INTERPROFESSIONAL SHARED DECISION MAKING IN NICU: A MIXED METHODS STUDY

By

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Abstract

Background: The process of shared decision making (SDM), a key component of interprofessional (IP) practice, provides an opportunity for the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided. The aim of this study was to understand how different professional groups perceive IPSDM, their role as effective participants in the process and how they ensure their voices are heard.

Methods: A sequential explanatory mixed methods design was used consisting of a realist review of the literature about IPSDM in intensive care, a survey of the IP team (n=96; RR-81.4%) about collaboration and satisfaction with the decision making process in NICU, semi-structured interviews with a sample of team members (n=22) working in NICU, and observation of team decision making interactions during morning rounds over a two week period. A tertiary care NICU in Canada was the study setting.

Findings: The study revealed a number of key findings that are important to our increased understanding of IPSDM. Healthcare professionals' (HCP) views differ about what constitutes IPSDM. The nature of the decision (triage, chronic condition, values sensitive) is an important influencing factor for IPSDM. Four key roles were identified as essential to the IPSDM process: professional expert, leader, synthesizer and parent. IPSDM involves collaboration, sharing, weighing and building consensus to overcome diversity. HCPs use persuasive knowledge exchange strategies to ensure their voices are heard during IPSDM. Buffering power differentials and increasing agreement about best options lead to well-informed decisions. A model was developed to illustrate the relationships among these concepts.

Conclusions: Findings from this study improve understanding of how different members of the team participate in the IPSDM process, and highlight effective strategies to ensure professional voices are heard, understood and considered during deliberations.

Keywords: interprofessional, shared decision-making, persuasive knowledge exchange

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CHAPTER ONE

Introduction

The purpose of this research was to explore interprofessional shared decision making (IPSDM) from the perspective of an interprofessional (IP) team in a neonatal intensive care unit (NICU). The complexity of the patient population in NICU requires a diverse team of health care professionals to identify the best options for care. This is an essential step for both effective care decisions and in preparation to support parents' involvement in decision making for preference-sensitive decisions. Since this research was focused on how the IP team engages in the shared decision making (SDM) process, parents were excluded as participants.

To address the objectives of this research, a sequential explanatory mixed methods design was used, consisting of four phases. The first phase was a realist review of the literature to determine the context, mechanisms and outcomes of IPSDM in intensive care. In the second phase, members of the IP team in NICU were surveyed to explore perceptions about collaboration and satisfaction with the decision making process. The third phase consisted of interviews with selected members of the IP team to explore their perceptions about the nature of IPDSM in NICU and strategies used to facilitate knowledge exchange within the IP team. The fourth and final phase involved observations of the IPSDM during patient care rounds in NICU. To provide background for this research, the importance of IP collaboration to health service delivery and patient care is discussed. SDM as a component of IP collaboration is introduced and interpretations of SDM in the literature are also presented.

What is Interprofessional Collaboration – Why is it Important?

When health needs of the patient are complex and require the skills of a number of health professionals, collaboration among professionals is essential (Oandasan et al., 2006). A broad range of knowledge and expertise must be brought together to support care and ensure best outcomes for infants in the NICU. Collaboration among health professionals can occur along a continuum from independent parallel practice (with autonomous health professionals working side by side); to consultation and referral (where health professionals exchange information); to interdependent co-provision of care (with interdependent decision-making) (Way, Jones, & Baskerville, 2001; Oandasan et al., 2006). The later form, where professionals from different disciplines collaborate to provide an integrated and cohesive IP approach to care to meet the needs of patients and their families, is referred to as interprofessionality (D'Amour & Oandansan, 2005; D'Amour, Ferrada-Videla, Rodriguez, & Beaulieu, 2005).

An overview of two systematic reviews of the literature exploring the concepts of interprofessionality (D'Amour & Oandansan, 2005) and teamwork (Xyrichis & Ream, 2008) have identified ten key elements of IP collaboration. These elements include: having two or more health professionals from different disciplines, a common goal, collaborative relationships, integrated and cohesive care, symmetry of power, shared knowledge, interactions over time, common understanding of each others' role, interdependency among health professionals, and a supportive organizational environment (Légaré et al., 2010b; Stacey, Légaré, Pouliot, Kryworuchko, & Dunn, 2010).

The concepts of partnership, sharing, interdependency, power, and collaborative process are most commonly included in definitions of IP collaboration (D'Amour et al., 2005). Partnership involves two or more professionals working collaboratively towards common goals, with open and honest communication, mutual trust and respect, and valuing the contributions and perspectives of the other professionals. Sharing involves shared

responsibilities, shared decision-making, shared healthcare philosophy, shared values, shared data, shared planning and intervention and shared professional perspectives. Interdependence on other members of the team means that individual contributions are maximized and the output of the whole becomes much larger than the sum of each part, leading to collective action. Power is shared among members of the team, recognized by all and is based on knowledge and experience rather than on functions or titles. Collaborative process is an interactive, transforming, and interpersonal process that requires that professional boundaries be crossed if each participant is to contribute to improvements in client care while duly considering the qualities and skills of the other professionals (D'Amour et al., 2005).

The Canadian Interprofessional Health Collaborative (2010) has developed a National Interprofessional Competency Framework that includes six competency domains for collaboration: IP communication, patient/client/family/community-centered care, role clarification, team functioning, collaborative leadership and IP conflict resolution. According to this framework IP collaboration is “the process of developing and maintaining effective IP working relationships with learners, practitioners, patients/clients/families and communities to enable optimal health outcomes” (Canadian Interprofessional Health Collaborative, 2010, p. 8). Elements of IP collaboration, which include respect, trust, shared decision making and partnerships, are dependent upon effective IP communication and the ability of teams to deal with conflicting viewpoints in order to reach reasonable compromises (Canadian Interprofessional Health Collaborative, 2010).

IP collaboration is now recognized by patient safety advocates, healthcare professional associations and regulatory bodies, researchers and government as key to the provision of high quality care and optimal patient outcomes. IP collaboration has been found to have a positive effect on workload, build cohesion among members of the team and reduce burnout (Oandasan et al., 2006; Clements, Dault, & Priest, 2007) thus

improving the quality of work life of healthcare professionals (Doran, 2005; McGillis Hall et al., 2006) . In addition, IP practice has the potential to improve the quality of care (Oandasan et al., 2004; Oandasan et al., 2006; Zwarenstein & Bryant, 2000) and affect patient safety (Byers & White, 2004; Committee on Quality Health Care In America, 2001; Committee on the Work Environment for Nurses and Patient Safety, 2004; Kohn, Corrigan, & Donaldson, 1999; Reason, 1990; Wachter & Shojania, 2004). As a result, IP education, practice and research, has been a priority of the Federal and Provincial governments (Burton, 2006; Health Canada, 2003; Kirby, 2002; Ministry of Health and Long Term Care, 2005; Ministry of Health and Long Term Care, 2006; Romanow, 2002).

Shared decision making, one of the essential elements of IP collaboration, is the focus of this research. It is important to understand how SDM functions in an intensive care environment where professions must work together to ensure optimal care in life threatening situations. Interpretations of SDM in the literature are discussed below.

Shared Decision Making in the Literature

Interpretations of SDM in the literature range from dyadic decision making, a process by which healthcare choice is made by a practitioner together with a patient (Towle & Godolphin, 1999; Légaré et al., 2010b), to an IP approach to SDM, a process that involves the IP team collaborating to identify best options and supporting the patient to be involved in decision making about those options (Légaré et al., 2010b; Légaré et al., 2010a), to a focus on clinical SDM within the IP team (Way, Jones, Baskerville, & Busing, 2001). In this latter form of SDM, members of the IP team collaborate to reach a common understanding of the patient situation, identify options for care and deliberate about best choices for optimal outcomes. An overview of each of these interpretations of SDM follows.

Dyadic Shared Decision Making

The first interpretation of SDM is dyadic SDM. Most of the literature on SDM focuses exclusively on the dyadic relationship of physician and patient. Dyadic SDM is described in the literature as the process by which the practitioner-patient dyad reach healthcare choices together (Charles, Gafni, & Whelan, 1997; Coulter, 2002; Elwyn, Edwards, Gwyn, & Grol, 1999; Elwyn, Edwards, Kinnersley, & Grol, 2000; Pierce & Hicks, 2001; Towle & Godolphin, 1999). It is advocated as an optimal model of treatment decision making (Charles et al., 1997).

Wennberg (2002) described care as either effective or preference sensitive. Effective care involves situations where evidence of benefit outweighs harm and therefore, all patients should receive this type of care, where indicated. However, in some cases, despite clear evidence to the contrary (e.g. benefits outweigh risks), some patients choose otherwise, much to the team's distress. In contrast, preference sensitive care involves situations where the evidence for the superiority of one treatment over another is either not available or does not allow differentiation. The best choice depends on how individuals value the risks and benefits of treatments and choice of treatment should belong to the patient (Elwyn, Frosch, & Rollnick, 2009). The dyadic model of SDM, which involves collaboration between patients and caregivers to come to an agreement about a healthcare decision, is especially useful for preference sensitive decisions when there is no clear 'best treatment option' and the patient or family is dealing with one health care professional (Dartmouth-Hitchcock Medical Center, 2007).

A number of models of treatment decision making between practitioner-patient dyads are described in the literature: the paternalistic model, the informed model, the professional-as-agent model and the SDM model (Charles et al., 1997). The paternalistic model assumes a passive role for the patient in the treatment decision making process and positions the physician in the dominant role of expert. The informed model uses information

is an enabling strategy, empowering the patient to become a more autonomous decision maker. The informed model leaves the physician outside the decision making process by limiting the role of the physician to one of information transfer. The goal of the professional-as-agent model is to resolve the informational asymmetry between physician and patient, but ultimately the physician makes the treatment decision, either assuming that he/she knows, or has already elicited the patient's preferences (Charles et al., 1997). In the SDM model a clinician, most often a physician and a patient both participate in the process of decision making. Information sharing occurs (e.g. both the patient and physician bring information and values to the process) and a treatment decision is made where both parties agree to the decision. This final step is an important characteristic that distinguishes SDM from the paternalistic, informed or professional-as-agent models where the ultimate responsibility for the decision is clearly vested with the physician or the patient (Charles et al., 1997).

Although advocated (Charles et al., 1997; Coulter, 2002; Elwyn et al., 1999; Elwyn et al., 2000; Pierce & Hicks, 2001; Towle & Godolphin, 1999), in reality SDM can be a challenge to achieve. A systematic review of 28 studies from 10 countries explored the barriers and facilitators to implementing SDM in clinical practice and found that little is known about SDM from the perspective of health professionals other than physicians (Gravel, Légaré, & Graham, 2006; Légaré, Ratte, Gravel, & Graham, 2008a) or how to operationalize SDM to ensure the different professional perspectives essential to the decision making process are considered. The most often reported barriers to SDM include: patient characteristics, clinical situation, lack of self-efficacy and time constraints (Gravel et al., 2006; Légaré et al., 2008a). The most often reported facilitators are provider motivation and positive impact on the clinical process and patient outcomes (Gravel et al., 2006; Légaré et al., 2008a).

In a systematic review of the literature about SDM, Makoul and Clayman (2006) identified 161 definitions of SDM in medical encounters. However, none of the definitions included an IP perspective as part of the process of SDM, thus limiting application to a broader clinical context. In a theory analysis of SDM conceptual models completed by Stacey and colleagues (2010),15 unique models of SDM containing 18 core concepts were found. The key features of the SDM process in these models included: equipoise (recognize decision to be made), knowledge transfer and exchange, expression of values / preferences, deliberation, the decision and implementation of the decision. However, only two models included more than one health professional collaborating with the patient and most SDM models also failed to include an IP approach to decision making (Stacey et al., 2010).

Thus, the conceptualization of SDM, when limited to the physician-patient dyad, does not adequately reflect the current realities of clinical practice where other participants are often involved (e.g. situations where patients are supported by family members or friends, or where incompetent or seriously ill patients require proxy decision makers to act on their behalf, or in cases where several physicians are involved in the decision making process with a single patient) (Charles et al., 1997). The dyadic SDM model also completely negates the essential roles of other members of the IP team in patient care planning and decision making and the influence of the environment (e.g. primary care versus intensive care setting) on the decision making process.

Interprofessional Approach to Shared Decision Making

The second interpretation of SDM to be discussed is the IP approach to SDM advocated by Légaré and colleagues (2008b). Just as SDM models lack IP collaboration principles and concepts (Makoul & Clayman, 2006; Moumjid, Gafni, Bremound, & Carrere, 2007), IP collaborative practice models have failed to address how patients' preferences should be incorporated into the IP collaboration process, the effect of IP collaboration on

SDM with a patient or family (D'Amour & Oandansan, 2005; Zwarenstein, Reeves, & Perrier, 2005) or how patients or families can actively participate in decision-making when healthcare teams are involved (D'Amour et al., 2005; D'Amour & Oandansan, 2005).

As a result of these limitations, Légaré and colleagues (2008b) have been working on a project to develop an IP approach to SDM model (IP-SDM). According to Légaré and colleagues (2008b), an IP approach to SDM involves the IP team collaborating to identify best options, and supporting the patient or family to be involved in decision making about those options for preference sensitive decisions.

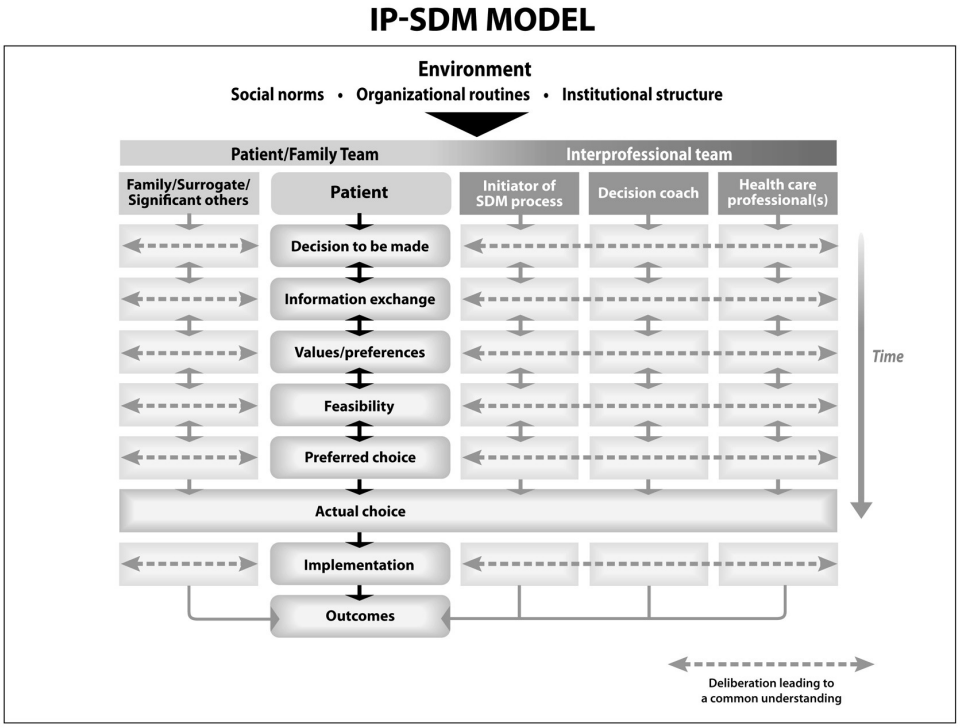
In the IP-SDM model (Légaré et al., 2010a) (Figure 1 - page 10), the patient presents with a health condition that requires decision making and follows a structured process to make an informed, value-based decision with a team of healthcare professionals. The model acknowledges the influence of individual team members' professional roles, including the decision coach, and the influence of the environment (social norms, organizational routines and institutional structure) on the decision making process. Central to the IP-SDM model is the patient, the initiator of the SDM process (e.g. any healthcare professional who identifies the health problem and the decision to be made) and the decision coach, who is trained to support the patient's involvement in decision-making. For the SDM process to be IP, at least two healthcare providers from different professions must collaborate with the patient either concurrently or sequentially. Family members, surrogate decision makers and other people who can influence the decision-making process (e.g. support the patient or make the process more difficult) are also included in this model (Légaré et al., 2010a).

In the IP-SDM model (Figure 1 – page 10), an initiator identifies that a decision, with more than one choice, needs to be made. The next step in the process involves exchange of information about the options and discussion about the potential harms and benefits of each option. Clarification of values and preferences of the patient and family as well as

acknowledgment of the impact of values and preferences of others involved in the decision making process (e.g. surrogates, decision coach, initiator and other health care professionals) follows. Final steps include exploration of the feasibility of the options, identification of the preferred or actual choice and implementation of the decision made and evaluation of outcomes (Légaré et al., 2010a).

Increased understanding about IP-SDM has the potential to improve the quality of decisions made and support provided to patients and their families (Légaré et al., 2010b) and to improve collaboration within IP teams by facilitating the decision-making process and continuity of care across health sectors (Haggerty et al., 2003). Although this model has been developed following an extensive review of the literature and consultation with experts, is based on the concepts of IP collaboration and SDM, recognizes the involvement of IP teams in the provision of care and supports patient or family involvement in decision making, and has been validated with stakeholders in Canada (Légaré et al., 2010a), it has not yet been tested in practice.

Figure 1. The Interprofessional Approach To Shared Decision Making Model (IP-SDM) (Légaré et al., 2010a).



Note: From "Validating a conceptual model for an interprofessional approach to shared decision-making: A mixed methods study" by F. Légaré, D. Stacey, S. Gagnon, S. Dunn, P. Pluye, D. Frosch, D. et al., 2010, *Journal of Evaluation in Clinical Practice*, p.4. Copyright 2010 by John Wiley and Sons. Reprinted with permission

Further research is needed to understand how an IP team collaborates to identify the decision to be made and the options for deliberation for effective care decisions (Wennberg, 2002) when different professional perspectives and opinions are involved. In addition, research is also needed to understand how IP teams collaborate to actually achieve SDM with patients or surrogate decision makers for preference sensitive decisions (Wennberg, 2002). Finally, research is needed to determine what interventions are effective to facilitate implementation of an IP approach to SDM in routine clinical practice and whether this approach to care is feasible in settings where patient acuity is high, and the team approach to care is fraught with unpredictability.

Clinical Shared Decision Making

The third interpretation of SDM to be discussed is clinical SDM. Clinical SDM is a key component of IP collaboration (D'Amour et al., 2005), which is the process that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided (Way et al., 2001). It has been identified as a key attribute of IP practice (Baggs & Schmitt, 1988; Lemieux-Charles & McGuire, 2006). In a commentary on 'healthy workplaces', Doris Grinspun (2007) the Executive Director of the RNAO, described clinical shared decision making as "the most substantive form of teamwork" (p. 85).

Clinical SDM in intensive care, has been associated with improved patient outcomes, nurse and resident job satisfaction (Baggs et al., 1999), improved end-of-life care (Puntillo & McAdam, 2006) and reduced adverse event rates (Jain, Miler, & Belt, 2006). Power differentials, lack of joint clinical decision making between doctors and nurses, and poor decision-making processes have been shown to contribute to the occurrence of critical incidents (Reader, Flin, & Lauche, 2006). This point is illustrated in the following excerpt from a pediatric cardiac surgery inquest that investigated the deaths of 12 babies and found the concerns of nurses and other members of the healthcare team were not addressed (Grinspun, 2007).

> When problems arose the concerns raised by nurses and others were not taken seriously. Even when a series of deaths occurred in rapid succession, there was not a timely and appropriate response within the surgical team, the Child Health Program, the medical and the administrative structures of the HSC, the death review processes of the OCME, and the complaints/investigation processes of the CPSM. To have all the components of the system fail in the case of the death of one child would be disturbing. To have the system fail repeatedly as the death toll mounted over a short period of several months is both shocking and difficult

> to understand (Manitoba Health, 2001, p. 127)….The inquest process revealed that nurses were not treated as full and equal member of the surgical team involved with the pediatric surgery program at HSC (Manitoba Health, 2001, p. 130).

