATIONAL FACTORS

The second determinant presented by San-Martin-Rodriguez et al.[6] is organizational factors. They include the structure, philosophy, and administrative support of the organization as important factors that can support or undermine collaborative practice.[6] Healthcare organizations must promote collaborative practice by developing supportive structures that will create a positive cultural environment for professionals.[6]

Organizational Structures

To promote shared decision-making for patient care the organization must promote a shift from a hierarchical structure to a more horizontal power structure.[6] In the operating room, hierarchy has been studied at the

cont. on page 32

The prevention of surgical errors can also be supported, at the organizational level, by providing staff with a more flexible work schedule, ensuring good management of resources and team conflict, promoting competency among professionals, and providing an adequate physical work environment.[27]

interpersonal level[28,29] and at an organizational level.[9,37] Ineffective team communication, throughout the pre-, intra-, and post-operative phases, was found, on the interpersonal level, to be a major contributor to patient injury.[26] Health organizations, in an effort to improve this situation, modeled the aviation industry and developed the surgical checklist.[30] This checklist has allowed for structured and dedicated time for team communication and has been proven to decrease surgical events such as wrong site and side surgery, time and resource issues, and post-operative infections.[30,38,39,40]

Gillespie, Chaboyer, Longbottom, Wallis[9] discussed what they called "the culture of blame" at an organizational level. When negative incidents occur the resulting incident reports and other organizational policy requirements appeared to cause conflicts among team members.[9] This prevents the team from learning together and is an obstacle to the interprofessional communications that is required for team members to learn from the incidents. The authors also noted that the "haphazard implementation of a pre-briefing protocol and finite resources" were an example of the negative effects of the bureaucratic approach on operating room team communication.[9] This demonstrates that lifesaving initiatives, such as the surgical checklist, can actually inhibit collaborative efforts when the organizational support is insufficient. Edmondson also found that organizational leaders who promoted a more horizontal power structure created a work environment that allowed operating room teams to integrate new technology in a safer and more efficient way.[37]

The prevention of surgical errors can also be supported, at the organizational level, by providing staff with a more flexible work schedule, ensuring good management of resources and team conflict, promoting competency among professionals, and providing an adequate physical work environment.[27]

Organization's Philosophy

In order to foster collaborative practice the organization's philosophy must emphasize justice, freedom of speech, and interprofessional collaboration.[6] Surgical team members must feel safe, without fear of negative consequences, to denounce patient-care situations that they perceive to be unsafe.[41] They must also believe that their care institution favours and promotes collaborative practice.[41] Although the role and value of the organizational mission and value statement is widely discussed in the literature only one article was found to discuss the effects of a positive work environment on nurse/surgeon communication[18] and no literature was found that expressly discussed the impact of the organizational philosophy on surgical teamwork.

Administrative Support

Good leadership is essential for the creation of an environment that promotes collaborative practice. Leaders must, in order to support collaborative practice at an organizational level, have a clear organizational vision and the ability to share it with others.[6] Effective organizational leaders can develop a supportive environment, in the operating room, where staff feel comfortable speaking up, asking questions, and constructively managing intra-surgical team conflicts.[37,40] The positive influence of transformational leaders and learning organizations has been documented to increase job satisfaction, patient safety, and effective teamwork.[42,43,44]

Team Resources

Teams must, in order to develop successful collaborative practices, be given time and space to meet and interact.[6] The surgical checklist was developed to provide this dedicated time, in the operating room, for team communication and to standardize the exchanges during shift change.[30] Time to meet and interact must also be provided for the purposes of interprofessional

education. Interprofessional education is discussed, as an option to improve communication and collaboration among surgical team members,[22,45] the literature on the subject is, however, sparse.

Coordination and Communication Mechanisms

According to San-Martin-Rodriguez et al.6 collaborative practice can benefit from:

> "standards, policies, and interprofessional protocols; unified and standardized documentation; and sessions, forums or formal meetings involving all team professionals."[6] (p.140)

The surgical checklist is a standard communication protocol.[26,40] Implementing standardized communication tools and avoiding "case irrelevant communications" can prove beneficial for collaborative practice and patient safety in the operating room.[46]

SYSTEMIC FACTORS

The final determinant presented by San-Martin-Rodriguez et al.[6] is the Systemic Factors that are defined as the systems outside the organization that also influence collaborative practice. Social, cultural, educational, and professional systems will have an impact on a professional's ability to engage in collaborative practice.[6] Below are some examples of how these systems were studied in the context of the operating room.

Social System

The social system relates to the power imbalances created by gender stereotyping and different social status among professionals. These factors can directly impede collaborative practice[6] The imbalances, and resulting inequalities, between nurses and surgeons have been the source of much research and publication.[15,18,22,24] These inequalities have been found to be the source of interprofessional conflict, ineffective communication patterns, disrespectful and abusive behaviour, and job dissatisfaction that can all lead to adverse patient events.[9,23,24,25,30] Although the literature discusses these events and their consequences no research was found discussing the development of educational interventions or organizational policies in order to mitigate this barrier to effective collaboration.

The social system relates to the power imbalances created by gender stereotyping and different social status among professionals.

Cultural system

The cultural beliefs held by individual practitioners may affect collaborative practice.[6] The effects of these cultural beliefs on operating room teamwork have not, based on the literature found in this paper, been studied. In an increasingly multicultural society, such as Canada's, this type of research could help organizations to develop culturally-sensitive educational activities and thus improve collaboration.

Professional system

Over the course of their pre-graduate studies, during their professional socialization phase, health professionals are immersed in their respective professional philosophies and patient-care models. This immersion results in the fragmentation of patient care, the creation of interprofessional conflict, and poor collaboration.[6] In the operating room this socialization pattern is particularly evident in looking at surgeons, nurses, and anaesthetists. Each of these health professions has its own distinct professional identity, defines its role and scope of practice according to the teachings of its own speciality, and generally socializes only among its own group.[18,24,26,40]

Although these factors are discussed in the literature there were no studies available that specifically discussed the factor of professional socialization and its effect on patient safety. Interprofessional educational activities have been discussed as effective

opportunities for different professionals to engage in more efficient communication and thus improve patient safety.[47,48]

Educational system

Interprofessional education is one of the main determinants of successful collaborative practice and the educational system is the principal level for the development and promotion of this concept.[6] The benefits of integrating interprofessional education into health professional curriculum are well documented and supported by Canadian and American collaborative initiatives.[3,49] It is not within the scope of this paper to review this literature. Health discipline students could, however, possibly benefit from an operating room clinical placement. It would support the early development of their communication skills and leadership abilities as well as expanding their professional socialization into a collaborative environment.[22,40,47]

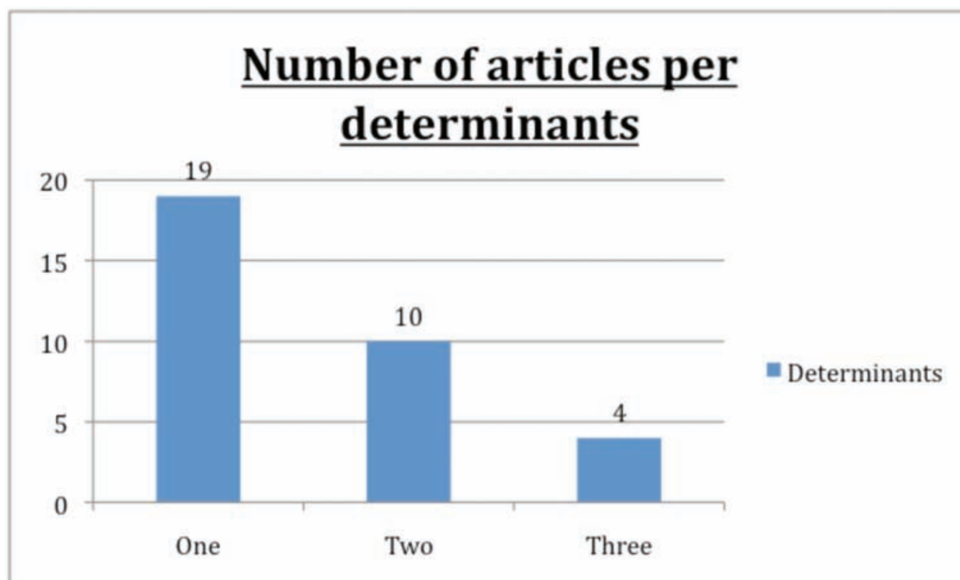
DISCUSSION AND IMPLICATIONS FOR FUTURE RESEARCH

This literature review demonstrates the amount of research and knowledge that has been developed from 2000 to 2013. Although the majority of research has focused on one determinant of collaborative practice[16,17,19,20,21,31-36,38,39,42-45,47,48] some have combined two [15,23-29,37,40] or all three determinants [9,18,22,30] in order to better understand the development and promotion of team work in the operating room setting (see Figure 2) (see Figure 3). Communication is the most researched aspect of collaborative practice and teamwork in the operating room with over 23 referenced articles including several quantitative and qualitative studies.[9,22,24,26,28] The influence of the personal and organizational cultural systems on operating room team cohesion has not been a focus of research.