A number of factors, stemming from professional training and socialization (Engestrom, 2000), are the basis for conflicts among health care professionals in planning care for critically-ill patients. These factors include differences in clinical judgment style, calculating and valuing patient survival, methods of obtaining information from the patient and family, perceptions of potential legal repercussions, and views of patient advocacy and patient autonomy (Shannon, 1997). In addition, health care professionals working within different scopes of practice often have different roles and responsibilities within the work setting. They often come with different perspectives about the patient situation (not a shared understanding), they have different aims and objectives, different understandings of science and evidence, they face different challenges and often use different criteria to judge success (Engestrom, 2000). Results from an ethnographic study of IP practice indicated that although members of an IP team bring different knowledge and observational perspectives to patient care planning, team deliberations appear to be a function of who is present and what is negotiated. When a discipline is not present, others may attempt to speak for them. In some cases, the missing voice is of little consequence; however, in other cases the impact can be profound (McClelland & Sands, 1993).

The complexity and uncertainty associated with a given decision also adds to the challenges of clinical SDM. The Framework for Clinical Decision Problems and Approaches (Pierce, 1997) illustrates factors that can affect this process. In this framework, the core elements of the decision problem are complexity and uncertainty. According to this model, in situations that involve two simple alternatives with little or no uncertainty regarding the outcomes, the choices are automatic if the options are clear, evidence is strong and there is

little emotional involvement (Pierce, 1997). As the complexity of a situation increases, and evidence is weak or unavailable, more problem-solving is required. Some of the problem solving involves identifying the options, determining who needs to be involved in the decision and whether a decision needs to be posed to a patient or family member (Pierce, 1997). Most of the challenging decisions involve either a complicated situation with multiple options of varying uncertainty or ethical considerations (Pierce, 1997) making decision making difficult. In the case of preference sensitive decisions, family involvement is paramount during these deliberations (Wennberg, 2002).

How the IP team works together can also affect clinical SDM. For successful outcomes to be achieved by IP teams, it is essential that all members communicate their perspectives and knowledge, and that their contributions are visible and understandable to the other members of the team (McCloskey & Maas, 1998). McCloskey and Maas emphasize that it is essential that members of IP teams express their individual perspectives or they risk groupthink. Groupthink results when members desire consensus and their focus on relationships and getting along overrides their personal motivation to appraise alternative courses of action (Carrell, Jennings, & Heavrin, 1997). If a group is very cohesive, they may agree, but on the wrong thing. This approach can result in less questioning and fewer potential ideas and opinions being put forward. If members differ in perspective and have the capability to express their opinions, the diversity of options increases and therefore the range of options to be considered are greater. Decision making related to patient care can lead to disastrous results if team members engage in groupthink; for example, the omission of actions by nurses to prevent skin breakdown or manage infant pain because priorities advanced by physicians or others take precedence (McCloskey & Maas, 1998).

However, the more diverse the opinions are from different professionals on the IP team, the greater the risk of ideas being rejected. An ethnographic study of social workers

and teamwork (with representation from pediatrics, audiology, psychology, nursing, dentistry, social work, special education, physical therapy, occupational therapy, nutrition, communications, and adapted physical education) revealed teams made compromises that reduced conflict, but did not resolve discrepancies among disciplines. Team members could not accept a finding from others that was not confirmed by their own discipline; they devalued data that were inconsistent with their own (Sands, Stafford, & McClelland, 1990).

The clinical SDM process requires that members of the IP team come together to identify the options for deliberation about a decision to be made. Some of these decisions are effective care decisions that will be supported by clear evidence and dealt with through the process of IPSDM to determine best options (e.g. use of conventional or high frequency ventilation, use of antibiotics for sepsis, pharmacological management of infant pain, infant feeding method, skin-to-skin care and support for preterm infants of 25 weeks gestation). However, some of these decisions will be preference sensitive decisions that require involvement of the families as surrogate decision makers for their infants, such as, withdrawal of care or support for preterm infants less than 23-24 weeks gestational age.

In either case, the SDM process requires all participants to reach a state of equipoise about the decision to be made. Equipoise is defined as “the existence of options that are in balance in terms of their attractiveness, or that the outcomes are to, a degree at least, equally desirable (or possibly undesirable)” (Elwyn et al., 2000, p. 3). Equipoise exists when the majority of people agree to consider making a choice between competing options (Elwyn et al., 2009; Elwyn et al., 2000).

However, the fact that clinicians form professional opinions based on the research literature, clinical experience, intuition, and ideology, as to the effects of particular treatments, means they are rarely in a state of equipoise to begin with (McCleary, 2002). Therefore, the options for treatment identified within the IP team must be weighed based on a variety of sources of information (McCleary, 2002). Diversity that cannot be overcome is

as detrimental to patient care planning as groupthink where the broad perspectives that exist in an IP team are melded into one common way of seeing, thinking and doing. The contribution of all members must be visible or priorities may be neglected and patient care planning may go ahead without consideration of all perspectives (McCloskey & Maas, 1998).

IP collaboration is often hindered by power differentials within the team (San Martin-Rodriguez, Beaulieu, D'Amour, & Ferrada-Videla, 2005). Therefore, “team members must sacrifice their autonomy, allowing their activity to be coordinated by the team, either through decisions by the team leader or through shared decision making”, (Clements et al., 2007, p. 2) in order for IP collaboration to be effective. In a study of Canadian integrative healthcare clinics, Gaboury (2009), also found that symmetry of power and equality among professionals was a key element necessary for successful IP collaboration. Therefore, clinical SDM requires either redistribution of the power allocation within the IP team (Grinspun, 2007) or use of strategies to balance or buffer the power differentials that exist. However, how this is accomplished is not clear.

The three interpretations of SDM previously discussed are represented within the following grid that classifies the process of DM according to patient/family involvement in decision making and whether a single health care provider or an IP team is providing care (Figure 2 – page 16). In dyadic SDM, an individual health care professional dealing with the patient, as clinical expert, contributes information to the discussions based on his/her own understanding of the patient situation and the evidence. In both an IP approach to SDM and IP clinical SDM, patient care is managed by an IP team of experts who must overcome their professional diversity to engage in a SDM process. Overcoming diversity, which means “dealing with conflicting viewpoints, and reaching reasonable compromises” (Canadian Interprofessional Health Collaborative, 2010, p. 8), is essential in order for the team to

identify the best options for treatment, and support patient, parent or surrogate decision maker involvement in decision making.

Figure 2. Interpretations of shared decision making grid

		HCP Involvement in Decision Making	
		Single HCP	**IP Team**
Patient / Family Involvement in Decision Making	**Yes**	**Dyadic SDM** • Process by which the practitioner-patient dyad reach healthcare choices together	**IP Approach to SDM** • Process whereby the IP team: - ***Collaborates*** to identify best options - ***Supports*** the patient or family to be involved in decision making about those options
	No	**No SDM** • Paternalistic decision making	**IP Clinical SDM within the team** • Process that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided • Potentially paternalistic towards the family

Purpose of the Study and Research Questions

Based on the literature, a number of questions about IPSDM remain unanswered. Little is known about the process of IPSDM from the perspective of health professionals other than physicians. What happens during the process of IPSDM to ensure that different professional perspectives, essential to IPSDM, are considered? Finally, how are power differentials within the IP team overcome during IPSDM?

I was interested in doing this study in order to learn more about the process of IPSDM and its application in intensive care. An NICU environment was selected because of

the unique characteristics that can both hinder and facilitate IPSDM. These characteristics include: high patient acuity and instability, the need for coordination of care and collaboration among many different professional groups, a model of practice where the healthcare team comes to the patient rather than the patient coming to see individual health care providers and the need for surrogate decision making. Since I was an insider in an NICU where IPSDM is considered to be the norm, a trusted member of the team and familiar with the clinical context of care, I had an excellent opportunity for in depth study of the concept.

The research questions were:

1. What is the relationship between the context in which IPSDM occurs, the mechanisms by which it works and the outcomes that are produced? (Chapter 4)
2. What are the barriers and facilitators of IPSDM in intensive care? (Chapter 5)
3. How do different professional groups perceive collaboration with the decision making process across three decision types (triage, chronic condition management, values sensitive decisions) in an NICU? (Chapter 6)
4. How do different professional groups perceive satisfaction with the decision making process across three decision types (triage, chronic condition management, and values sensitive decisions) in an NICU? (Chapter 6)
5. What are the perceptions of different professionals about the meaning of IPSDM? (Chapter 7)
6. What are the perceptions of different professionals about the key roles involved in IPSDM? (Chapter 7)
7. What are the perceptions of different professionals about the processes involved in IPSDM? (Chapter 7)
8. How do different professionals ensure their voice is heard during IPDSM interactions in NICU? (Chapter 8)

The term interprofessional is used interchangeably in the literature with such terms as multidisciplinary or interdisciplinary to mean among different professional groups. However, to some professional groups, the term interdisciplinary means between different specialties within the same discipline (e.g., the specialties of cardiology, surgery, neurology in medicine). For the purpose of this study the term “interprofessional” will be used to refer to practice among different health professionals (e.g. nursing, medicine, respiratory therapy, social work). Reference to other terms found in the literature will be reported as published.

CHAPTER TWO

Conceptual Frameworks

This chapter describes a conceptual framework designed for this study (The Shared Decision Making and Health Care Team Effectiveness Model) and an additional framework (Activity Theory) (Engestrom, 2000) that has been used to guide this work.

The Shared Decision Making and Health Care Team Effectiveness Model

As a guiding framework for this study, I developed The Shared Decision Making and Health Care Team Effectiveness Model (Figure 3 – page 21) based on concepts from a systematic review of the health care team effectiveness literature (Lemieux-Charles & McGuire, 2006) and a decisional conflict framework (Légaré, O'Connor, Graham, Wells, & Tremblay, 2006). This model illustrates the relationships among components of IP practice, clinical decision making, team effectiveness and health care outcomes.

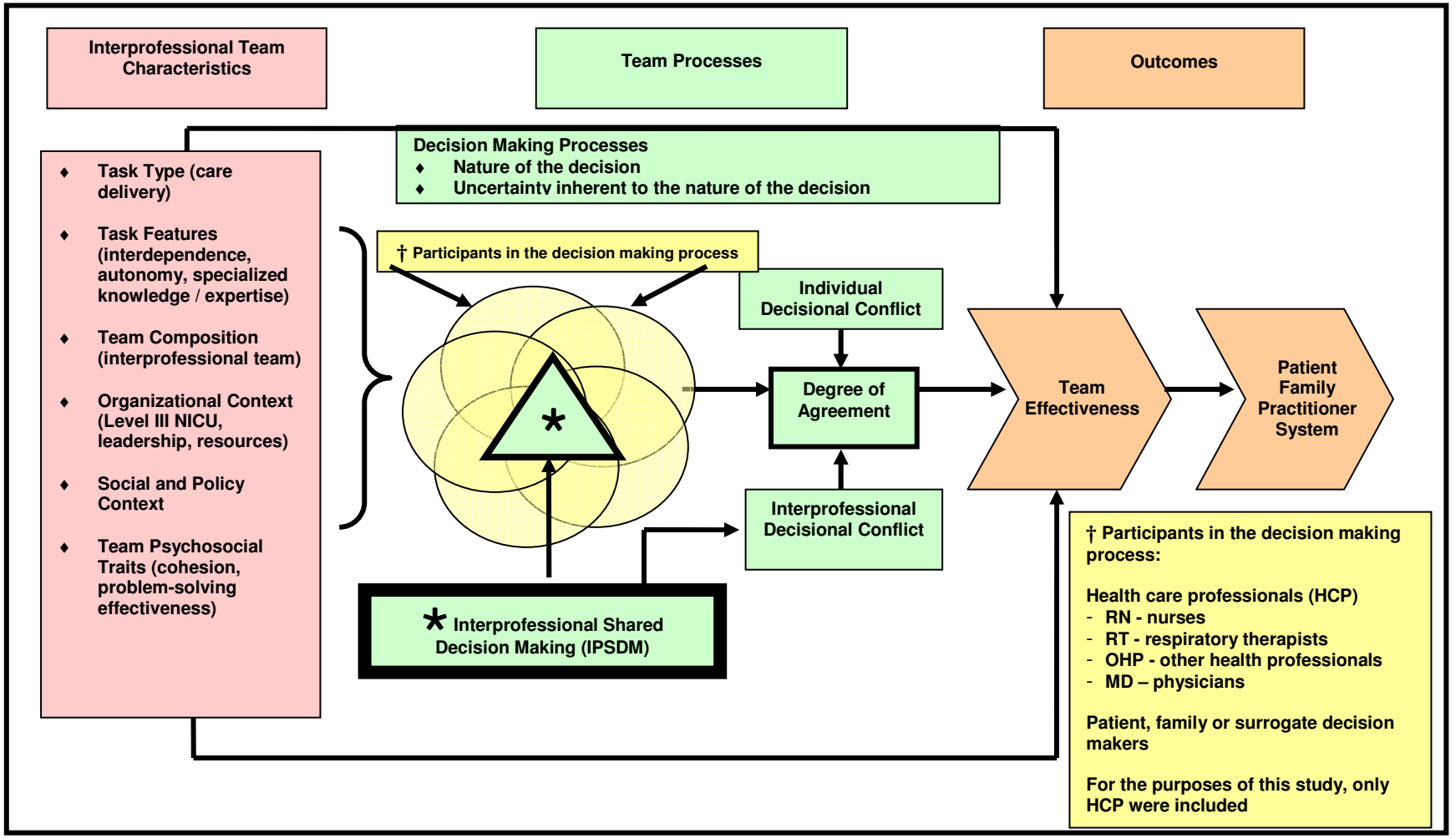
The left side of the framework (pink) reflects the factors from the Integrated Team Effectiveness Model (ITEM) developed by Lemieux-Charles and McGuire (2006) that influence team effectiveness and health care outcomes (right side of the framework – orange). According to the ITEM, these factors include: the task of the team (e.g. care delivery); task features (e.g. collaboration required – interdependence, autonomy, specialized knowledge/skills); team composition (e.g. size of the team, disciplines); psychosocial traits of the team (e.g. cohesion, problem-solving. effectiveness); and the organizational (e.g. setting, resources, leadership) and social and policy context in which the team exists. According to the ITEM, team processes that influence effectiveness include: communication, co-ordination, collaboration, conflict, leadership, decision making process and participation. For the purpose of this study, one of the team processes, shared decision making within the IP team, was singled out for further investigation.

The central portion of the framework (green) depicting the IPSDM process is based on a model developed by Légaré and colleagues (2006) which was used to explore the

impact of the Ottawa Decision Support Framework (ODSF) (O'Connor et al., 1998) on the agreement and the difference between patients' and physicians' decisional conflict. In this new model, the green area now represents the collaborative SDM process that occurs among members of an IP team and other participants (e.g. the patient, family or surrogate decision makers). According to this framework, factors that impact on decision making include: the participants involved in the decision, the nature of the decision (decision type, difficulty, and urgency), uncertainty inherent to the nature of the decision (complexity of the decision and availability of evidence), individual decisional conflict, IP decisional conflict and degree of agreement among participants in the SDM process.

Decisional conflict (represented in the central green portion of the framework) is described as a state of uncertainty about which course of action to take when choices among competing actions involve risk, loss, regret or challenge to personal life values (O'Connor, 1997). The Decisional Conflict Scale (DCS) that was originally developed to identify decisional conflict in patients (O'Connor, 1995), has been adapted to assess health care providers' perspectives on the decision making process (Dolan, 1999). It was originally developed for use with physicians. I suggest, however, that during the process of shared decision making within an IP team, decisional conflict is not only an individual issue for each participant (including patient, family and healthcare provider), depending on the decision to be made, but it can also be an issue across professional groups when there is a struggle to come to agreement about different options.

Figure 3. Shared Decision Making and Healthcare Team Effectiveness Model [Adapted from: (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006)]



Therefore, based on this newly developed Shared Decision Making and Health Care Team Effectiveness Model, I hypothesize that IP team characteristics, shared decision making processes, degree of individual and team decisional conflict, and degree of agreement about a decision will have a direct effect on IP team effectiveness. IP team effectiveness is determined by objective measures of patient, family, practitioner and system outcomes, and perceptions of the members of the IP team about team effectiveness (e.g. well-being, satisfaction, willingness to work together and perceived accomplishment of task outcomes) (Lemieux-Charles & McGuire, 2006).

This research is specifically focused on increasing understanding about the central aspect of the model (the SDM process as it occurs among members of the IP team). The IPSDM process is represented by a star (★) within a green triangle in the central portion of the Venn diagram. The triangle represents the perspectives of the different health care professionals who make up the IP team in the NICU and symbolizes the second conceptual framework used to guide this work (Activity Theory), discussed below.

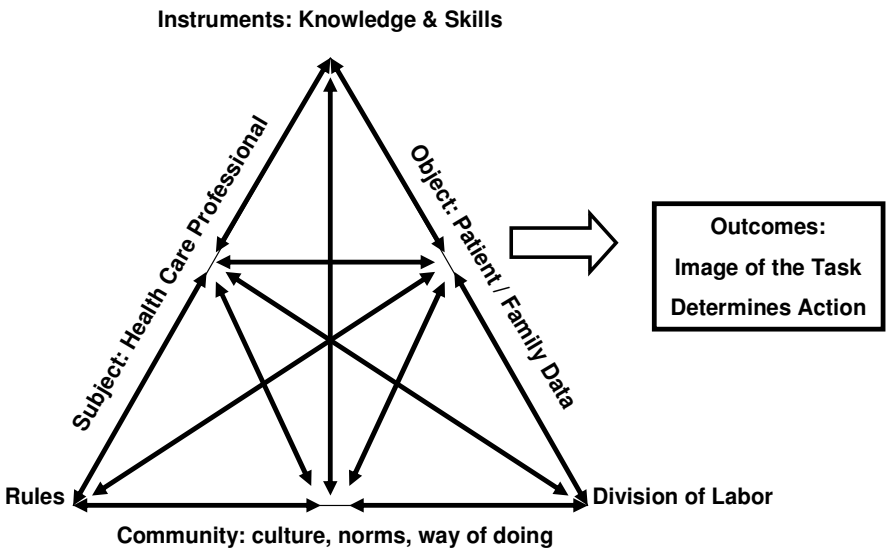
Although participants in SDM can include health care professionals, the patient, the family or other surrogate decision makers, the aim of this study was to first explore how the members of the IP team work together to define a problem and identify the options for deliberation. Any information obtained about family involvement in the process of IPSDM is only from the perspective of health care professionals.

Activity Theory

Activity Theory (Engestrom, 2000) (Figure 4 – page 23), provides a framework to understand how different health care professionals view the patient, conceptualize problems and decide on actions to solve the problems. According to this framework, each health care professional develops knowledge and skills through training and patient care experiences. Practitioners function according to a certain set of rules, within a culture with norms, rules, pre-established division of labour and set ways of communicating. These inter-relationships

determine how each member of the team makes sense of and gives meaning to patient care situations and subsequently determines how they respond.

Figure 4. Activity Theory (Engestrom, 2000)



Note: From "Activity theory as a framework for analyzing and redesigning work" by Y. Engestrom, 2000, *Ergonomics,* p. 962. Copyright 2000 by Taylor & Francis. Reprinted with permission.