Interactional factors such as individuals' willingness to participate in collaborative practice and the importance of mutual respect and understanding are important indicators of successful teamwork[6] but there is a need for further research into operating room team members' personal motivation to participate in the process. The lack of study in this area may be related to the difficulty of accurately researching and interpreting such personal motivation.

The majority of communication studies are qualitative designs such as focus groups and observational studies. Dr Lorelei Lingard has performed extensive research in Canada on the communication patterns and the socialization of novices in the surgical setting.[26,30,40,50] She and her team developed an instrument to empirically measure the quality of communication in the operating room.[51] The development, and validation, of a standard measuring tool to assess team communications could prove beneficial to future research. More research is needed to demonstrate empirical relationships between effective team communication, increased positive surgical outcomes, and the development of a culture of patient safety.

Figure 3



> Interactional factors such as individuals' willingness to participate in collaborative practice and the importance of mutual respect and understanding are important indicators of successful teamwork[6]

However, as San-Martin-Rodriguez et al.[6] demonstrated, successful collaboration is more than effective communication. Many factors remain unexplored and multiple research avenues are yet to be developed. Research on interactional factors such as the willingness to work together, interprofessional respect, and the factors that promote and develop trust and build stronger relationships among surgical team members, could support the development of a culture of patient safety in the operating room.[16,52] Research is needed to qualitatively and empirically study the effects of trust on team cohesion and patient outcomes. Such studies could support the development of activities to promote both personal and professional responsibilities associated with collaborative practice and its role in patient safety.

Sexton et al. (2006) developed a teamwork climate scale that measures operating room team members' ability to speak up, conflict resolution skills, physician-nurse collaboration, feeling of peer support, safety to ask questions, and heeding of nurses' input by the surgical team.[53] This tool has proven to have a high degree of reliability and validity in measuring these domains among professional groups.[53] This team climate assessment tool could guide future research projects to empirically determine the relationship between a positive work climate and patient safety. Interprofessional educational activities, aimed at developing trust and respect among team members, could possibly improve collaborative practice and teamwork. More research is needed to examine the relationships between interprofessional education, effective collaboration, and patient safety.

Further research on organizational factors, such as the influence of the organizational philosophy including the review and understanding of its mission and value, could prove valuable in healthcare as demonstrated by the literature in business and leadership.54 Developing transformational nursing leaders, both formal and informal, who can speak up and advocate for their patients, could support operating room nurses in promoting and enforcing patient safety. Research into the relationships between leadership nursing education and the development of a culture of patient safety could support the development of leadership educational activities.

Systemic determinants that affect collaborative practice, among operating room team members, have been greatly understudied. Interprofessional education is being increasingly developed in academic curriculums[55] and students must be able to continue developing and using those skills after they enter practice.

Today's healthcare organizations are multicultural environments where practitioners enter the operating room from different social systems and cultural beliefs that have an influence on their social interactions.[56] Developing effective collaboration without being conscious of these differences is nearly impossible. Effective collaborative practice in the operating room, and on other healthcare teams, starts with education. The development of technical skills is an important aspect of healthcare training but more emphasis on interprofessional education and effective collaborative practice could change the current culture of working in 'silos' and could promote patient safety and improve patient outcomes.[2] This author believes that organizations must address gender inequalities, cultural sensitivity, and professional status issues that are currently impeding the development of collaborative practice. Interprofessional education has the potential to support the development of competencies that could change the hierarchical power structure of the operating room. Further studies are needed to examine the effects of cultural differences on teamwork. These studies could develop a cultural awareness among team

ORNAC Standards pertaining to this article can be found in the Operating Room Nurses Association of Canada (ORNAC) (April 2013) *Standards, Guidelines, and Position Statements for Perioperative Registered Nursing Practice* (11th edition), section 4, pg(s) 204 - 208, Standard(s) 4.1.1 to 4.1.31.

members and facilitate better interprofessional communications.