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Each profession has a different cognitive map and therefore members of an IP team can look at the same patient situation and not see the same thing (Petrie, 1976). Socialization within different health care professions involves development of a unique voice, perspective, or personal and professional view of the world (Drinka & Clark, 2000). The differences in perspectives among members of the professional health care team can lead to differing assumptions about the problem in the clinical assessment and decision making process. In order for IP practice to work, members of different professions have to develop

new ways of learning, seeing the problems, establishing rules and communicating when they come together in a team (Engestrom, 2000; Hall, 2006). They have to find a common language to make implicit / tacit knowledge explicit (Robinson & Cotterell, 2005), develop a shared vision of patient care with group ownership of the problems and solutions and challenge each others' professional cognitive maps (Engestrom, 2000; Hall, 2006). They must co-create a new way of being (Légaré, 2006). This process is akin to integrated knowledge translation (IKT) "where developers and users of research collaborate together to develop a shared perspective, common language and common understanding about the health problem/issue the team will focus on" (Gagnon, 2009, p. 240).

Health care professionals are educated to emphasize or deemphasize the need for input from other health care professionals, depending on their values related to control over the clinical decision-making process (Stein, Watts, & Howell, 1990; Watts, McCaulley, & Priefer, 1990). Discipline specific world-views prepare individuals to work within their own discipline, not to communicate with individuals from another discipline (Hall, 2005). Conflicts in values have been described for nurse-physician interactions (Corser, 1998; Pike, 1991), social worker-physician relationships (Mizrahi & Abramson, 1985; Mizrahi & Abramson, 2000), and nurse-social worker collaboration (Drinka & Clark, 2000; Werner, Carmel, & Ziedenberg, 2004). In addition, professional education not only focuses on developing a specific area of expertise, but also different approaches to problem solving (i.e. ruling in or ruling out) as is illustrated in the following quote:

> Physicians – with their more reductionist values – are trained in diagnostic techniques that narrow the range of options, heavily relying on 'objective' data such as laboratory and diagnostic tests in the process. Social workers, with their more holistic values are taught to go beyond the narrow presenting problem to incorporate larger psychological issues, such as income, family relationships, and the environment. They tend to rely on subjective data collected by interviews

> that are heavily interpreted by clinical judgment and experience. Nurses, depending on their background and training, may fall somewhere between these two extremes (Drinka & Clark, 2000, p. 76-77).

Respiratory therapists' scope of practice is primarily focused on pulmonary function, management of respiratory issues and ventilation support. When unique disciplinary perspectives are valued, the uniqueness of each professional perspective can be an asset rather than a detriment to patient and family care (Pike, 1991).

Since the differences in perspectives among members of the professional team can lead to differing assumptions about the problem in the clinical assessment and decision making process, "the person who controls the definition of the problem, defines the range of options available to solve it" (Drinka & Clark, 2000, p. 78). Therefore, responses to a given clinical situation will vary depending on who the health care provider is (e.g. physician, nurse, respiratory therapist, or other health care provider), whether the context of care is in a tertiary care setting or a remote rural setting, what the rules of engagement are in relation to this patient interaction, the resources available and the urgency of the situation. The interview questions for phase 3 of this study have been developed based on key components from this framework (Appendix 4 – page 274).

These models provide logical and comprehensive frameworks upon which to build the research design and answer the questions in this study. A study design matrix (Appendix 1 – pages 266-269) summarizes relationships between the conceptual frameworks, objectives, research questions, methods, sample groups and analyses for each phase of the study.

- **Phase 1** (realist review of the literature) provides an overview of existing knowledge about IPSDM in intensive care.

- **Phase 2** (survey) provides additional context for the study by describing the perceptions of members of the team about collaboration and satisfaction with the decision making process across three decision types (triage, chronic condition management, values sensitive decisions) in the NICU.
- **Phase 3** (interviews) narrows the focus of inquiry to obtain more in depth information from selected participants about the process of SDM in the NICU.
- **Phase 4** (observations of IP decision making interactions that occurred during patient care rounds within the NICU) provides behavioral data for comparison with the perceptions of members of the IP team obtained in phases 2 and 3.

CHAPTER THREE

Methods

The purpose of this study was to explore the process of IPSDM and identify factors that promote or hinder this process in an NICU. To address this objective a sequential explanatory mixed methods study was designed to answer the research questions. Information about mixed methods research, the ethical considerations and potential threats to the reliability and validity of the study are presented below.

Rationale for a Mixed Methods Research Approach

Mixed methods research is defined as "research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study" (Johnson & Onwuegbuzie, 2004, p. 17). The major justification for this type of research is that quantitative and qualitative research together, provide for a richer data source and opportunity for more in-depth understanding of the topic under study (Onwuegbuzie & Teddlie, 2003).

Mixed methods research is based on the philosophical premise of pragmatism and a belief that quantitative and qualitative methods are compatible and that they can both be used in a single research study (compatibility thesis) (Johnson & Onwuegbuzie, 2004). The philosophy of pragmatism (advocated by classical pragmatists Charles Sanders Peirce, William James and John Dewey) says that researchers should use the approach or mixture of approaches that works the best to answer the research questions (Johnson & Onwuegbuzie, 2004). This logic of inquiry may involve the use of "induction (or discovery of patterns), deduction (testing of theories and hypotheses) and abduction (uncovering and relying on the best of a set of explanations)" (Johnson & Onwuegbuzie, 2004, p. 17) to understand results.

There are five major purposes for conducting mixed methods research: triangulation (i.e. convergence and corroboration of results from the different methods); complementarity

(i.e. elaborate, enhance, illustrate, and clarify the results from one method with the results from the other method); development (i.e. results from one method help to develop or inform the other method); initiation (i.e. discovering paradoxes and contradictions that lead to re-framing of the research question); expansion (i.e. extending the breadth and range of inquiry by using different methods for different inquiry components) (Greene, Caracelli, & Graham, 1989).

In mixed methods research, assuming the focus of each phase of the study is on the same question, if findings are corroborated, confidence in the results is increased. If the findings conflict then the researcher can explore in greater depth the differences and can interpret the findings with additional insight (Onwuegbuzie & Teddlie, 2003; Johnson & Onwuegbuzie, 2004). Triangulation can help to corroborate findings, strengthen the study results and counter researcher bias. Use of triangulation in this study is discussed later in this chapter.

Mixed Methods Research Process

There are six major mixed methods research designs: sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested and concurrent transformative (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Mixed methods research designs are classified according to four criteria: implementation time order (i.e. concurrent versus sequential), priority (i.e. equal status versus dominant status), stage of integration (i.e. analysis or interpretation phase) and theoretical perspective (Creswell et al., 2003; Johnson & Onwuegbuzie, 2004). To be considered a mixed methods design, the findings must be mixed or integrated at some point during the study (Johnson & Onwuegbuzie, 2004).

A mixed methods research process involves eight distinct steps which include: determining the research question, confirming that a mixed design is appropriate, selecting the mixed method or mixed-model research design, collecting the data, analyzing the data

using qualitative and quantitative analysis techniques, legitimate (validate) the data, interpret the data and draw final conclusions (Johnson & Onwuegbuzie, 2004). The process of data analysis during mixed methods research functions as a legitimation tool to ensure rigor of the research. During the process of analysis, the researcher(s) continually strive to assess and document legitimacy (e.g. trustworthiness - credibility, dependability, confirmability, transferability) (Onwuegbuzie & Teddlie, 2003).

This study, a sequential explanatory mixed methods design, is a qualitatively driven project with a quantitative component with the goal of using triangulation and complementarity of the data to increase understanding of the concept of IPSDM. The purpose of the sequential explanatory design is to use the qualitative findings to help explain and interpret the results of the quantitative phase of the study (Creswell et al., 2003). In this design, results are reported in distinct phases with a final discussion that brings the results together and integrates the findings (Creswell et al., 2003).

Mixed methods data analysis may involve a number of stages (Onwuegbuzie & Teddlie, 2003). The process of data analysis for this study involved data reduction, display and integration. First data reduction was carried out to reduce the dimensionality of the data (e.g. quantitative data was descriptively and statistically analyzed and qualitative data was thematically analyzed). Then data display was completed to create pictorial descriptions of the data (e.g. charts and model diagrams for qualitative data, and tables and graphs for quantitative data). Finally, the results of both quantitative and qualitative data analysis were integrated together for comparison and contrast.

A mixed methods approach was selected because IPSDM is a complex practice issue and different methods were required to answer the research questions. Each health care profession has a different culture, including values, beliefs, attitudes, customs and behaviors (Engestrom, 2000; Hall, 2005) and as such, potentially sees the process of

IPSDM from a different perspective. A mixed methods approach provides increased opportunity to explore the concept of IPSDM through this multi-faceted lens.

The quantitative component of this study (the survey data) provided the opportunity to measure perceptions across professional groups about collaboration and satisfaction with the decision making process. The survey data provided a benchmark of the perceived level of collaboration and sharing that occurs during decision making in this NICU, and provided some preliminary information about group differences. The qualitative component of this study, (e.g. interview and observational data), which is equally as important as the survey data, provided a rich source of additional information from selected participants about the process of IPSDM in the NICU which helped to explain the different professional perspectives found in the survey. The observational data provided behavioral data for comparison with perceptions of the IP team obtained through the survey and interviews. Together, the quantitative and qualitative data enriched each other to provide a more precise picture of IPSDM in this NICU than any one component would have done. A detailed description of the methods used for each phase of this study is included as part of the manuscripts that follow (Chapters 4-8).

Ethical Considerations

Ethics approval was received from the Research Ethics Boards at the participating hospital and the University of Ottawa. Risks associated with this project were considered minimal, given the study design and the content of the project. There was no intervention and people often find benefit to their practice when given an opportunity to reflect and discuss their perspectives. The Medical and Nursing Directors of the NICU were provided with an information letter about the study which was circulated to the IP team and posted in the NICU. Information sessions for all staff were also conducted to answer questions and address concerns.

Prior and informed consent was obtained from each participant before the surveys, interviews and observations occurred (Savage, 2000). Completion of the survey was also used as an indication of implied consent to participate in this phase of the study. Consent to participate was reconfirmed prior to every observation by an insider at arms length to the study (Nurse Educator), to ensure potential participants felt no coercion or pressure to participate. Verbal consent was also obtained from parents if they were present during rounds. There was no financial compensation for the participants' time. All information obtained has been coded to ensure anonymity of both the participants and the patients.

The unit of analysis for this study was an NICU. In general, consultation with a community under study and exploration of ethical space within that community is considered good practice prior to and during development of any research project (Canadian Institutes of Health Research, 2007). Canadian Institutes of Health Research (CIHR) Guidelines (2007) stipulate that, "where the ethical spaces of two or more communities meet, there may be a need to reconcile differences among those ethical spaces in ways that respect and protect the validity of each" (p. 17). In the context of IP research, there are potentially significant differences between the ethical spaces of members of different health care professions. It is important that researchers understand and acknowledge the validity of different ethical perspectives, to ensure that it is respected throughout the research process. Therefore, in order to achieve this goal, the Canadian Institute of Health Research (CIHR) Guidelines for Health Research Involving Aboriginal People (Canadian Institutes of Health Research, 2007), were followed. Although, these guidelines were created for research involving Aboriginal peoples, they address issues that are relevant and applicable to other specialized or vulnerable groups and health care contexts. A summary table of the articles and ethical principles within this guideline as applied to this study is included in Appendix 5 (pages 275 to 277).

Trustworthiness and Validity

Use of qualitative and quantitative methods in mixed methods research provides opportunity for the researcher to use the strengths of each method to obtain a richer source of data to increase understanding about the phenomenon under study (Abowitz & Toole, 2010). However, according to Abowitz & Toole (2010) each approach is "subject to problems of reliability and validity and therefore has distinct limits of generalizability" (p. 109).

Validity refers to a researcher's ability to "draw meaningful and justifiable inferences" (Creswell, 2005, p. 600) from the data. In other words, is the measurement of the phenomenon under study true (Hunter & Brewer, 2003)? Reliability refers to the idea of repeatability or replicability. If conducted again, would the study yield similar results? Mixed methodology researchers need to use established methods to enhance validity and reliability in both qualitative and quantitative research. The exact methods used will vary depending on the research design. Key determinants of the trustworthiness or validity of qualitative studies are credibility, dependability, confirmability and transferability (Lincoln & Guba, 1985). Methods to ensure trustworthiness may include triangulation, member or peer checks, and rich, detailed descriptions and salient quotes regarding the data. With the quantitative data, the researcher may discuss the validity and reliability of the instruments used. The following discussion summarizes the strategies used in this research to enhance the trustworthiness and validity of the findings.

Ensuring Trustworthiness of the Qualitative Components of this Research

Credibility

Credibility is based on evaluation of whether or not the research findings are a credible (or believable) interpretation of the data (Fraenkel & Wallen, 2003). A qualitative study is credible when descriptions or interpretations of findings are recognized by people

as their own and when other researchers or readers can also recognize the experience from hearing or reading about it (Sandelowski, 1986).

To ensure the credibility of this study, three methods were employed: multilayered data collection, member checking and peer review. Data was collected through surveys, interviews and observations to make sure the picture was as complete as possible. This technique provided a richer, more credible data set than one or two sources of data would have provided on their own.

Member checking, or respondent validation, involves systematically soliciting feedback about the data and conclusions from the participants, in order to counteract the risk of misinterpreting the meaning of what participants say and do (Maxwell, 2005). However, because multiple realities exist that are dependent on individual, subjective interpretations of events, validation of results with participants has been questioned (Sandelowski, 1993; Graneheim & Lundman, 2004). In fact, Morse and colleagues (2002), insist that member checking can actually be a threat to validity of findings, given the fact that the data has been de-contextualized, clustered with other responses and summarized – thus making recognition difficult. Many authors highlight difficulties with member checking, such as people changing their minds over time, poor recall, the effect of the data collection process itself and the effect of new experiences in the intervening period (Bloor, 1997; Angen, 2000; Long & Johnson, 2000). Although the value of seeking validation from participants has been questioned, at the very least “participants should recognize themselves and aspects of their world within the research findings” (Johnson & Waterfield, 2004, p. 125).

Therefore, for the purposes of this study, a selected group of participants (from each professional group) were invited to review the findings. An overview of each phase of the study was presented along with the integrated model that was developed to represent the concepts related to the nature of IPSDM and persuasive communication. Participants were

asked if they felt the data were interpreted in a manner congruent with their own experiences. Overall, the participants agreed that the concepts identified in the model (i.e. sharing, weighing, consensus, persuasion, power disparity within the team) made sense, the relationships between concepts were appropriate and the model resonated with the reality of their experience. All participants reported that they could see their perspectives clearly represented in the model.

A second strategy to ensure credibility of this study was through use of peer review. Peers are not experts brought in to "confer the validity stamp of approval on a project, but they can provide expert criticism" (Sandelowski, 1998, p. 470). Peer review occurs when others review the data and the findings to evaluate whether the identified themes clearly emerge from the data. Peers are other researchers or clinicians, whose role is to ask questions. Peer review tests the robustness and completeness of the emerging themes, enables researchers to question and justify their interpretations (Barbour, 2001) and thus helps to validate the findings.

Therefore, as a way of soliciting peer review and checking whether the findings are congruent with reality in other settings, preliminary results of this study were been presented at two conferences. Feedback from the audience of healthcare professionals working in perinatal settings, indicated the concepts identified were relevant, the issues related to decision making described in this study and the challenges of ensuring voices are heard are also common to other settings.

Dependability and Confirmability

Dependability is determined by whether the data adequately represents the phenomena under study. According to Tashakkori & Teddlie (2003), "dependability is achieved by ensuring consistency between different procedures for measurement / observation of the same phenomenon or attribute, an audit trail and use of data triangulation" (p. 694). Confirmability is a measure of how well the inquiry's findings are

supported by the data collected (MacKey & Gas, 2009). This requires the researchers make available full details of the data on which they are basing their claims or interpretation.

Dependability of the data refers to the stability, reproducibility and accuracy of the data collected (Busch et al., 2005). According to Abowitz and Toole (2010), problems can arise due to:

> Inadvertent changes in the measuring instrument (unplanned changes in question wording), in the observer or mode of observation (changing from personal observation to video taping between subjects), or in the phenomenon itself (changes in reported answers due to fatigue on the part of subjects during a long interview) (p. 110).

To increase the rigor of data collection during the interviews, an interview guide was developed to help guide discussions. The questions were pilot tested for clarity and meaningfulness with two health care professionals prior to the interviews. Interviews were arranged at the convenience of each participant (either face-to-face or by phone) and the duration was limited. Observations were completed simultaneously with two observers and data recorded on standardized data collection sheets. De-briefings were held following rounds, when convenient for the IP team and so as to not interrupt progress of rounds.

Multiple coding is a common procedure used during data analysis to demonstrate rigor, and it attempts to establish a level of inter-rater reliability (Cutcliffe & McKenna, 1999). Two people (myself and my thesis supervisor who had no previous contact with the NICU) independently coded the first two interviews and compared results to ensure consistency in the coding. Although the wording used to describe a code sometimes differed (i.e. hierarchy of evidence versus evidence), the essence of the codes identified were congruent. In addition, members of my supervisory committee verified that the response categories and coding were meaningful during review of the initial drafts of the two qualitative papers prepared for this dissertation (Chapters 7 and 8).

During data analysis, I used a coding process to elicit themes from data. To ensure the final themes identified were comprehensive and all-inclusive I discussed the findings with members of my thesis committee (expert review), colleagues who work in the field and participants at two conference presentations (peer review), and study participants (member checking), thus enhancing dependability and confirmability of the findings.

Audit Trail

The dependability and confirmability of a study is also enhanced by a satisfactory audit of the research process as well as the data, interpretations of the findings and resulting recommendations (Krefting, 1991; Horsburgh, 2003). An audit trail can be used to check the pathway of decisions taken by the researcher so that others can understand how and why decisions were made (Cutcliffe & McKenna, 2002; Johnson & Waterfield, 2004; Koch, 1994).

To verify the audit trail, I relied on the assistance of my thesis committee and a competent peer (Johnson & Waterfield, 2004). My thesis committee (BC, IDG, and JM) have expertise in quantitative, qualitative and mixed methods research, nursing, interprofessional practice and education, knowledge translation and shared decision making. My thesis committee, not only provided expert review throughout the entire research process, but they also audited my progress through each phase of the study. My thesis committee met with me as I refined my procedures, after I collected the data, and periodically during the process of data analysis. During our meetings, the committee received regular progress reports of the project, and posed questions regarding the research methodology, data analysis, interpretation of the findings, trustworthiness of the study, and other research issues. The committee members made pointed observations and suggestions, and posed questions throughout the process. This mixed methods inquiry has been revised to take into account the comments and feedback I received from the expert review. My competent peer (IG) is a biostatistician with additional experience in mixed

methods research. IG provided statistical advice during the quantitative analysis, functioned as the second reviewer during the realist review of the literature, verified coding of the interview data, and provided feedback for each of the papers developed to present the study findings.

Triangulation

Triangulation, which involves using multiple research techniques and multiple sources of data to explore issues from all feasible perspectives, can aid in establishing credibility, confirmability, dependability and transferability. The value of triangulation is that it reduces observer or interviewer bias and enhances validity and reliability (accuracy) of the data and interpretation of findings (MacKey & Gas, 2009). Research involving participants with different experiences and backgrounds should be optimized through triangulation (Mays & Pope, 2000).

There are five types of triangulation (theory, methodological, discipline, investigator and data triangulation). Data triangulation can be achieved through time triangulation (e.g. using longitudinal research design), space triangulation (e.g. across settings) or participant triangulation (e.g. comparison at the individual level, among groups, and at the collective level). Investigator triangulation means that more than one person examines the same situation. Discipline triangulation means that a problem is studied by different disciplines. Theory triangulation involves use of alternative or competing theories. Methodological triangulation involves within-method triangulation (e.g. the same method used on different occasions), and between-method triangulation (e.g. different methods are used in relation to the same object of study) (Christensen, 2001). Three methods of triangulation were used in this study (methodological, investigator and data triangulation).

Methodological triangulation was achieved by using more than one method for data collection (survey, interviews and observations) to provide a broader reach and richer information with which to understand the process of IPSDM in the clinical setting.

Investigator triangulation was achieved through use of multiple observers (researcher and research assistant) during phase four of the study (observations). In addition, members of the thesis committee verified the coding themes developed for phase three (interview data). Data triangulation was achieved by collecting data from nurses, respiratory therapists, physicians and other health professionals to provide opportunity for breadth and comparison of information. Analysis of the survey data (phase two) involved comparison of results at the Individual, group and team levels.

Transferability

Transferability refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings (Johnson & Waterfield, 2004). Although qualitative research findings are rarely directly transferable from one context to another, the extent to which findings may be transferred depends on the similarity of the context (MacKey & Gas, 2009). Thick description of the study and assumptions that were central to the research, is important for determining similarity of context (Krefting, 1991).

The essential components of thick description are: representative samples from the data, information about the patterns in the data, explanation of the phenomenon researched and interpretative meaning of findings with respect to previous research (Cutcliffe & McKenna, 1999). This richness of the description allows the reader to judge the reliability of the data and interpretation of findings and the extent to which these findings can be transferred to other settings. To enhance transferability, a detailed thick description of the context, participants, data, analysis process, the data analysis documents used to generate the answers to the research questions and interpretation of findings have been included as part of this dissertation.

Ensuring Validity of the Quantitative Component of this Research (Survey)

Internal Validity

Internal validity in quantitative research is determined by the validity of tests and instruments as measures of the phenomenon under investigation (Sandelowski, 1986). A research instrument is valid when there is confidence that it measures what it was intended to measure. The internal validity of the quantitative component of this research was strengthened through use of a previously validated and reliable instrument developed to measure collaboration and satisfaction with the decision making process (CASDS) (Baggs, 1994).

The CSACD (Baggs, 1994) was originally designed to measure nurse-physician collaboration in making specific patient care decisions in an intensive care unit (ICU). The instrument consists of nine items. The first six items measure critical attributes of collaboration (planning together, open communication, shared responsibility, cooperation, consideration of concerns, and coordination) that are scored from 1 (strongly disagree) to 7 (strongly agree) on a Likert-type scale. The seventh question is a global measure of collaboration scored from 1 (no collaboration) to 7 (complete collaboration). The last two items measure satisfaction with the decision making process and the decision and are scored from 1 (not satisfied) to 7 (very satisfied). A seven point scale was chosen by the developers because it offered enough choice to provide variance in responses (Baggs, 1994). The total possible collaboration score (questions 1-7) is 7 to 49 with a higher score indicating more collaboration in the decision making process.

Content validity for the collaboration scale is supported by the scale's development from a literature review (Baggs & Schmitt, 1988) and by review of the questions by nursing and medical experts in collaborative practice (Baggs & Schmitt, 1995). Criterion validity is supported through correlation of the global collaboration question with the six critical attribute items (correlation coefficient of 0.87) (Baggs, 1994; Dougherty & Larson, 2005).

Reliability and construct validity have been demonstrated in a pilot study (n=58) (Baggs, 1994). Cronbach's alpha (a measure of the internal consistency and reliability of the instrument) was reported to be .98 in a nursing sample and .93 for the medical residents for the six critical attributes of collaboration (Baggs & Schmitt, 1995; Dougherty & Larson, 2005). Construct validity was supported by a principal factor analysis, which produced a two-factor solution (one for collaboration and one for satisfaction) (Baggs, 1994; Baggs & Schmitt, 1995). The six critical-attribute collaboration items explained 75% of the variance in collaboration. The Eigenvalue for the collaboration factor was 4.5. Factor loading for the six items ranged from 0.82 to 0.93 (Baggs, 1994; Dougherty & Larson, 2005). Additional details, psychometric properties and methods of administration for the original instrument are reported in Appendix 2 (page 270).

For the purposes of this study, I made minor modifications to the wording of the original instrument (with permission) (Appendix 8 – page 281 and 282) so that the respondents would better relate the questions to their specific collaborative context of care (e.g. the words 'nurses and physicians' were changed to 'members of the interprofessional team in NICU'; present tense was used rather than the past tense) (Appendix 3 - pages 271 to 273). The instrument was also formatted to address three different clinical decision types: triage decisions, chronic condition decisions and values sensitive decisions (Stacey, Murray, Dunn, Menard, & O'Connor, 2008), however, the essence of each of the questions was unchanged. "Adapting wording of scale items to the respondents' specific context is often done in research that uses summated rating scales. As long as the fundamental meaning of the item is unchanged, this typically poses no problem" (Gaboury, 2010, Biostatistician, personal communication). The modified version of the instrument was pilot tested with four health care professionals prior to the start of the study to ensure clarity of the questions and to establish face validity.

Conclusion Validity

Another aspect of the validity of a quantitative study is conclusion validity. This is the degree to which conclusions reached about relationships between variables are justified. This may be established by ensuring adequate sampling procedures, and use of appropriate statistical tests, and reliable measurement procedures (Trochim, 2006).

All parametric tests have four basic assumptions that must be met for the test to be accurate (normally distributed data, homogeneity of variance, interval data and independent measures) (Field, 2000). Assessing the degree to which scores within a dyad or group are related (non-independent) is an important first step in examining group data. One question that must be addressed before non-independence can be measured in group data is whether there is a natural distinction between the group members. Group distinction in this study is based on professional membership (nurse, physician, respiratory therapist and other allied health professionals) and is not interchangeable (Kashy & Kenny, 2000).

Based on the fact that this data set consisted of interval data (seven-item Likert scale) that was found to be normally distributed (Kolmogorov-Smirnov and Shapiro-Wilk normality tests) and these were independent measures (e.g. participants responded independently, their responses were not linked to anyone or anything else, and these were not repeated measures), ANOVA (analysis of variance) was chosen as the most appropriate analysis technique to measure differences across groups in this study for different decision types (triage, chronic condition management and values-sensitive decisions). A post hoc analysis with Scheffe pairwise comparison procedure was used to determine if there was a difference between groups. The criterion for significance was set a priori at $\alpha = 0.05$. The Scheffe post hoc test, is customarily used with unequal sample sizes such as found in this data set (Jones, 2009).

Bias is defined as any systematic error in a study that could result in an incorrect association between variables (Hennekens & Buring, 1987). Two reasons that bias can

occur are an unrepresentative sample or insufficient numbers to provide the power to show an association in what is being measured. Missing data are important if the participants with missing data differ from the participants with complete data with respect to outcome and determinants of outcomes (Hennekens & Buring, 1987). Missing data are also important if the sample size becomes too small to provide the power to detect the outcome being measured.

The collaboration survey was distributed to 118 members of the IP team in NICU. A total of 96 completed surveys were returned giving an overall response rate of 81.4% (nurses n=68/85, RR-80%; physicians n=13/15, RR-86.7%; respiratory therapists n=8/11, RR-72.7%; and other health professionals n=7/7, RR-100%). Although the majority of participants were nurses (n=68, 70.8%), other key members of the IP team were also represented (physicians – n=13, 13.5%; respiratory therapists – n=8, 8.3%; other health professionals – n=7, 7.3%). These results reflected the total population of health care professionals working in the NICU and provided sufficient power to detect statistically significant differences across professional groups using ANOVA.

Missing data was minimal. Just over 96% of respondents answered all of the questions for the three decision types. The data set for triage decisions contained a total of 24/864 missing cells (2.8%) leaving 97.2% of the data complete for analysis. The data set for chronic condition decisions contained a total of 22/864 missing cells (2.5%) leaving 97.5% of the data complete for analysis. The data set for values sensitive decisions contained a total of 11/864 missing cells (1.3%) leaving 98.7% of the data complete for analysis.

Missing data was primarily found within the allied health group for questions related to triage and chronic condition decisions. Upon recommendation from the statistician, the decision was made to complete the analyses with the existing data set (without imputation)

since the missing data constituted less than 10% of the total data set the impact on the statistical results and p-values would not be substantial (Day, Fayers, & Harvey, 1998).

Researcher Role & Prevention of Researcher Influence

Another threat to the reliability and validity of this study is related to the influence of the researcher. I am a researcher who, by necessity as a doctoral student, not only facilitated the research process, but collected the data and analyzed and interpreted the findings. I was also an insider to the research environment being a member of the nursing staff in the NICU where the study took place. There are four ways in which a researcher might unduly influence the data of a qualitative inquiry: researcher presence (the reactions of program participants to the researcher's presence), instrument change (changes in the researcher over the course of the study), professional incompetence (through lack of sufficient training or preparation) and researcher bias or value imposition (the undue influence of the values or biases of the researcher) (Patton, 1999).

Researcher Presence (Reactivity and Hawthorne Effect)

Reactivity is related to the influence of the researcher on the setting or individuals studied (Maxwell, 2005). During interviews, what the informant says is always influenced by the interviewer (Holden, 2000). Interviews were based on the assumption that the participants were experienced NICU staff, in many cases holding positions of power and responsibility, and as such they were well able to express their own thoughts. This indeed proved to be the case. The most inexperienced staff had been working in this unit for at least two years and even they were very familiar with the system of care in the unit. The fact that the researcher was an insider in the study setting also facilitated acceptance by participants.

Observation of participants has the potential to provide rich data, however there is a potential impact on participants' performance when being watched. This is called the Hawthorne effect and although the Hawthorne effect is self-limiting (Holden, 2000), it can

take a long time for this to happen. Triangulation of data and allowing time for the participants to become accustomed to being observed helped to counter this issue. Development of a working relationship during data collection tends to increase genuine interaction (Meier & Davis, 2001). I contend that being an insider in the NICU meant that a working relationship already existed which helped to create an atmosphere of trust between myself and the participants, decreasing the likelihood of undue researcher influence.

Researcher Change over Time

In long-term participant observation projects, there is a concern that prolonged participation can change the researcher (as an instrument of the research) and thus bias the data. The concern is that researchers will "go native" (Patton, 1999, p. 1203). Based on the fact that I was already an insider to this unit, and observational data collection occurred over a period of approximately two weeks, any concern about "going native" was negligible. To minimize any other instrument/researcher changes over time, I employed three additional strategies. First, I relied on many years of experience in facilitating adult learners to allow me to get into a professional mindset before each interaction with participants. Second, I used an interview guide and attempted to ask the same questions to each participant. Third, I used a second observer when collecting observational data of IP team decision making interactions. I contend that these three strategies minimized any potential for undue influence from instrument changes over time and increased the rigor of the data collection process.

Researcher Inexperience

An inexperienced researcher's professional incompetence can cause undue influence on a project's data. Because I played dual roles of facilitator and researcher in this inquiry, it is appropriate to summarize my experience in this field and briefly discuss the implications this might have had for the project. I have extensive experience in as a clinician, educator, program manager, and consultant in neonatal care, and have studied

the relevant literature in the areas of communication, experiential learning, counselling, and knowledge transfer. I know the clinical setting and all members of the IP team well. I have had previous experience working as a research assistant and have collected both interview and observational data before. As a consequence, I felt well prepared to facilitate this research process with the support of my thesis committee, and I contend that my experience and support network minimized any undue influence associated with researcher inexperience.

Researcher Bias

A potential threat to this study is related to researcher bias. Since it is impossible to eliminate the researcher's theories, beliefs and perceptual lens, it is important to understand how a particular researcher's values, expectations and experience influence the conduct and conclusions of the study (Maxwell, 2005; Johnson & Waterfield, 2004). Popay, Rogers and Williams (1998) suggest that "the question is not whether the data are biased, but to what extent the researcher has rendered transparent the processes by which data have been collected, analyzed and presented" (p. 348). This reiterates the importance of an audit trail, thick description of the research process and findings and reflexivity on the part of the researcher. Reflexivity seeks to recognize the influence of the researcher's experiences, beliefs and personal history on the research process and interpretation of findings (Krefting, 1991; Angen, 2000).

To that end, I summarize below, my own values, beliefs, assumptions and biases that I see as pertinent to this inquiry.

- I believe that involvement of all members of the IP team in patient care planning is essential for quality patient care.
- I think that researchers and practitioners interested in the field of IPSDM have not yet generated a model that adequately represents the concepts and processes involved in IPSDM.

- I expected that the data from this study would demonstrate some interesting hypotheses and connections with existing literature and give some direction for future research.
- I suspected that the data would reveal some significant differences in how professionals see and understand the concept of IPSDM
- I have extensive clinical experience in NICU as a staff nurse and clinical educator. In addition, I have worked in an advanced practice role as a member of a neonatal transport team that uses an IPSDM model of practice.
- I have had my own experiences (positive and negative) working as a member of an IP team and grappling with the issues of IPSDM. I was interested to find out how others perceived the concept of IPSDM in the NICU.
- I felt very comfortable to approach people from all professional groups to talk about this issue. I felt very comfortable during the conversations and was able to probe perceptions easily. I understand the clinical area, patient population, disease processes, management strategies, the way the team works together, the personalities, the jargon and professional language used. I found this very beneficial during the interviews and as I reviewed the transcripts in detail during the coding process. However, I was also conscious of the fact that this comfort level might influence my perception of factors that might interfere with IPSDM.
- Although I felt comfortable with the team during observations and interviews, I also felt a blurring of my role as a clinician and researcher. I felt I was straddling a fence and had my feet in two worlds simultaneously. In fact, I felt the need to constantly clarify with everyone which hat I was wearing on any given day, in an attempt to be transparent and true to the research process.

- My preconceptions were that, the healthcare professionals in this NICU are a close knit group that value teamwork as a way of providing optimal care to the infants. They also value the expertise of other members on the team.
- Although the attending neonatologist is considered to be the ultimate decision maker and most responsible person for patient care decisions in this NICU, input from other members of the team is usually solicited.
- Although all members of the IP team are encouraged to, and do, provide input during patient care rounds, some team members are more confident and assertive than others in how they participate.
- From my perspective, this team does share in the process of decision making; however, there are no guidelines, or policies or procedures in place to guide this practice. I felt this unit was an ideal setting in which to explore professional perspectives about IPSDM, and the barriers and facilitators that influence this process.

My years of experience as a clinician in NICU, as an educator facilitating adult learning groups, and as a knowledge broker responding to consults related to neonatal/perinatal care issues, has given me the expertise to facilitate discussion during interviews, while only minimally influencing the content. As I participated in each interaction with participants, I made deliberate and conscious efforts to avoid influencing content in any way. In addition, during each of the interviews, any time that I was not 100% confident of understanding what a given participant said or meant, I either carefully reflected the comment verbatim back to the participant for clarification, or asked for clarification.

This research is based on the paradigm that each person's story reflects a different perspective of the situation and triangulation of different professional perspectives provides a collage of multiple realities to inform understanding (Koch, 1994). Purposive sampling

was used to reduce the risk of systematic biases related to one professional group's perspective and to counter researcher bias. Use of an interview guide and creation of verbatim transcripts provided an accurate recording of the detailed descriptions provided by the participants. In addition, use of a second observer and recording field notes ensured accurate recording of data during observations and provided an opportunity for reflection (Maxwell, 2005). I contend that my experience, these careful reflections, care taken during the data collection process, use of a second observer, use of verbatim transcripts and having two people (one of whom had no contact with this unit) code a number of the transcripts, have minimized any undue researcher influence in this study.

Although problems can arise in situations where the researcher may have difficulty separating his/her own experience from that of the subjects (Bryman, 1988; Maxwell, 2005), this may not detract entirely from the quality of the research, if it facilitates a better understanding of the subject matter and credibility is enhanced (Koch, 1994). As an insider to this NICU, I had previously established professional working relationships with this team and the benefit of knowing the people, the system of care and the environment. The fact that I was an insider enhanced my credibility, facilitated acceptance and access to the environment, created trusting relationships with potential participants, expedited the research process and facilitated recruitment and collection of a rich store of data. The insider knowledge of the NICU allowed me to engage in discussions on an equal footing, and prevented misinterpretation of the information. During this study, being an insider facilitated the research process. However, to ensure participant perspectives were protected and researcher bias was limited, care was also taken to reflect about preconceptions and biases, ensure transparency of the research process, record information in a systematic way, and validate information through participant feedback, thus enhancing the trustworthiness of the study findings.

CHAPTER FOUR

Article 1

A Realist Review of the Literature: The Context, Mechanisms and Outcomes of Interprofessional Shared Decision Making in Intensive Care

This chapter presents the results of a realist review of the literature about interprofessional shared decision making in intensive care. The purpose of the review, procedures followed and approach to analysis of the findings are presented in the following manuscript developed for publication. The context, mechanisms and outcomes of IPSDM are discussed.

Target Journal: **Implementation Science**

Author Guidelines:

Abstract – 350 words

Article – no specific word limit provided

"There is no explicit limit on the length of articles submitted, but authors are encouraged to be concise. There is no restriction on the number of figures, tables or additional files that can be included with each article online. Figures and tables should be sequentially referenced. Authors should include all relevant supporting data with each article." (http://www.implementationscience.com/info/instructions/)

A Realist Review of the Literature: The Context, Mechanisms and Outcomes of Interprofessional Shared Decision Making in Intensive Care

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Abstract

Background: Interprofessional shared decision making (IPSDM) is a key component of interprofessional collaboration, which is defined as a process that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided. A review of the literature, using a realist approach to research synthesis (Pawson, Greenhalgh, Harvey, & Walshe, 2004), was performed to determine the context, mechanisms and outcomes of IPSDM in intensive care.

Methods: A systematic search of the literature from 1950 to July 2009 was conducted using the following databases - AMED, CINAHL, Cochrane Database, EMBASE, Healthstar, Medline, and Psychinfo. Studies were included if they were in English, about interprofessional team decision making, and referred to clinical practice in critical care or intensive care settings. The quality of the studies was assessed independently by two authors. The results of the review were organized into a taxonomy based on the realist review questions and content analysis was performed.

Results: Nineteen articles (representing 16 studies) were retained for synthesis. The majority of included studies were carried out in the United States and the United Kingdom, and used interviews, focus groups or observational methods for data collection. The studies primarily involved nurses and physicians as participants and focused on decision making related to ethical issues. Results revealed benefits of IPSDM for patients (shortened futile intensive care), families (reduced confusion), health care providers working in intensive care settings (increased job satisfaction), and a positive impact on health service delivery (controlling costs, and improving job satisfaction and retention of nurses). IPSDM has been reported to increase team effectiveness, improve the quality of the decision making process and the decisions made. Key mechanisms for IPSDM included: knowledge (e.g. professional expertise, sharing information and reaching professional consensus), skills (e.g. communication skills - the ability to participate in discussions and present logical

coherent arguments), and values (e.g. having respect for other professions, understanding different perspectives and valuing knowledge about the patient / family).

Conclusions: The results of this realist review provided insight into the context, mechanisms and outcomes of IPSDM in intensive care. However, further research is needed to fully understand the process of decision making, how to meld differing perspectives to reach consensus, and how to overcome interprofessional conflict, when it occurs, in order to optimize decision making.

Keywords: interprofessional, shared decision making, realist review, intensive care

Background

Interprofessional (IP) education, practice and research, as means to improve health care and patient outcomes, have been a priority of the Federal and Provincial governments in Canada (Burton, 2006; Health Canada, 2003; Kirby, 2002; Ministry of Health and Long Term Care, 2005; Ministry of Health and Long Term Care, 2006; Romanow, 2002) and internationally (World Health Organization, 2010). Among other benefits, IP practice has the potential to improve patient safety (Byers & White, 2004; Committee on Quality Health Care In America, 2001; Committee on the Work Environment for Nurses and Patient Safety, 2004; Kohn et al., 1999; Reason, 1990; Wachter & Shojania, 2004) the quality of work life of health professionals (Doran, 2005; McGillis Hall et al., 2006) and the quality of care (Oandasan et al., 2004; Zwarenstein & Bryant, 2000).