CONCLUSION:

In conclusion successful collaborative practice in the operating room is dependent on more than just effective communication. It is influenced by a set of complex interactions between interpersonal, organizational, and systemic factors. Professionals must have the willingness to engage in collaborative practice and develop a sense of belonging to a strong and competent team. Organizations must make interprofessional collaboration and education a part of their mission and values and support its development by investing the human and financial resources needed to allow professionals to develop strong communities of practice. The foundations of collaborative practice must be developed early in the professional socialization of healthcare professionals. This includes interprofessional educational activities both at the pre and post graduate levels.

The research on effective collaboration, among operating room teams, has mainly focused on communication skills. Other research avenues, such as the development of interprofessional educational programs and the influence of organizational and personal factors on team cohesion, have been discussed in this paper and warrant further research to improve the culture of patient safety in Canadian hospitals. Future research resources would be maximized by focusing on these lesser studied aspects of successful collaborative practice.

In conclusion successful collaborative practice in the operating room is dependent on more than just effective communication.

REFERENCES

1. Devine J, Chutkan N, Norvell D, Dettori J. Avoiding Wrong Site Surgery: A Systematic Review. J Spine. 2010; 35 (9S): S28-S36.

2. World Health Organization. Framework for action on interprofessional education & collaborative practice. [Online] Available from: http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf [Accessed 9 Oct 2013] p. 7, p.55

3. Canadian Interprofessional Health Collaborative. What is collaborative practice? [Online] Available from http://www.cihc.ca/files/CIHC_Factsheets_CP_Feb09.pdf

4. Association of periOperative Registered Nurses. Key Components of a Healthy Perioperative Work Environment. [Online] Available from: http://www.aorn.org/search.aspx?searchtext=collaborative%20practice [Accessed 9 Oct 2013].

5. Operating Room Nurses of Canada. Mission, Vision, & Values. [Online] Available from: http://www.ornac.ca/mission.phtml [Accessed 9 Oct 2013].

6. San-Martin-Rodriguez L, Beaulieu M, D'Amour D, & Ferrada-Videla M. The determinants of successful collaboration: A review of theoretical and empirical studies. J Interprof Care. 2005; Supplement 1: 132-147.

7. Canadian Patient Safety Institute. What is Quality and Patient Safety? [Online] Available from: http://www.patientsafetyinstitute.ca/english/toolsresources/governance_patientsafety/pages/whatisquality_andpatientsafety.aspx [Accessed 9 Oct 2013]. P.1

8. BC Patient safety & Quality Council. Surgical site infection. [Online] Available from: http://bcpsqc.ca/clinical-improvement/surgical-site-infections/ [Accessed 9 Oct 2013].

9. Gillespie B, Chaboyer W, Longbottom P, Wallis M. The impact of the organizational and

individual factors on team communication in surgery: A qualitative study. *Int J Nurs Stud*. 2010; 47: 732-741

10. Vital Smart. The silent treatment: Why safety tools and checklists aren't enough to save lives. *Agency for Healthcare Research and Quality*. 2011. Available from http://www.aacn.org/WD/hwe/docs/the-silent-treatment.pdf. [Accessed 10 Oct 2013]

11. Shekelle P, Wachter R, Pronovost P, Schoelles K, Mcdonald K, Dy S. *An Updated Critical Analysis of the Evidence for Patient Safety Practices*. Agency for Healthcare Research and Quality U.S. Department of Health and Human Services. Making Health Care Safer II. 2013. [Online] Available from: http://www.ahrq.gov/research/findings/evidence-based-reports/ptsafetyII-full.pdf. [Accessed 10 Oct 2013]

12. Fitzpatrick J. Finding the research for evidence-based practice - Part two: Selecting credible evidence. *Nurs Times*. 2007; 103 (17): 32-33a. Available from: http://www.nursingtimes.net/nursing-practice/clinical-zones/management/finding-the-research-for-evidence-based-practice-part-two-selecting-credible-evidence/201888.article [Accessed 10 Oct 2013].

13. Patterson K, Grenny J, Maxfield D, Mcmillan R, Switzler A. Influencer: The Power to Change Anything. USA: McGraw-Hill; 2008.

14. Khan K, Kunz R, Kleijnen J, Antes G. Five steps to conducting a systematic review. JRSM. 2003; 96 (3): 118-121.

15. Makary M, Sexton J, Freischlag J, Holzmueller C, Rowen L, Pronovost P. Operating Room Teamwork among Physicians and Nurses: Teamwork in the Eye of the Beholder. *J Am Coll Surg*. 2006; 202 (5): 746–752.