Shared decision making (SDM) has been identified as a key attribute of IP practice (Baggs & Schmitt, 1988; Lemieux-Charles & McGuire, 2006) and is advocated as an optimal model of treatment decision making (Charles et al., 1997). SDM, as a key component of IP collaboration (D'Amour et al., 2005), enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided (Way et al., 2001).

SDM is also described in the literature as the process by which the practitioner-patient dyad reach healthcare choices together (Charles et al., 1997; Coulter, 2002; Elwyn et al., 1999; Elwyn et al., 2000; Pierce & Hicks, 2001). SDM that involves collaboration between patients and caregivers to come to an agreement about a healthcare decision is especially useful when there is no clear “best treatment option” (Dartmouth-Hitchcock Medical Center, 2007) and the patient or family is dealing with one health care professional. This conceptualization of SDM (limited to health professional - patient dyads in primary care settings) does not adequately reflect the current realities of clinical practice when other participants are involved (e.g. patients supported by family members or friends, or

incompetent or seriously ill patients who require proxy decision makers to act on their behalf, or in cases where several physicians (each offering different treatment options) are involved in the decision making process with a single patient) (Charles et al., 1997). This model also completely negates the essential roles of other members of the IP team in patient care planning and decision making and the influence the environment has on the decision making process.

As a result of these limitations, Légaré and colleagues have been working on a project to develop an IP approach to SDM (IP-SDM) model for use in primary care (Légaré et al., 2008b). According to Légaré and colleagues (2008b), IP-SDM involves members of the IP team collaborating to identify best options and supporting the patient or family to be involved in decision making about those options. In this process, patients have their decisional needs met, and reach healthcare choices that are agreed upon by them and their practitioners.

The purpose of this realist review was to systematically search for and report on studies about IP shared decision making (IPSDM) in intensive care. The main objective was to increase understanding about the context in which IPSDM occurs, the mechanisms by which it works and the outcomes that are produced. A secondary objective was to identify barriers and facilitators to IPSDM in intensive care.

The intensive care environment was selected because of the unique characteristics that can both hinder and facilitate IPSDM, including rapidly changing patient acuity, the need for coordination of care and collaboration among members of many different professional groups, a model of practice where the healthcare team comes to the patient rather than the patient coming to see individual health care providers and the need for surrogate decision making.

The results of this review are presented in two papers. The findings related to context, mechanisms and outcomes of IPSDM are presented in this first paper. The second

paper (Chapter 5) focuses on the barriers and facilitators of IPSDM in intensive care settings.

Methods

Conceptual Framework

The Shared Decision Making and Health Care Team Effectiveness Model (adapted from (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006) (Figure 3 – page 21), was developed to guide exploration of the concept of IPSDM for this study. This model is based on concepts from a recent systematic review of the health care team effectiveness literature (Lemieux-Charles & McGuire, 2006) and a decisional conflict framework (Légaré et al., 2006). This model illustrates the relationships between components of IP practice, SDM, team effectiveness and health care outcomes. The focus of this realist review was to seek evidence to add to this model.

Realist Approach to Research Synthesis

A Realist Approach to Research Synthesis (Pawson & Boaz, 2004; Pawson, 2006; Pawson et al., 2004) was used to guide synthesis of the evidence found. A systematic review of evidence is a process that identifies studies relevant to a particular topic, appraises the quality of these studies according to predetermined criteria and synthesizes their results using scientific methods (Khan, Kunz, & Kleijnen, 2003). Conventional systematic reviews impose a strict hierarchy of evidence, focused on questions of effectiveness that rarely reflect the complexity of the context in which interventions are operationalized. Therefore, reviews of complex service delivery are a challenge and the findings may have limited clinical application (McCormack, Wright, Dewar, Harvey, & Ballantine, 2007).

Pawson and colleagues (2004) designed the Realist Approach to Research Synthesis to explore complex social interventions. Social interventions are activities that comprise theories, involve the actions of people, consist of a chain of steps or processes

that interact and are rarely linear, are embedded in social (health care) systems, are prone to modification, and usually exist in open systems that change through learning (Pawson & Boaz, 2004; Pawson, 2006; Pawson et al., 2004; Pawson, Greenhalgh, Harvey, & Walshe, 2005; Sridharan, Platt, & Hume, 2006). This approach is relevant to a review of the evidence about the process of IPSDM, which qualifies as a complex social intervention. The realist approach draws evidence from qualitative, quantitative and mixed methods studies so that both the processes and impacts of interventions may be investigated (Pawson et al., 2005).

Search Strategy

A systematic search of the literature from 1950 to July 2009 was conducted using the following databases - AMED, CINAHL, Cochrane Database, EMBASE, Healthstar, Medline, and Psychinfo. The keyword search strategy was developed in consultation with a library database search specialist. Figure 5 (page 78) outlines the search terms and their yields. The bibliography of each retained article was reviewed to find additional papers not retrieved by the search strategy. Journals that publish studies about IP practice in health care (e.g. *Journal of InterprofessionalCare and the Journal of Research in Interprofessional Practice and Education*) and the primary researcher's personal files were also hand searched.

Identification of Eligible Studies

Abstracts of retrieved studies were independently screened for eligibility by the primary investigator (SD) and a second researcher (IG) for inclusion. All papers selected for more detailed review were also independently screened for eligibility by both reviewers to ensure high reliability and validity of the review. Disagreements were resolved through consensus meetings between reviewers. A study was considered eligible for inclusion if it:

1. included an original collection of data,
2. reported empirical results of qualitative or quantitative studies,

3. participants included health professionals,
4. was about IP team decision making (using terms: inter-dependent or joint decision making, group process around decision making, collaboration about decisions, problem-solving between groups, or participating in decision making, or multidisciplinary / interprofessional decision making),
5. answered at least one of the research questions listed below,
6. referred to clinical practice in a critical care or intensive care setting, and
7. was available in English.

Studies exclusively about health professional / patient dyadic SDM were excluded. A detailed list of the selection criteria are provided in Table 1 (page 79). Progress through the stages of the review, with itemized rationale for exclusion of studies is also provided in Figure 6 (page 80). Nine studies were published in a language other than English (French, German (5), Norwegian, Portuguese, and Spanish), however they were also excluded for reasons other than language (not primary research, not about IPSDM, dyadic decision making, involved physicians only, involved nurses only, and not about critical care).

The following realist review questions (Pawson et al., 2004) formed the basis for this review of the literature. With regards to the context, mechanisms and outcomes of IPSDM in intensive care:

1. What is the nature of IPSDM?
2. What is the nature of IPSDM for different participants? (Who is/should be involved)
3. For what types of decisions does IPSDM occur?
4. What are the mechanisms by which IPSDM works? (How)
5. What are the outcomes of IPSDM?
6. What are the barriers and facilitators of IPSDM?

The findings for questions one to five are reported in this article.

Data Extraction

Study characteristics were abstracted using standardized data abstraction tables. The information included: author(s), year of publication, title of article, journal name, volume and issue, country of origin, and author's professional affiliation. In addition, the main objectives of the study, definition of shared decision making (if available), setting and characteristics of the participants, sampling strategy, and response rate were also documented. Finally, the methodological approaches, data collection strategies, research questions, outcomes measured (with results and recommendations) and any quality issues and limitations noted for each study were recorded.

Study results were then summarized into a table, collated under each research question, and then coded and thematically analyzed. From this analysis, the taxonomy of results was created. To ensure validity and reliability of the themes identified, the results of all included studies were also reviewed by second reviewer (IG) and verified against the taxonomy.

Quality Assessment

Quality assessment of the included studies was completed based on guidelines from the Standard Quality Assessment Criteria for Evaluating Primary Research Papers framework (Kmet, Lee, & Cook, 2004). This framework was selected because it includes a manual for quality scoring of quantitative, qualitative and mixed methods studies with definitions, detailed instructions for use, as well as a set of validated tools. To ensure validity and reliability of the quality assessment, 30% of the studies were assessed by the second reviewer and consensus was reached for the quality scores. The quality scores for the remaining studies were revised based on these findings. A minimum threshold of 65% was set for inclusion of studies in this review. This threshold was selected based on recommendations provided in the quality assessment guidelines (Kmet et al., 2004).

Results

Quality Assessment

Overall, the qualitative studies (n=16/19) scored 65% or above (mean 79%; range 65-95%) (Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; Kavanaugh, Savage, Kilpatrick, Kimura, & Hershberger, 2005; Lingard, Espin, Evans, & Hawryluck, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; McHaffie, Laing, Parker, & McMillan, 2001; Melia, 2001; Porter, 1991; Robinson, Cupples, & Corrigan, 2007; Viney, 1996). Methodological weaknesses were primarily found with descriptions of the theoretical framework, sampling strategy, data collection methods and data analysis. Researcher reflexivity was addressed in less than 40% of the qualitative studies suggesting that the researchers did not reflect on the potential for their personal perspectives to bias results. The quantitative studies (n=3/19) all scored above 70% (mean 83%; range 73 – 100%) (Baggs & Schmitt, 1995; Baumann-Holzle, Maffezzoni, & Bucher, 2005; Stern et al., 1991) however, commonalities of weaknesses were less easy to identify among these papers. The quality of the reporting (completeness, comprehensiveness and writing style) may have contributed to some of the lower scores. Based on this quality assessment, no studies were excluded from the synthesis of results (Tables 2 and 3 – pages 81 and 82).

Characteristics of the Included Studies

At the conclusion of the screening process 19 articles (representing 16 studies) were retained for synthesis. The findings for two studies were presented in multiple papers (Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a). The majority of included studies were carried out in the United States and the United Kingdom (n=17/19), involved nurses and physicians as participants (n=14/19), and used surveys (n=3/19), interviews (n=14/19), focus groups (n=2/19) or observational methods (n=5/19) for data collection. The articles were published

in 15 different journals and all but two studies were published within the past 15 years. A summary of the characteristics of the included studies is provided in Table 4 (page 83). Information about excluded studies is available from the authors.

Definition of Terms

Only two of the articles used the term 'shared decision making' (Baggs et al., 2007; Kavanaugh et al., 2005) in the text of the paper. Although no specific definition was provided in either paper, the term was used in the context of parent involvement in decision making. The majority of studies referred to the concept through use of terms such as: group process around decision making (n=10/19) (Carros, 1997; Coleman, 1998; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; McHaffie et al., 2001; Melia, 2001; Robinson et al., 2007; Stern et al., 1991; Viney, 1996); collaborative decision making (n=3/19) (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Lingard et al., 2004); or joint decision making (n=4/19) (Baumann-Holzle et al., 2005; Coombs & Ersser, 2004; Coombs, 2003; Porter, 1991).

Realist Review Findings

The results of this review have been organized into a taxonomy (Table 5 – pages 84 to 86) based on the realist review questions previously described. A flowchart, presenting the context, mechanisms and outcomes of IPSDM, has also been developed (Figure 7 – page 87) and a summary of key findings is presented below.

What is the Nature of IPSDM?

Two studies provided examples of IPSDM. The first study (Baumann-Holzle et al., 2005), describes a framework for ethical decision making that was developed by a 'Medical-Ethical Working Group in Neonatology' consisting of three doctors, three nurses, a minister and an ethicist. The seven-step approach to ethical decision making was implemented and evaluated in an NICU in Zurich, Switzerland. The steps involved: describing the situation, differentiating pros/cons, developing scenarios, reaching a unanimous decision, planning

discussion with the parents, discussing options with the parents, and evaluating the decision. This approach was described as an effective method for joint decision making because it integrated the best interests of the infants and their parents, the possibilities for high-tech neonatal intensive care interventions, and the perspectives of the nurses and doctors (Baumann-Holzle et al., 2005). Two important key attributes were emphasized in this approach - achievement of consensus and involvement of key stakeholders (inner circle, advisors). Although, parents did not participate in these ethical rounds, their views were included in the decision making (DM) process by proxy as their way of life and their value systems were considered. An external evaluation of 84 sessions over a three year period was carried out and revealed a beneficial effect on the quality of the decision making process, and on the quality of the teamwork in the unit. In addition, analysis of 26 critically ill newborns who died in the NICU after a structured decision making process (matched with infants from the Swiss Neonatal Network on gestational age, severe malformation and intracranial hemorrhage) demonstrated shortened futile intensive care, and reduced suffering for both infants and parents (Baumann-Holzle et al., 2005)

The second example of IPSDM in action was illustrated in an ethnographic study of team decision making in an NICU in the United States (Carros, 1997). Thirty-one consecutive weekly discharge planning meetings, over an eight-month period (covering 1,222 patients), were observed. The NICU team consisted of neonatologists, nurses, social workers, occupational / physical therapists and representatives from child psychology. Steps in the decision making process included: creating a shared perceptual reality of each situation, weighing the ideas about what each family needed, developing scenarios through story-telling, achieving team agreement through exchange of information and negotiation, discussions with parents and evaluation of the families' understanding and ability to adapt. Findings from this study concluded that this was a high-performance team that made

decisions in a consistent fashion, based on a constructed reality, and a systematic and effective process for decision making (Carros, 1997).

The importance of some of the individual steps in the IPSDM processes described above was also acknowledged in a number of other studies: a) describing the situation and developing a shared perceptual reality (McHaffie et al., 2001), b) differentiating pros and cons (Kavanaugh et al., 2005; McHaffie et al., 2001), c) reaching a unanimous (team) decision (Coleman, 1998; McHaffie et al., 2001) and d) discussing the options with parents (Baggs & Schmitt, 1995; Baggs et al., 2007; Coleman, 1998; Kavanaugh et al., 2005; McHaffie et al., 2001) when it comes to team decision making. Involvement of parents in the DM process in these studies was limited. More often than not they were the 'receivers of information' rather than full participants in the DM process.

What is the Nature of IPSDM for Different Participants?

Who should be involved in IPSDM?

Nurses and physicians were the primary participants in the studies. Only two studies included social workers or other members of the IP team as participants, limiting the perspectives gathered (Baggs et al., 2007; Carros, 1997). Few studies explored the concept of decision making including parents (n=3/19) (Baggs et al., 2007; Kavanaugh et al., 2005; McHaffie et al., 2001). Despite this limitation, the importance of and need for inclusion of other key participants (health care professionals, ethicists, chaplains and parents/families) in the decision making process was acknowledged by a number of authors (Baggs & Schmitt, 1995; Baggs et al., 2007; Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; Kavanaugh et al., 2005; Lingard et al., 2004; Melia, 2001; Robinson et al., 2007; Viney, 1996). However, opinion varied about level of involvement and when and how participation should occur.

Level of Involvement / Role in Decision Making

All but one study, (Baumann-Holzle et al., 2005) addressed the question of level of involvement and roles in decision making. Five roles were described: bringing different perspectives but not being the decision maker (n=11/19); being the decision maker (bearing the burden of the decision) (n=16/19); being the patient (family) advocate (n=6/19); being a knowledge interpreter / information provider (n=11/19); and a shared decision making role (n=4/19). A description of each role and the related issues are described.

Bringing different perspectives but not being the decision maker

Although the importance of bringing different perspectives to a case was acknowledged in just over half of the studies (n=11/19; 58%) (Baggs et al., 2007; Carros, 1997; Coleman, 1998; Coombs & Ersser, 2004; Kavanaugh et al., 2005; McHaffie & Fowlie, 1998b; McHaffie et al., 2001; Melia, 2001; Porter, 1991; Stern et al., 1991; Viney, 1996), for the most part the input was limited to physicians and nurses, and to a lesser degree, family. Opinions about the degree of involvement varied, leaving the questions of when, who, and how different participants should be involved unanswered.

Nurses believe they bring a unique perspective to the team discussions; however they often feel their contribution is undervalued (McHaffie & Fowlie, 1998b). In an observational study of power relations between nurses and physicians, Porter (1991) explored four levels of nursing participation in decision making with physicians (unproblematic subordination, informal covert decision making, informal overt decision making and formal overt decision making). Unproblematic subordination is “the traditional interpretation of nurse-doctor interaction and involves nurses’ unquestioning obedience of medical orders, and the complete absence of nurses’ involvement in the decision making process” (Porter, 1991, p. 731). Informal covert decision making is the traditional interpretation of the ‘doctor-nurse game’ (Stein et al., 1990; Stein, 1978) which involves the “pretence of unproblematic subordination, whereby nurses show respect for doctors and

refrain from open disagreement with them or making direct recommendations or diagnoses, while at the same time attempting to have an input into decision making processes“ (Porter, 1991, p. 731).

Although these first two levels of interaction were most commonly observed, senior nurses also employed informal overt strategies to ensure greater nursing input in decision making (Porter, 1991). For example, these nurses “were prepared and willing to argue in support of their proposed line of action at the risk of attempted rejection by physicians” (Porter, 1991, p. 733). Use of this strategy reduced the power differential between physicians and nurses (Porter, 1991). In this study, formal overt decision making strategies (i.e. use of the nursing process) were used infrequently by nurses (Porter, 1991).

Parental participation in decision making was explored in three studies (Baggs et al., 2007; Kavanaugh et al., 2005; McHaffie et al., 2001). In one study, about decision making for imperilled newborns in NICU, the majority of physicians (58%) and nurses (73%) advocated joint decision making that involves parents (McHaffie et al., 2001). However, some nurses and physicians perceive family involvement in DM should be limited to one of ‘consultant’ or ‘information provider’ only (Coleman, 1998; McHaffie et al., 2001; Stern et al., 1991; Viney, 1996). In a phenomenological study of ethical decision making in intensive care, physicians and nurses reported that “relatives can sometimes obscure or muddy the waters and give you actual misinformation regarding patient lifestyles” (Viney, 1996, p. 185). This view was supported in two other studies where nurses and physicians described that parents/families can sometimes have erroneous understanding about the case and give misinformation regarding the patient (Coleman, 1998; McHaffie et al., 2001). This view is contrary to current opinion about shared decision making and the importance of inclusion of patients and families in the decision making process.

Parents differ in their desired level of involvement in decision making, reinforcing the need for healthcare professionals to determine each parents’ preference for participation

(Kavanaugh et al., 2005). The timing of parental involvement varied with the changing condition of the baby, urgency of the need to decide, the consultant's perceptions and preferences, and the family's tolerances and resources (McHaffie et al., 2001). Physicians tended to involve parents more if the situation had a high degree of uncertainty (McHaffie et al., 2001). The extent of involvement of parents in the actual decision varied, but if they were taking any responsibility for the choices, it was often after team deliberations had occurred that their opinions were sought.

The decision maker (bearing the burden of the decision)

Bearing the burden of the decision, or being the decision maker, was a common theme in over three quarters of the papers (n=16/19; 84%). While physicians commonly seek the opinions of colleagues or specialists, and parents discuss the issues with family and friends, decisions are usually made by the medical team with or without the parents (McHaffie et al., 2001). In a phenomenological study about ethical decision making experiences among physicians and nurses concerning withdrawal of treatment, physicians were unanimous that the final decision should be a medical one, made in the best interests of the patient as seen by the medical staff (Viney, 1996).

Nurses and physicians in a Pediatric Intensive Care Unit (PICU) were asked to rate key stakeholders' participation in the decision making process with regards to level of involvement, being listened to, and making the decision. Consulting physicians, fellows, and house officers were classified as high frequency decision makers who were involved, listened to, and functioned as decision makers. Patients (and families) were classified as passive participants in decision making in that they were highly involved, but were less likely to be listened to or to make decisions. Other members of the health care team were classified as middle frequency decision makers. Respiratory therapists belonged to this group in that they were listened to 89% of the time and they made decisions 43% of the time. Social workers were rated as middle frequency information providers in that they were

listened to 54% of the time, but only made decisions 9% of the time. Nurses were rated as high frequency information providers in that they were listened to in the PICU, but seldom made treatment decisions (Stern et al., 1991).

Perspectives about 'who should be the decision maker' differ between health care providers and parents. Although physicians and nurses perceive that parents are involved in treatment decisions more often than parents do (Kavanaugh et al., 2005), they also question the appropriateness of placing families in the position of making medical judgments about the worth of treatment (Kavanaugh et al., 2005; McHaffie et al., 2001; Viney, 1996).

In a study about ethical decision making for newborns (McHaffie et al., 2001) only 3% of physicians and 6% of nurses stated that parents should make the ultimate decision to withhold or withdraw treatment. They perceived this decision to be too weighty a burden for parents to bear alone. However, 58% of physicians and 73% of nurses advocated a joint approach to decision making. Interestingly, in this same study, 56% of parents perceived the ultimate decision had been theirs (42% believed they alone had accepted this responsibility, and 14% said it had been their joint decision with the physicians). The majority of parents viewed decision making about their infant's care as a part of their parental responsibility (McHaffie et al., 2001). Parents report feeling confident about decision making as long as they have received adequate information (Kavanaugh et al., 2005).

Advocacy role (for patient and family)

A number of studies (n=6/19) addressed an advocacy role for patients and their families. Physicians reported that, since the final decision was theirs, they should act as the patient's advocate (Viney, 1996). There was varied opinion when it came to the nurses' role as patient advocate. Some nurses described how they were in the prime position to be patient advocate because of their close proximity working with both patients and families

(Baggs & Schmitt, 1997; Carros, 1997; Coombs, 2003; Robinson et al., 2007; Viney, 1996), while other nurses reported, that because they have no legal standing, they could not be patient advocates (Viney, 1996). It appears that the advocacy role is limited by feelings of powerlessness on the part of nurses and the influence of hierarchical structure and power and authority in critical care (Coleman, 1998; Coombs, 2003; Viney, 1996).

Knowledge interpreter / information provider

The knowledge interpreter / information provider role was a common role identified in the majority of studies. Parents stressed the importance of receiving honest, consistent information from a limited number of professionals to avoid hearing conflicting information (Kavanaugh et al., 2005). Both physicians and nurses described the main role of the nurse was to relay or reinforce information (Kavanaugh et al., 2005; Stern et al., 1991), mainly between the relatives and the medical staff and act as information brokers (Viney, 1996). Nurses reported they played a significant role in reinforcing what physicians said to parents and reinterpreting the information into understandable language (Coombs & Ersser, 2004; Kavanaugh et al., 2005; McHaffie & Fowlie, 1997). Nurses also perceived their nursing role in ICU as mediating between the world of high technology and the human response. In this way, they acted as the interface between families and the hospital system (Coombs & Ersser, 2004).

Sharing in the decision

Only four studies (Baggs et al., 2007; Carros, 1997; Kavanaugh et al., 2005; Melia, 2001) described the concept ‘shared decision making’. Two perspectives were identified. First, parents expressed a desire to be involved in decision making about their infants. However, their perspectives about level of involvement were not consistent. Some parents perceive that they are involved in decision making by merely giving approval for a treatment option recommended by the physician (Kavanaugh et al., 2005). For others, more active involvement in deliberations is required and this is dependent on receiving adequate

information and recommendations from physicians (Kavanaugh et al., 2005). Second, shared decision making depends on the willingness of the physician leader to listen, share decision making and support collaborative structures (e.g. rounds) as a way to facilitate care coordination (Baggs et al., 2007), and achievement of consensus within the team (Carros, 1997; Melia, 2001).

For What Types of Decisions does IPSDM Occur?

Based on the inclusion criteria used for the systematic review, studies were limited to those carried out in critical care or intensive care environments (Adult/ICU/MICU/SICU settings – n=10/19 studies; Infant/NICU/PICU settings – n=9/19 studies). For the most part the decisions discussed in this literature revolved around end of life decision making (EOLDM) (Baggs et al., 2007), ethical decision making (Baumann-Holzle et al., 2005; Coleman, 1998; Melia, 2001), level of aggressiveness of care or withdrawal of care (Baggs & Schmitt, 1995; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a; McHaffie et al., 2001; Robinson et al., 2007; Viney, 1996), discharge planning from NICU (Carros, 1997) and life support decisions for extremely preterm infants (Kavanaugh et al., 2005). General clinical decision making was the focus of discussion in a few studies (Baggs & Schmitt, 1997; Coombs, 2003; Coombs & Ersser, 2004; Lingard et al., 2004; Porter, 1991; Stern et al., 1991). No studies addressed issues in IPSDM related to different types of decisions (e.g. triage or emergency decisions, chronic condition management decisions or ethical / values sensitive decisions).

What are the Mechanisms by which IPSDM Works? (How)

Three themes (knowledge, skills, and values and beliefs of members of the IP team) emerged from the literature addressing the question of how IPSDM works.

Knowledge

Knowledge-related factors reported to impact on IPSDM included: expertise (being knowledgeable / having access to the right information) (Baggs & Schmitt, 1997; Carros,

1997; Coombs, 2003; Coombs & Ersser, 2004; Lingard et al., 2004; McHaffie et al., 2001), the concept of collective ownership of information (sharing, borrowing, trading) (Baggs & Schmitt, 1997; Carros, 1997; Lingard et al., 2004) and reaching consensus (coming to a shared perceptual reality about the situation) (Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; McHaffie et al., 2001; Melia, 2001).

Expertise (knowledge and access to information)

An important antecedent of collaboration in decision making is being there (Baggs & Schmitt, 1997). However, having the expertise (appropriate knowledge and experience) to participate is essential as well (Carros, 1997; McHaffie et al., 2001). Practitioners were more likely to collaborate with people they perceived had pertinent knowledge. In general, more experienced practitioners were seen by nurses and physicians as more knowledgeable, therefore more competent and good people with whom to collaborate (Baggs & Schmitt, 1997; McHaffie et al., 2001). Access to and understanding of patient information is also critical to participation in decision making. The key holders of knowledge are often in a position of power in the decision making process because of unlimited access to and understanding of patient information (Coombs, 2003; Coombs & Ersser, 2004).

Ownership and trade

Lingard and colleagues (2004), found the mechanisms by which team collaboration is achieved or undermined in the complex, high-pressure environment of an ICU is through the perception of ownership and process of trade of commodities. In the ICU environment, valued commodities (e.g. specialized knowledge, technical skills, equipment, clinical territory) are negotiated or exchanged during IP interactions (Baggs & Schmitt, 1997; Carros, 1997; Lingard et al., 2004). These commodities are either collectively owned (by the ICU team) or individually owned (by the nurse or the nursing profession or other professions) (Lingard et al., 2004).

Collective ownership of a commodity provides a foundation for group identity. It promotes collaboration among members of the team. Recognition and acceptance of the knowledge and skills others possess (individual ownership) is also necessary for team collaboration (Lingard et al., 2004). For example, a respiratory therapist's role in providing ventilation support must be recognized and respected by other team members. However, individual ownership of a commodity can create interdisciplinary tension if team members feel their particular knowledge and skills are not valued (e.g. nurses' intimate knowledge of the patient). Issues related to ownership occur at the interface between individual and collective knowledge and responsibility (Lingard et al., 2004).

Team members trade physical commodities (e.g. equipment and resources - pumps and beds) and social commodities (e.g. respect, goodwill, and knowledge) as they negotiate their collaborative work (Lingard et al., 2004). The most dominant currency for trade reported by nurses was respect, which they expected in return for information, knowledge, resources, and goodwill. Failure of other team members to treat nursing with respect often resulted in an embargo of trade (i.e. knowledge withheld) (Lingard et al., 2004). When the forces of ownership and trade are ignored, tensions accumulate and collaboration becomes sluggish. When these forces are accommodated, team members act more effectively together (Lingard et al., 2004).

Professional consensus

The concept of professional consensus was emphasized in the literature. Team consensus helps professionals learn to communicate more effectively with each other. The process of consensus building fosters respect by enabling members to understand better and empathize with the diverse positions and perspectives held by their coworkers (Coleman, 1998). The process of seeking and achieving team consensus benefits families as well because it reduces the confusion associated with feedback from members of a large medical team (Coleman, 1998).

Consensus building is a key step in the structured approach to ethical decision making in NICU presented in two studies (Baumann-Holzle et al., 2005; McHaffie et al., 2001). In these units, options were discussed within the team first and consensus was established (either an absolute or majority view), prior to discussions with parents. This consensus view was then presented to the parents (McHaffie et al., 2001). Melia (2001) explored ethical decision making in an ICU and found that nurses and physicians perceived the achievement of consensus to be a highly desirable means of ensuring solidarity of the team, essential for good patient care and a symbol of team strength .

Skills

Communication skills were emphasized in the literature as critical to the process of IPSDM. These skills included the ability to participate in discussions (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coleman, 1998; Coombs, 2003; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; Porter, 1991), the ability to assert voice and make logical coherent arguments (Carros, 1997; Coombs, 2003; Coombs & Ersser, 2004; McHaffie et al., 2001; Porter, 1991) and the ability to involve the family in determining best interests of the patient (Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; Viney, 1996).

Optimizing communication skills and having the ability to present a well reasoned case can affect decision making in two ways: through understanding of the information presented and the ability to participate in the process. The way information is presented to parents, for example, can directly influence their understanding, perceptions and preferences of what should be done (McHaffie et al., 2001). Having the confidence and ability to participate in discussions about a case and present logical, coherent arguments to other members of the team will determine whose voice is heard and listened to (Carros, 1997; Coombs, 2003; Coombs & Ersser, 2004; McHaffie et al., 2001; Porter, 1991). Medical staff have expressed frustration with what they believe is the inability of nurses to defend

their arguments on rounds and argued the need for nurses to demonstrate knowledge of objective and measurable variables used in clinical management (Coombs & Ersser, 2004). Therefore, being able to communicate in a way that your message is received, understood, and valued is essential to a shared decision making process. However, what gives value to a message varies among different professional groups.

Determining 'best interests' of the patient was highlighted in four studies as an important and essential component of the decision making process (Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; Viney, 1996). What was not clearly articulated was how to achieve consensus and the lens through which best interests should be established when different perspectives, priorities, and power differentials are involved.

Values and Beliefs

Values held by members of the IP team that facilitate IPSDM include: respect and trust of other professionals (Baggs & Schmitt, 1997; Carros, 1997; Coleman, 1998; Lingard et al., 2004), willingness to consider and understand and value different perspectives (Baggs & Schmitt, 1997; Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; Lingard et al., 2004; Melia, 2001), willingness to share knowledge and the risk and responsibility of decision making (Baggs & Schmitt, 1997; Carros, 1997) and valuing knowledge about the patient and family (Baggs & Schmitt, 1997; Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; Kavanaugh et al., 2005; Viney, 1996).

Being receptive, which includes being interested in collaboration, having respect and trust for other professions, and being willing to consider different perspectives is critical to the success of a shared decision making process (Baggs & Schmitt, 1997). The willingness to include others in the decision making process facilitates a balanced assessment of the patient and development of a comprehensive plan of care (Carros, 1997). Working toward professional consensus fosters respect by enabling members of the

team to understand better and empathize with the diverse positions and perspectives held by their co-workers. Consensus also helps to ease the burden of decision making for the physician, especially in difficult ethical circumstances (Coleman, 1998). Valuing and sharing knowledge about the patient, in a process of trade, helps to facilitate not only the exchange of information but an exchange of power as team members negotiate with one another (Carros, 1997; Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004).

What are the Outcomes of IPSDM?

Only two studies specifically examined the impact of shared decision making on outcomes (Baggs & Schmitt, 1997; Baumann-Holzle et al., 2005). In a study about the process of collaboration between nurses and physicians, participants perceived that working together improved patient care (acting rapidly, use of maximum information and planning), increased learning (information exchange), led to job satisfaction (provision of improved care and working in a pleasant atmosphere) and controlled costs (saved time and retention of nurses) (Baggs & Schmitt, 1997). In another study, the implementation of a framework for ethical decision making in NICU improved nurse / physician relationships, improved the quality of the decision making process and shortened futile intensive care (Baumann-Holzle et al., 2005).

Evidence of effectiveness of IPSDM was also described in five other studies (Carros, 1997; Coleman, 1998; Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004). Valuing and sharing knowledge (in a process of trade) helped to facilitate exchange of information and exchange of power as the team members negotiated with one another (Carros, 1997; Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004). Consensus building within the team fostered respect and enabled members to understand and empathize with the diverse positions and perspectives put forward by their colleagues (Coleman, 1998). Achieving consensus helped to ease the burden of decision making for the physician (Coleman, 1998), reduced the risk and responsibility for the decision (Carros,

1997) and reduced confusion for the family associated with receiving feedback from a large IP team (Coleman, 1998). Finally, including others in the decision making process facilitated a more complete and balanced assessment of the patient and development of a more comprehensive and balanced plan of care (Carros, 1997) and resulted in a group decision that was better than an individual decision would be (Carros, 1997).

Discussion - Gaps in the Literature

Information gleaned through this realist review provides evidence to both support and add to The Shared Decision Making and Health Care Team Effectiveness Model designed for this study. The outcomes of IPSDM have been shown to benefit patients (shortened futile intensive care), families (reduced confusion), health care providers working in intensive care settings (increased job satisfaction) and also to impact positively on health service delivery (controlling costs through time saved, and improving job satisfaction and retention of nurses).

IPSDM has also been reported to increase team effectiveness, improve the quality of the decision making process and the decisions made. The process of reaching consensus during IPSDM has been found to foster respect and improve relationships, facilitate the trade of information and exchange of power, facilitate individual learning through information exchange, ease the burden of decision making and decrease the risk and responsibility for the decision. IPSDM is also reported to improve patient care by enabling members of the IP team to understand and empathize with diverse positions and perspectives, maximizing the information available for patient care planning and facilitating a balanced assessment of the patient and development of a comprehensive plan of care.

The mechanisms for IPSDM emphasized in these studies were related to: knowledge (e.g. having expertise and understanding, establishing collective ownership and reaching consensus), skills (e.g. communicating effectively, being able to assert voice and present a logical coherent argument and determining best interests of the patient) and

values and beliefs (e.g. respect and trust, considering and understanding different perspectives, sharing knowledge, risk and responsibilities for the decision and valuing knowledge about the patient and family).

The findings of this realist review acknowledge the importance of differing perspectives and how these perspectives can impact decision making. However, gaps in the literature exist. The majority of studies included in this review dealt with ethical and end of life decision making and, although there was some application with respect to routine clinical decision making, there were no studies that examined issues of IPSDM with respect to different types of decisions (e.g. triage or emergency decisions, chronic condition management decisions or ethical / values sensitive decisions).

The majority of studies were limited to nurse/physician decision making. Although the participants consistently reiterated the need for inclusion of the other essential team members, as well as patients and their families where applicable, there was limited discussion about full team involvement. There was also no information available about how to meld different perspectives, and how to overcome individual and IP conflict when it occurs, in order to optimize decision making. Although there was discussion about the importance of reaching consensus there was no discussion about how to reach consensus, and what determines consensus versus groupthink. There was also no consideration of how to determine best interests of the patient when different perspectives, priorities and power differentials are at play.

There was limited use of the term shared decision making within the sample of included studies and no standardized definitions of other terms that were used to express the collaborative nature of decision making (e.g. group process in decision making, collaborative decision making, or joint decision making). Most studies were retrospective and provider focused, rather than including both providers and families and they were based in a single critical care unit. There is also confusion in the literature about the

meaning of the term SDM and whether it refers to simply sharing information or sharing in the process of deliberating about a decision.

Finally, the question of when and how parents or surrogate decision makers should be involved in the decision making process remains unanswered. How this should be accomplished in intensive care (i.e. tailored to families' needs, abilities, values, level of confidence, expertise, experience and preferences etc.) was not addressed in this literature. Evidence did indicate parents differed in their desire for involvement in the decision making process (Kavanaugh et al., 2005) and the approaches described in these studies more often than not, involved parents after the team had the opportunity to deliberate about the issues and come up with recommendations (McHaffie et al., 2001). Therefore, what is referred to as shared or joint decision making in this literature is not consistent with the definition of SDM when healthcare choice is made by practitioner(s) together with patient or family (Towle & Godolphin, 1999; Légaré et al., 2008b).

Conclusion

Sixteen studies were included in this realist review. Results provide some insight into the context, mechanisms and outcomes of IPSDM, but gaps in the literature exist. There were no definitions provided, little triangulation of results and a variety of approaches were used, which limits comparability of the studies. The research is predominantly focused on nurse / physician interaction about ethical decision making and does not fully explore the full scope of team dynamics during the process of IPSDM in intensive care. Little information is available about the how the team reaches consensus, how quality decisions are made in the context of IPSDM in intensive care and when and how parents should be involved in the decision making process.