16. Manser T. Teamwork and patient safety in dynamic domains of healthcare: A review of the literature. *Acta Anaesthesiol Scand*. 2009; 53: 143-151.

17. Silen-Liponen M, Tossavainen K, Turunen H, Smith A. Learning about teamwork in the operating room clinical placement. Br *J Nurs*. 2004; 13 (5): 244-253.

18. Silen-Lipponen M, Turunen H, Tossavainen K. Collaboration in the operating room: The nurses' perspective. *J Nurs Adm*. 2002; 32 (1): 16-19.

19. Gillespie B, Grimbeek P, Wallis M, Chaboyer W. Resilience in the operating room: developing and testing of a resilience model. *J Adv Nurs*. 2007; 59 (4): 427-38.

20. Leblanc P, Schaufeli W, Salanova M, Llorens S, Nap R. Efficacy beliefs predict collaborative practice among intensive care unit nurses. *J Adv Nurs*. 2009; 66 (3): 583-594.

21. Alfredsdottir H, Bjornsdottir K. Nursing and patient safety in the operating room. *J Adv Nurs*. 2007; 61 (1): 29-37.

22. Lingard L, Reznick R, Espin S, Regehr G, Devito I. Team communication in the operating room: Talk patterns, sites of tension, and implication for novices. *Acad Med*. 2007; 77 (3): 232-237.

23. Espin S, Lingard L. Time as a catalyst for tension in nurse-surgeon communication. *AORN* J. 2001; 74 (5): 672-682.

24. Weeks M. Nurse physician communication- Discourse analysis. *Can Oper Room Nurs J*. 2004; 22 (4): 33-36.

25. Clement D, Dault M, Priest A. Effective Teamwork in Healthcare: Research and Reality. *Healthc Pap*. 2007; 7 (SP): 26-34. Available from: http://www.longwoods.com/content/18669 [Accessed 11 Oct 2013].

26. Lingard L, Espin S, Regehr G, Baker G, Reznick R, Bohnen J. Communication failures in the operating room: An observational classification of recurrent types and effects. *Qual Saf Healthc*. 2004; 13: 330-334.

27. Silen-Lipponen M, Tossavainen K, Turunen H, Smith A. Potential errors and their prevention in the operating room teamwork as experienced by Finnish, British, and American nurses. *Int J Nurs Stud*. 2005; 11 (1): 21-32.

28. Nestel D, Kidd J. Nurses' perceptions and experience of communication in the operating theatre: a focus group interview. *BMC Nurs*. 2006; 5 (1) [Accessed 11 Oct 2013].

29. Booij L. Conflicts in the operating room. *Curr Opin Anaesthesiol*. 2007; 20: 152-156. Available from: http://www.uwoanesthesia.ca/documents/Conflict%20in%20Operating%20Theatre.pdf [Accessed 11 Oct 2013].

30. Haynes A, Weiser T, Berry W, Lipsitz S, Breizat A, Dellinger P. A surgical safety checklist to reduce morbidity and mortality in a global population. *N Engl J Med*. 2009; 360: 491-499. Available from: Retrieved from http://www.nejm.org/doi/full/10.1056/NEJMsa0810119 [Accessed 11 Oct 2013].

31. Lingard L, Reznick R, Devito I, Espin S. Forming professional identities on the health care team: discursive constructions of the 'other' in the operating room. *Med Educ*. 2013; 36 (8): 728-734.

32. Christian C, Gustafson M, Roth E, Sheridan T, Gandhi T. A prospective study of patient safety in the operating room. *Surg*. 2006; 139 (2): 159–173.

33. Gillespie B, Gwinner K, Chaboyer W, Fairweather N. Team communications in surgery – creating a culture of safety. *J Interprof Care*. 2013; 27 (5): 387-393. Available from: http://informahealthcare.com/doi/abs/10.3109/13561820.2013.784243 [Accessed 11 Oct 2013].

34. Runy L. Patient Safety in the Operating Room. *Hosp Health Netw.* 2007; 81 (3): 49, 51-54.

35. Papaconstantinou HT, H, Jo C, Reznik S, Smythe W, Wehbe-Janek H. Implementation of a surgical safety checklist: impact on surgical team perspectives. *Ochsner J*. 2013; 13 (3): 299-309.