The health care providers involved in decision making in intensive care are important to the quality of the decisions made. In order for an IP team to work together effectively and thereby impact patients, families, health care providers and health service

delivery, the contribution of all members of the team must be visible and patient and family preferences must be considered. IPSDM is the key, but details about how to effectively operationalize IPSDM in intensive care is still unclear. Findings from this realist review of the literature and recommendations from two Cochrane systematic reviews (Zwarenstein & Bryant, 2000; Zwarenstein, Goldman, & Reeves, 2009), support the need for further research to increase understanding about how IPSDM works.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

SD, along with members of her Doctoral Thesis Committee (BC, IDG, and JM), conceived the study. SD validated the methods and article selection, abstracted all included studies, analyzed the results and wrote the paper. IG participated in the selection and screening of the articles, quality appraisal of the studies and reviewed the paper. BC supervised the synthesis and reviewed the paper. IDG and JM were advisors for the synthesis and reviewed the paper. The librarian, IG and BC participated in the conception of the review, and provided comments on the search strategy. All authors have read, and approved the final version of this manuscript

Figure 5. Search strategy results – interprofessional shared decision making in critical care

#	Searches	Results (AMED, EMBASE, Healthstar, Medline, Psychinfo)	Results (CINAHL, Cochrane Database)	TOTAL	Objectives
1	cooperative behavior.mp. or exp Cooperative Behavior/	45339			**To identify collaborative practice**
2	interprofessional relations.mp. or exp Interprofessional Relations/	84001			
3	group processes.mp. or exp Group Processes/	219320			
4	organizational culture.mp. or exp Organizational Culture/	94575			
5	work environment.mp. or exp Work Environment/	37579			
6	attitude of health personnel.mp. or exp Attitude of Health Personnel/	208254			
7	collaboration.mp. or exp COLLABORATION/	99094			
8	collaborative practice.mp. or exp Joint Practice/	1229			
9	team work.mp. or exp Teamwork/	10057			
10	teamwork.mp. or exp TEAMWORK/	16202			
11	"journal of interprofessional care"	2087			
12	or/1-11	657994	51716	709710	
13	(interdisc$ or transdisc$ or multidisc$).mp. [mp=ti, ot, ab, nm, hw, tc, id, sh, tn, dm, mf]	133482			**To identify health care teams**
14	(inter disc$ or trans disc$ or mult disc$).mp. [mp=ti, ot, ab, nm, hw, tc, id, sh, tn, dm, mf]	969			
15	(interprofess$ or inter profess$).mp. [mp=ti, ot, ab, nm, hw, tc, id, sh, tn, dm, mf]	76098			
16	patient care team.mp. or exp Multidisciplinary Care Team/	84289			
17	multidisciplinary care team.mp.	86			
18	interprofessional care team.mp.	2			
19	interdisciplinary care team.mp.	47			
20	transdisciplinary care team.mp.	0			
21	health care team.mp.	4760			
22	or/13-21	270910	17467	288377	
23	decision making.mp. or exp Decision Making/	395678			**To identify decision making**
24	decisionmaking.mp. or exp Decision Making, Clinical/	1406			
25	decision-making.mp.	322865			
26	shared decision making.mp.	3178			
27	joint decision making.mp.	302			
28	advocacy.mp. or exp PATIENT ADVOCACY/	69893			
29	or/23-28	459402	28245	487647	
30	12 and 22 and 29	9524	229	9753	
31	critical care.mp. or exp Critical Care/	281066			**To identify critical care**
32	intensive care.mp.	226306			
33	neonatal intensive care.mp. or exp Intensive Care, Neonatal/	28540			
34	exp Intensive Care Units, Pediatric/ or pediatric intensive care.mp.	52239			
35	or/31-34	416751	29606	446357	
36	30 and 35	562	23	591	
37	Remove duplicates from 36	269	3	272	**FINAL RESULTS**
39	Not critical care	8962	206	9168	
40	Final Result	293	26	319	

Table 1. *Selection criteria for the realist review*

Eligibility Criteria	
Includes an ***original collection of data*** *(multiple reports accepted if reporting different results)*	❒ Yes ❒ No
Reports ***empirical results of qualitative or quantitative research***	❒ Yes ❒ No
Participants include ***multiple (regulated) healthcare professionals*** and may include patients and / or families	❒ Yes ❒ No
Refers to ***shared decision making*** as: ❒ A process by which a healthcare choice is made by practitioners together with the patient (Légaré et al., 2008b; Weston, 2001; Towle & Godolphin, 1999) ❒ A collaborative process that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided (Way, Jones, & Busing, 2000) ❒ A joint process of decision making between health professionals and patients, or as decision support interventions including decision aids, or as the active participation of patients in decision making (Gravel et al., 2006)	❒ Yes ❒ No
If the term ***interprofessional shared decision making*** (IPSDM) is not used, makes reference to a process of shared decision making through use of terms such as: ❒ Interdependent or joint decision making ❒ Group process around decision making ❒ Collaboration about decisions ❒ Problem-solving between groups ❒ Participating in decision making ❒ Multidisciplinary / interprofessional decision making	❒ Yes ❒ No
Makes reference to the following ***characteristics of IPSDM***: ❒ More than one member of the team participates in the process of decision making ❒ Information sharing occurs (both the patient and health care professionals bring information and values to the process) ❒ A treatment decision is made and all parties agree to the decision (Charles et al., 1997).	❒ Yes ❒ No
Refers to clinical practice in critical care settings: ❒ Acute care ❒ Intensive care ❒ Neonatal or pediatric intensive care	❒ Yes ❒ No
Answers at least one of the following ***research questions***: ❒ With regards to the ***process of IPSDM*** in critical care: ○ ***What is the nature of IPSDM?*** ○ ***What is the nature of IPSDM for different participants?*** (Who should be involved) ○ ***For what types of decisions does IPSDM occur?*** ○ ***What are the mechanisms by which IPSDM works?*** (How) ○ ***What are the outcomes of IPSDM?*** ○ ***What are the barriers and facilitators of IPSDM?***	❒ Yes ❒ No
Article available in English	❒ Yes ❒ No
Exclusion criteria	
Studies limited to one healthcare professional / patient or family dyad	❒ Yes ❒ No
Primary care settings or community	❒ Yes ❒ No
Discussion articles or articles that present the results of the same study	❒ Yes ❒ No

Figure 6. Progress though the stages of the realist review

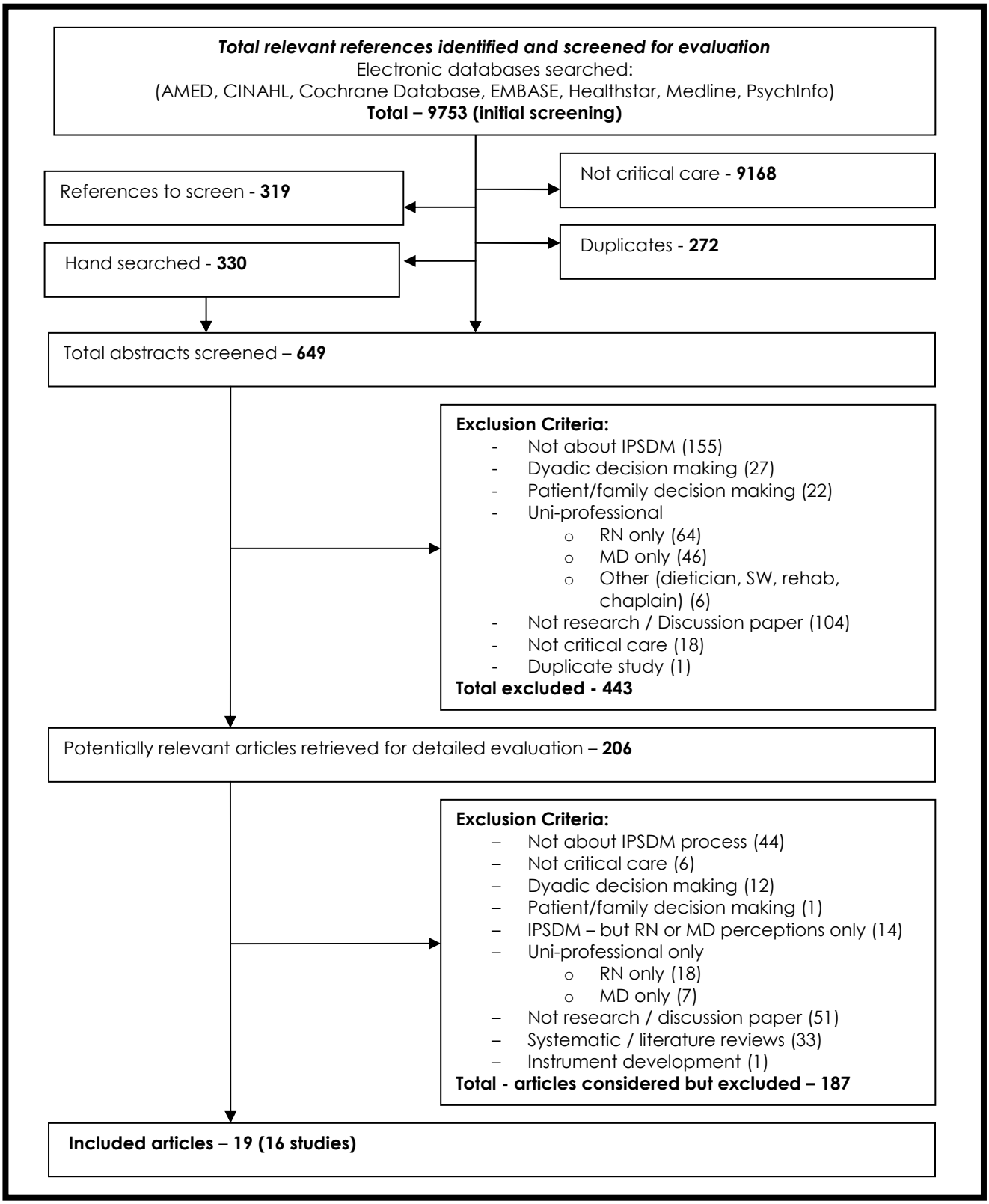


Table 2. *Quality assessment of included studies (quantitative studies)*

		Study Identification																		
	Criteria	1 B5	2 B7	3 B1	4 BH	5 CA	6 CL	7 C3	8 C4	9 K5	10 L4	11 M7	12 M8	13 M8	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
	About shared DM (S), inter-dependent or joint DM (J), group process around DM (G), collaboration in DM (C), problem solving between groups (PS), participating in DM (P), multidisciplinary / interprofessional DM	**2** **C**			**2** **J**														**2** **G**	
	Definition of type of 'decision making' provided	**0**			**0**														**0**	
	Total Score / Maximum possible score (4)	**2**			**2**														**2**	
1.	Question / objective sufficiently described?	**2**			**0**														**2**	
2.	Study design evident and appropriate?	**2**			**1**														**2**	
3.	Method of subject / comparison group selection or source of information / input variables described and appropriate?	**1**			**2**														**2**	
4.	Subject (and comparison group, if applicable) characteristics sufficiently described?	**2**			**1**														**2**	
5.	If interventional and random allocation was possible, was it described?	**N/A**			**N/A**														**N/A**	
6.	If interventional and blinding of investigators was possible, was it reported?	**N/A**			**N/A**														**N/A**	
7.	If interventional and blinding of subjects was possible, was it reported?	**N/A**			**N/A**														**N/A**	
8.	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?	**2**			**2**														**2**	
9.	Sample size appropriate?	**1**			**1**														**2**	
10.	Analytic methods described / justified and appropriate?	**1**			**1**														**2**	
11.	Some estimate of variance is reported for the main results?	**1**			**2**														**2**	
12.	Controlled for confounding?	**N/A**			**2**														**N/A**	
13.	Results reported in sufficient detail?	**2**			**2**														**2**	
14.	Conclusions supported by the results?	**1**			**2**														**2**	
	TOTAL SCORE / MAXIMUM SCORE	**15/20**			**16/22**														**20/20**	
	Percentage Score	**75**			**72.7**														**100**	

1(B5) - Baggs (1995) 2(B7) - Baggs (1997) 3(B1) - Baggs (2007) 4(BH) - Baumann-Holzle (2005) 5(CA) - Carros (1997) 6(CL) - Coleman (1997)
7(C3) - Coombs (2003) 8(C4) - Coombs (2004) 9(K5) - Kavanaugh (2005) 10(L4) - Lingard (2004) 11(M7) - McHaffie (1997) / (1997) 12(M8) - McHaffie (1998)
13(M8) - McHaffie (1998) 14(M1) - McHaffie (2001) 15(ME) - Melia (2001) 16(P1) - Porter (1991) 17(R7) – Robinson (2007) 18(S1) - Stern (1991)
19(V6) - Viney (1996)

Code: 2: Yes 1: Partial 0: No N/A: Not applicable

Table 3. *Quality assessment of included studies (qualitative studies)*

		Study Identification																		
	Criteria	**1 B5**	**2 B7**	**3 B1**	**4 BH**	**5 CA**	**6 CL**	**7 C3**	**8 C4**	**9 K5**	**10 L4**	**11 M7**	**12 M8**	**13 M8**	**14 M1**	**15 ME**	**16 P1**	**17 R7**	**18 S1**	**19 V6**
	Type of DM: Shared DM (S), inter-dependent or joint DM (J), group process around DM (G), collaboration in DM (C), problem solving between groups (PS), participating in DM (P), multidisciplinary / interprofessional DM		2 C	2 S		2 G	2 G	2 J	2 J	2 S	2 C	2 G	2 G	2 G	2 G	2 G	2 J	2 G		2 G
	Definition of 'decision making' included		0	0		0	0	0	0	0	0	0	0	0	0	0	2	0		0
	Total Score / Maximum possible score (4)		2	2		2	2	2	2	2	2	2	2	2	2	2	4	2		2
1.	Question / objective sufficiently described?		2	2		2	2	2	2	2	2	2	2	2	2	2	2	2		2
2.	Study design evident and appropriate?		2	2		2	2	2	2	2	2	2	2	2	2	2	2	2		2
3.	Context for study clear?		2	2		2	2	2	2	2	2	2	2	2	2	2	2	2		2
4.	Connection to a theoretical framework / wider body of knowledge?		1	1		2	2	2	1	2	1	1	1	1	1	2	2	2		1
5.	Sampling strategy described, relevant and justified?		2	1		1	1	2	2	1	1	2	2	2	2	1	1	2		2
6.	Data collection methods clearly described and systematic?		2	1		1	1	1	2	2	2	1	1	1	1	2	1	2		2
7.	Data analysis clearly described and systematic?		2	2		2	2	1	1	1	1	1	1	1	1	1	0	2		1
8.	Use of verification procedure(s) to establish credibility?		2	2		2	2	0	2	2	2	0	2	2	2	0	0	2		2
9.	Conclusions supported by results?		2	2		2	1	2	2	2	2	2	2	2	2	2	2	2		2
10.	Reflexivity of the account?		2	0		2	2	0	0	0	0	0	0	0	0	2	2	0		2
	TOTAL SCORE / MAXIMUM POSSIBLE SCORE (20)		19	15		18	17	14	16	16	15	13	15	15	15	16	14	18		18
	Percentage Score		95	75		90	85	70	80	80	75	65	75	75	75	80	70	90		90

1(B5) - Baggs (1995) 2(B7) - Baggs (1997) 3(B1) - Baggs (2007) 4(BH) - Baumann-Holzle (2005) 5(CA) - Carros (1997) 6(CL) - Coleman (1997)
7(C3) - Coombs (2003) 8(C4) - Coombs (2004) 9(K5) - Kavanaugh (2005) 10(L4) - Lingard (2004) 11(M7) - McHaffie (1997) / (1997) 12(M8) - McHaffie (1998)
13(M8) - McHaffie (1998) 14(M1) - McHaffie (2001) 15(ME) - Melia (2001) 16(P1) - Porter (1991) 17(R7) – Robinson (2007) 18(S1) - Stern (1991)
19(V6) - Viney (1996)

Code: 2: Yes 1: Partial 0: No N/A: Not applicable

Table 4. *Characteristics of included studies*

Characteristics	Details	n = 19
Study Setting / Country	US	7
	UK	10
	Europe	1
	Canada	1
Study Designs / Methods	Ethnography	5
	Grounded theory	1
	Phenomenology	1
	Questionnaires / surveys	3
	Interviews / focus groups / observation	9
Healthcare Providers (Participants in the study)	RN, MD	14
	RN, MD, SW, OT, PT	1
	RN, MD, SW, ethicist, pharmacist, chaplain	1
	RN, MD, parents	3
Year of Publication	1991	2
	1992	
	1993	
	1994	
	1995	1
	1996	1
	1997	4
	1998	2
	1999	
	2000	
	2001	2
	2002	
	2003	1
	2004	2
	2005	2
	2006	
	2007	2
Journals	Acta Paediatrica	1
	British Journal of Midwifery	1
	Critical Care	1
	Critical Care Nursing Quarterly	1
	Dissertations	2
	Health Bulletin	1
	Intensive and Critical Care Nursing	1
	Journal of Advanced Nursing	2
	Journal of Critical Care	1
	Journal of Medical Ethics	1
	Journal of Pediatric Nursing	1
	Nursing in Critical Care	1
	Nursing Times Research	1
	Palliative Medicine	1
	Research in Nursing and Health	2
	Social Science and Medicine	1
Author's Professional Affiliations	Physician	13
	Nurse	27
	Social Worker	1
	Psychologist	1
	Physical Therapist	1
	Midwife	4
	Unknown	6

Table 5. *Taxonomy of results (context, mechanisms and outcomes of IPSDM)*

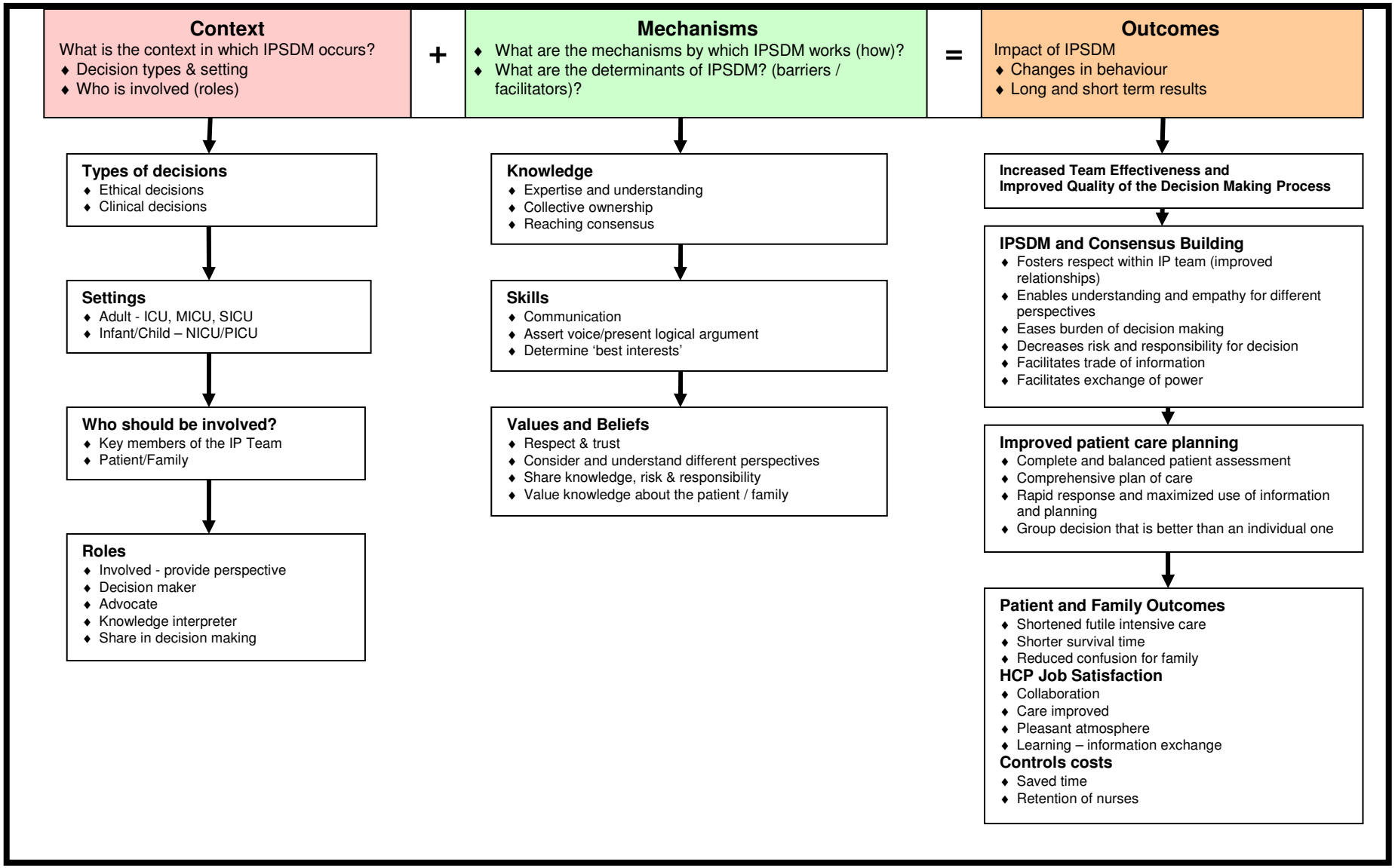
Section / Topic	1 BA5	2 BA7	3 B07	4 BH5	5 CA7	6 CL8	7 C3	8 C4	9 K5	10 L4	11 M7	12 M81	13 M82	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
1. What is the nature of IPSDM? (EXAMPLES)																			
a. Decision Making (ethical issues / discharge plan)																			
Describe situation / shared perceptual reality				✱	✱									✱					
Differentiate pros/cons				✱	✱				✱					✱					
Develop scenarios				✱	✱														
Unanimous decision (team)				✱	✱	✱								✱					
Plan discussion with parents / patients				✱	✱	✱													
Discuss with parents / patients	✱		✱	✱	✱	✱			✱					✱					
Evaluate the decision				✱	✱				✱										
2. What is the nature of IPSDM for different participants?																			
a. Who is (✱)/who should be involved (✚)																			
Nurses	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱
Physicians	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱
Patients / Family / Parents	✚		✱	✚		✚			✱					✱	✚				✚
Other health care providers	✚		✱	✚	✱	✚				✚							✚		
b. Level of involvement / Role in DM																			
Involved (provide different perspective)			✱		✱	✱		✱	✱				✱	✱	✱	✱		✱	✱
Decision maker / bear burden of decision	✱	✱	✱			✱	✱	✱	✱		✱	✱	✱	✱	✱	✱	✱	✱	✱
Advocate for patient or family		✱			✱	✱	✱										✱		✱
Knowledge interpreter / information provider		✱	✱		✱	✱	✱	✱	✱	✱	✱					✱			✱
Shared decision making			✱		✱				✱						✱				