36. Haynes A, Weiser W, Berry W, Lipsitz S, Breizat A, Dellinger E. Changes in safety attitude and relationship to decreased postoperative morbidity and mortality following implementation of a checklist-based surgical safety intervention. *BMJ Qual Saf*. 2011; 20: 102-107.

37. Edmondson A. Speaking up in the operating room: How team leaders promote learning in interdisciplinary action teams. *J mang Stu*. 2003; 40 (6): 1419-1452.

38. Lingard L, Regehr G, Orser B, Reznick R, Baker G, Doran D. Evaluation of a preoperative checklist and team briefing among surgeons, nurses, and anesthesiologists to reduce failures in communication. *Arch Surg*. 2008; 143 (1): 12-17. Available from: http://clinicalhumanfactorsgroup.org/resources/08_qrt04/Lingard_et_al_Evaluation_of_a_checklist_briefing_ArchSurg2008.pdf [Accessed 11 Oct 2013].

39. Hurlbert S, Garrett J. Improving operating room safety. *Patient Saf Surg*. 2009; 3 (1): 25. [Accessed 11 Oct 2013].

40. Lingard L, Garwood S, Poenaru D. Tensions influencing operating room team function: does institutional context make a difference. *Med Educ*. 2004; 38 (7): 691-699.

41. Mahajan R. Critical incident reporting and learning. *Br J Anaest*. 2010; 105 (1): 69--75.

42. Laschinger H, Wong C, Mcmahon L, Kaufman C. Leader Behavior impact on staff nurse empowerment, job tension, and work effectiveness. J Nurs Adm. 1999; 25: 28-39.

43. Firth-Cozens J. Cultures for improving patient safety through learning: the role of teamwork. *Qual Health Care*. 2001; 10 (supl II): ii26-ii31. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1765756/pdf/v010p0ii26.pdf [Accessed 11 Oct 2013].

44. Shortell S, Singer S. Improving Patient Safety by Taking Systems Seriously. *JAMA*. 2008; 299 (4): 445-447. Available from: http://jama.jamanetwork.com/article.aspx?articleid=1149150 [Accessed 11 Oct 2013].

45. Lingard L, Whyte S, Espin S, Baker R, Order B, Doran D. Towards safer interprofessional communication: Construction a model of "utility" from preoperative team briefings. *J Interprof Care*. 2006; 202 (5): 471-483.

46. Sevdalis N, Healey A, Vincent C. Distracting communications in the operating theatre. *J Eval Clin Pract*. 2007; 13 (3): 390-394.

47. Collin K, Paloniemi S, Mecklin J. Promoting interprofessional teamwork and learning: The case of a surgical theatre. *J educ wk*. 2010; 23 (1): 43-63.

48. Barnsteiner J, Disch J, Hall L, Mayer D, Moore S. Promoting interprofessional education. *QSEN*. 2007; 55 (3): 145-150.

49. Aihc-us.org. *Home - American Interprofessional Health Collaborative*. [Online] Available from: http://www.aihc-us.org/ [Accessed 11 Oct 2013].

50. Lingard L. The rhetorical 'turn' in medical education: What have we learned and where are we going? *Adv Health Sci Educ Theory Prac*. 2007; 12: 121-133. [Accessed 11 Oct 2013].

51. Lingard L, Regehr G, Espin S, Whyte S. A theory-based instrument to evaluate team communication in the operating room: balancing measurement authenticity and reliability. *Qual Saf Health Care*. 2006; 15 (6): 422-426.

52. Kunzle B, Kolbe M, Grote G. *Ensuring patient safety through effective leadership behaviour: a literature review*. Safety Science. 2010; 48 (1): 1-17.

53. Sexton J, Makary M, Pryor D, Hendrich A, Holzmueller C, Knight A. Teamwork in the operating room: frontline perspectives among hospital and operating room personnel. *Anesthesiol*. 2006; 105 (5): 869-870.

54. Daft R. *The leadership experience*. 5th ed. South Western: Cengage Learning; 2011.

55. Deschênes B, Jean-Baptiste A, Matthieu É, Mercier A, Roberge C, St-Onge M. *Guide d'implantation du partenariat de soins et de services: Vers une pratique collaborative optimale entre intervenants et avec le patient*. Montreal University. 2013. Available from: http://www.ruis.umontreal.ca/documents/Guide_implantation.pdf. [Accessed 13 Oct 2013].

56. Giger J, Davidhizar R. When the operating room has a multicultural team. Today's surgical nurse. 1996; 18 (5): 26.