Section / Topic	1 BA5	2 BA7	3 B07	4 BH5	5 CA7	6 CL8	7 C3	8 C4	9 K5	10 L4	11 M7	12 M81	13 M82	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
3. In what circumstances does IPSDM work?																			
a. Types of decisions / setting																			
Ethical / EOLDM / Withdrawal of care	✱		✱	✱	✱	✱		✱	✱		✱	✱	✱	✱	✱		✱	✱	✱
Clinical decisions	✱	✱			✱		✱	✱		✱						✱			
Adult / ICU / MICU / SICU / OR	✱	✱	✱				✱	✱		✱					✱	✱	✱		✱
Infant /NICU / PICU				✱	✱	✱			✱		✱	✱	✱	✱				✱	
4. What are the mechanisms by which IPSDM works? (How)																			
a. Knowledge																			
Expertise, understanding of & access to information		✱			✱		✱	✱		✱				✱					
Collective ownership – share / borrow / trade		✱			✱					✱									
Reach professional consensus				✱	✱	✱								✱	✱				
b. Skills																			
Communication skills - ability to participate in discussions	✱	✱	✱		✱	✱	✱				✱	✱				✱			
Ability to assert voice /present logical coherent arguments					✱		✱	✱						✱		✱			
Determine 'best interests' (involve family)				✱	✱	✱													✱
c. Values and Beliefs																			
Respect and trust for the other profession		✱			✱	✱				✱									
Consider / understand different perspectives		✱		✱	✱	✱				✱					✱				
Share knowledge / risk / responsibility		✱			✱														
Value knowledge about the patient / family		✱		✱	✱	✱	✱	✱	✱										✱

Section / Topic	1 BA5	2 BA7	3 B07	4 BH5	5 CA7	6 CL8	7 C3	8 C4	9 K5	10 L4	11 M7	12 M81	13 M82	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
5. What are the outcomes of IPSDM																			
Improved MD/RN relationships				✱															
Improved quality DM process				✱															
Increased team effectiveness				✱															
Improved patient care (act rapidly, maximize info and planning)		✱																	
Decrease risk and responsibility for decision					✱														
Complete and balanced patient assessment					✱														
Comprehensive balanced plan of care					✱														
Consensus benefits family - reduces confusion associated with feedback from members of a large IP team						✱													
Consensus building - fosters respect within the IP team						✱													
Consensus building - eases burden of DM for physicians						✱													
Consensus building - increases understanding and empathy for different perspectives						✱													
Results in a group decision that is better than an individual one					✱														
Process of trade facilitates exchange of information and exchange of power					✱		✱	✱		✱									
Patient outcomes (shortened futile intensive care/survival time)				✱															
Learning (result of information exchange)		✱																	
HCP job satisfaction (care improved, pleasant atmosphere)		✱																	
Controls costs (saved time, nursing retention)		✱																	

1(BA5) - Baggs (1995) 2(BA7) - Baggs (1997) 3(B07) - Baggs (2007) 4(BH5) - Baumann-Holzle (2005) 5(CA7) - Carros (1997) 6(CL8) - Coleman (1998)
7(C3) - Coombs (2003) 8(C4) - Coombs (2004) 9(K5) - Kavanaugh (2005) 10(L4) - Lingard (2004) 11(M7) - McHaffie (1997) / (1997) 12(M81) - McHaffie (1998)
13(M82) - McHaffie (1998) 14(M1) - McHaffie (2001) 15(ME) - Melia (2001) 16(P1) - Porter (1991) 17(R7) – Robinson (2007) 18(S1) - Stern (1991)
19(V6) - Viney (1996)

Figure 7. Interprofessional shared decision making in critical care (context, mechanisms, and outcomes)



CHAPTER FIVE

Article 2

A Realist Review of the Literature: Barriers and Facilitators of Interprofessional Shared Decision Making in Intensive Care

This chapter presents the results of a realist review of the literature about interprofessional shared decision making in intensive care. The purpose of the review, procedures followed and approach to analysis of the findings are presented in the following manuscript, developed for publication. Barriers and facilitators of the process of IPSDM are discussed.

Target Journal: **Implementation Science**

Author Guidelines:

Abstract – 350 words

Article – no specific word limit provided

"There is no explicit limit on the length of articles submitted, but authors are encouraged to be concise. There is no restriction on the number of figures, tables or additional files that can be included with each article online. Figures and tables should be sequentially referenced. Authors should include all relevant supporting data with each article." (http://www.implementationscience.com/info/instructions/)

A Realist Review of the Literature: Barriers and Facilitators of Interprofessional Shared Decision Making in Intensive Care

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Abstract

Background: Interprofessional shared decision making (IPSDM) is a key component of interprofessional collaborative practice which is defined as a process that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided. A review of the literature, using a realist approach to research synthesis (Pawson et al., 2004) was performed to identify barriers and facilitators to IPSDM in intensive care settings where rapidly changing patient acuity, the need for coordination of care and collaboration among members of many different professional groups and the need for surrogate decision making is the norm.

Methods: A systematic search of the literature from 1950 to July 2009 was conducted using the following databases - AMED, CINAHL, Cochrane Database, EMBASE, Healthstar, Medline, and Psychinfo. Studies were included if they were in English, about interprofessional team decision making, and referred to clinical practice in critical care or intensive care settings. The quality of the studies was assessed independently by two authors. The results of the review were organized into a taxonomy based on the realist review questions and content analysis was performed.

Results: Nineteen articles (representing 16 studies) were retained for synthesis. The majority of included studies were carried out in the United States and the United Kingdom, involved mostly nurses and physicians as participants and used interviews, focus groups or observational methods for data collection. Barriers to IPSDM included: power differentials, scopes of practice, paternalistic attitudes, knowledge imbalance, time limitations and unresolved decisional conflict. Facilitators of IPSDM included: being available, being receptive, having appropriate knowledge, joint problem solving, confidence to assert voice and anticipating opportunities.

Conclusions: Although advocated as the optimal form of decision making, the results of this realist review revealed that barriers to IPSDM in intensive care make operationalization of this model of decision making a challenge. Further research is needed to fully understand the process of decision making and how to overcome the barriers to ensure input from all members of the IP team is considered during the process of decision making.

Keywords: interprofessional, shared decision making, realist review, intensive care, barriers, facilitators

Background

Interprofessional (IP) education, practice and research, as a means to improve health care and patient outcomes, have been a priority of the Federal and Provincial governments in Canada (Burton, 2006; Health Canada, 2003; Kirby, 2002; Ministry of Health and Long Term Care, 2005; Ministry of Health and Long Term Care, 2006; Romanow, 2002) and internationally (World Health Organization, 2010). Among other benefits, IP practice has the potential to improve patient safety (Byers & White, 2004; Committee on Quality Health Care In America, 2001; Committee on the Work Environment for Nurses and Patient Safety, 2004; Kohn et al., 1999; Reason, 1990; Wachter & Shojania, 2004) the quality of work life of health professionals (Doran, 2005; McGillis Hall et al., 2006) and the quality of care (Oandasan et al., 2004; Zwarenstein & Bryant, 2000).

Shared decision making (SDM) has been identified as a key attribute of IP practice (Baggs & Schmitt, 1988; Lemieux-Charles & McGuire, 2006) and is advocated as an optimal model for treatment decision making (Charles et al., 1997). SDM as a key component of IP collaboration (D'Amour et al., 2005), enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided (Way et al., 2001).

SDM is also described in the literature as the process by which the practitioner-patient dyad reach healthcare choices together (Charles et al., 1997; Coulter, 2002; Elwyn et al., 1999; Elwyn et al., 2000; Pierce & Hicks, 2001). SDM, which involves collaboration between patients and caregivers to come to an agreement about a healthcare decision, is especially useful when there is no clear best treatment option (Dartmouth-Hitchcock Medical Center, 2007) and the patient or family is dealing with one health care professional.

This conceptualization of SDM (limited to health professional - patient dyads in primary care settings) does not adequately reflect the current realities of clinical practice when other participants are involved (e.g. patients supported by family members or friends,

or incompetent or seriously ill patients who require proxy decision makers to act on their behalf, or in cases where several physicians (each offering different treatment options) are involved in the decision making process with a single patient) (Charles et al., 1997). This model also completely negates the essential roles of other members of the IP team in patient care planning and decision making, and the influence the environment has on the decision making process.

As a result of these limitations, Légaré and colleagues have been working on a project to develop an IP approach to SDM (IP-SDM) model for use in primary care (Légaré et al., 2008b). According to Légaré and colleagues (2008b), IP-SDM involves members of the IP team collaborating to identify best options and supporting the patient or family to be involved in decision making about those options. In this process, patients have their decisional needs met and reach healthcare choices that are agreed upon by them and their practitioners.

The purpose of this realist review was to systematically search for and report on studies about IP shared decision making (IPSDM) in intensive care. The main objective was to increase understanding about the context in which IPSDM occurs, the mechanisms by which it works and the outcomes which are produced. A secondary objective was to identify barriers and facilitators to IPSDM in intensive care.

The intensive care environment was selected because of the unique characteristics that can both hinder and facilitate IPSDM, including rapidly changing patient acuity, the need for coordination of care and collaboration among members of many different professional groups, a model of practice where the healthcare team comes to the patient rather than the patient coming to see individual health care providers and the need for surrogate decision making.

The results of this review are presented in two papers. The findings related to context, mechanisms and outcomes of IPSDM were presented in a previous paper

(Chapter 4). The barriers and facilitators of IPSDM in intensive care settings are the focus of this, the second paper.

Methods

Conceptual Framework

The Shared Decision Making and Health Care Team Effectiveness Model (adapted from (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006) (Figure 3 – page 21) was developed to guide exploration of the concept of IPSDM for this study. This model is based on concepts from a recent systematic review of the health care team effectiveness literature (Lemieux-Charles & McGuire, 2006) and a decisional conflict framework (Légaré et al., 2006). This model illustrates the relationships between components of IP practice, SDM, team effectiveness and health care outcomes. The focus of this realist review was to seek evidence to add to this model.

Realist Approach to Research Synthesis

A Realist Approach to Research Synthesis (Pawson & Boaz, 2004; Pawson, 2006; Pawson et al., 2004) was used to guide synthesis of the evidence found. A systematic review of evidence is a process that identifies studies relevant to a particular topic, appraises the quality of these studies according to predetermined criteria and synthesizes their results using scientific methods (Khan et al., 2003). Conventional systematic reviews impose a strict hierarchy of evidence, focused on questions of effectiveness that rarely reflect the complexity of the context in which interventions are operationalized. Therefore, reviews of complex service delivery are a challenge and the findings may have limited clinical application (McCormack et al., 2007).

Pawson and colleagues (2004) designed the Realist Approach to Research Synthesis to explore complex social interventions. Social interventions are activities that comprise theories, involve the actions of people, consist of a chain of steps or processes that interact and are rarely linear, are embedded in social (health care) systems, are prone

to modification, and usually exist in open systems that change through learning (Pawson & Boaz, 2004; Pawson, 2006; Pawson et al., 2004; Pawson et al., 2005; Sridharan et al., 2006). This approach is relevant to a review of the evidence about the process of IPSDM, which qualifies as a complex social intervention. The realist approach draws evidence from qualitative, quantitative and mixed methods studies so that both the processes and impacts of interventions may be investigated (Pawson et al., 2005).

Search Strategy

A systematic search of the literature from 1950 to July 2009 was conducted using the following databases - AMED, CINAHL, Cochrane Database, EMBASE, Healthstar, Medline and Psychinfo. The keyword search strategy was developed in consultation with a library database search specialist. Figure 8 (page 115) outlines the search terms and their yields. The bibliography of each retained article was reviewed to find additional papers not retrieved by the search strategy. Journals that publish studies about IP practice in health care (e.g. *Journal of Interprofessional Care and the Journal of Research in Interprofessional Practice and Education*) and the primary researcher's personal files were also hand searched.

Identification of Eligible Studies

Abstracts of retrieved studies were independently screened for eligibility by the primary investigator (SD) and a second researcher (IG) for inclusion. All papers selected for more detailed review were also independently screened for eligibility by both reviewers to ensure high reliability and validity of the review. Disagreements were resolved through consensus meetings between reviewers. A study was considered eligible for inclusion if it:

1. included an original collection of data,
2. reported empirical results of qualitative or quantitative studies,
3. participants included health professionals,

4. was about IP team decision making (using terms: inter-dependent or joint decision making, group process around decision making, collaboration about decisions, problem-solving between groups, or participating in decision making, or multidisciplinary / interprofessional decision making),
5. answered at least one of the research questions listed below,
6. referred to clinical practice in a critical care or intensive care setting and
7. was available in English.

Studies exclusively about health professional / patient dyadic SDM were excluded. A detailed list of the selection criteria are provided in Table 6 (page 116). Progress through the stages of the review, with itemized rationale for exclusion of studies is also provided in Figure 9 (page 117). Nine studies were published in a language other than English (French, German (5), Norwegian, Portuguese, and Spanish), however they were also excluded for reasons other than language (not primary research, not about IPSDM, dyadic decision making, involved physicians only, involved nurses only, and not about critical care).

The following realist review questions (Pawson et al., 2004) formed the basis for this review of the literature. With regards to the context, mechanisms and outcomes of IPSDM in intensive care:

1. What is the nature of IPSDM?
2. What is the nature of IPSDM for different participants? (Who is/should be involved)
3. For what types of decisions does IPSDM occur?
4. What are the mechanisms by which IPSDM works? (How)
5. What are the outcomes of IPSDM?
6. What are the barriers and facilitators of IPSDM?

The findings for question six are reported in this article.

Data Extraction

Study characteristics were abstracted using standardized data abstraction tables. The information included: author(s), year of publication, title of article, journal name, volume and issue, country of origin and author's professional affiliation. In addition, the main objectives of the study, definition of shared decision making (if available), setting and characteristics of the participants, sampling strategy and response rate were also documented. Finally, the methodological approaches, data collection strategies, research questions, outcomes measured (with results and recommendations) and any quality issues and limitations noted for each study were recorded.

Study results were then summarized into a table, collated under each research question and then coded and thematically analyzed. From this analysis, the taxonomy of results was created. To ensure validity and reliability of the themes identified, the results of all included studies were also reviewed by second reviewer (IG) and verified against the taxonomy.

Quality Assessment

Quality assessment of the included studies was completed based on guidelines from the Standard Quality Assessment Criteria for Evaluating Primary Research Papers framework (Kmet et al., 2004). This framework was selected because it includes a manual for quality scoring of quantitative, qualitative and mixed methods studies with definitions and detailed instructions for use, as well as a set of validated tools. To ensure validity and reliability of the quality assessment, 30% of the studies were assessed by the second reviewer and consensus was reached for the quality scores. The quality scores for the remaining studies were revised based on these findings. A minimum threshold of 65% was set for inclusion of studies in this review. This threshold was selected based on recommendations provided in the quality assessment guidelines (Kmet et al., 2004).

Results

Quality Assessment

Overall, the qualitative studies (n=16/19) scored 65% or above (mean 79%; range 65-95%) (Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; Kavanaugh et al., 2005; Lingard et al., 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; McHaffie et al., 2001; Melia, 2001; Porter, 1991; Robinson et al., 2007; Viney, 1996). Methodological weaknesses were primarily found with descriptions of the theoretical framework, sampling strategy, data collection methods and data analysis. Researcher reflexivity was addressed in less than 40% of the qualitative studies suggesting that the researchers did not reflect on the potential for their personal perspectives to bias results. The quantitative studies (n=3/19) all scored above 70% (mean 83%; range 73 – 100%) (Baggs & Schmitt, 1995; Baumann-Holzle et al., 2005; Stern et al., 1991) however, commonalities of weaknesses were less easy to identify among these papers. The quality of the reporting (completeness, comprehensiveness and writing style) may have contributed to some of the lower scores. Based on this quality assessment, no studies were excluded from the synthesis of results (Tables 7 and 8 – pages 118 and 119).

Characteristics of the Included Studies

At the conclusion of the screening process 19 articles (representing 16 studies) were retained for synthesis. The findings for two studies were presented in multiple papers (Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a). The majority of included studies were carried out in the United States and the United Kingdom (n=17/19), involved nurses and physicians as participants (n=14/19), and used surveys (n=3/19), interviews (n=14/19), focus groups (n=2/19) or observational methods (n=5/19) for data collection. The articles were published in 15 different journals and all but two studies were published within the past 15 years. A

summary of the characteristics of the included studies is provided in Table 9 (page 120). Information about excluded studies is available from the authors.

Definition of Terms

Only two of the articles used the term shared decision making (Baggs et al., 2007; Kavanaugh et al., 2005) in the text of the paper. Although no specific definition was provided in either paper, the term was used in the context of parent involvement in decision making. The majority of studies referred to the concept through use of terms such as: group process around decision making (n=10/19) (Carros, 1997; Coleman, 1998; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; McHaffie et al., 2001; Melia, 2001; Robinson et al., 2007; Stern et al., 1991; Viney, 1996),collaborative decision making (n=3/19) (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Lingard et al., 2004), or joint decision making (n=4/19) (Baumann-Holzle et al., 2005; Coombs & Ersser, 2004; Coombs, 2003; Porter, 1991).

Realist Review Findings

The results of this review have been organized into a taxonomy (Table 10 – pages 121 and 122) based on the realist review questions previously described. A flowchart, presenting the barriers and facilitators of IPSDM, has also been developed (Figure 10 – page 123) and a summary of key findings is presented below.

What are the Barriers to IPSDM?

Barriers to IPSDM were reported often within this group of studies. All studies but one (Baumann-Holzle et al., 2005) provided some information. Four themes emerged: rules of the game, knowledge imbalance, time limitations and unresolved decisional conflict.

Rules of the game

Barriers to IPSDM included in this theme were: power differential and conflict (control / voice), formal and informal rules and roles (scopes of practice / role not valued) and paternalistic attitude / parental autonomy.

Power Disparity and Conflict

Issues of power disparity and conflict were presented in over half of the studies in this review (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a; McHaffie et al., 2001; Melia, 2001; Porter, 1991; Viney, 1996). Power differential and conflict can arise because of the knowledge and role diversity within a health care team (Coombs, 2003). In the ICU, decision making continues to be strongly driven by the medical knowledge base and authority. The key holders of medical knowledge (the medical staff) are therefore maintained in the powerful role of decision maker (Coombs, 2003). Other sources of knowledge and roles, such as those held by nurses, are less valued by physicians, resulting in tension between nursing and medicine (Coombs, 2003; Coombs & Ersser, 2004).

A power differential can create a situation where nurses' views are rarely solicited or offered and are therefore under-represented. This results in nurses' preferences being accommodated less than physicians' and, as a consequence, nurses feel undervalued in the decision making and care giving process (McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b). This power disparity also influences individual's perceptions about collaboration in decision making. For example, residents commonly see themselves as ultimately responsible for decision making. They perceive a brief explanation on their part as collaborative, whereas nurses perceive this as giving an order (Baggs & Schmitt, 1997).

Nurses believe they have unique insights into the family dynamics and can provide valuable information gleaned from their close involvement with the family (parents confide fears and anxieties to them) (McHaffie & Fowlie, 1997). However, nurses are perceived and perceive themselves to have an insignificant power base within the decision making process (Coombs, 2003). Physicians attribute this to the subordinate position that nurses

perceive themselves to be in, while nurses believe that this subordinate position is re-enforced by physicians (Coombs, 2003). Previous attempts to deal with this issue have proven ineffective in that they have been focused on the interpersonal development of nurses, rather than challenging the dominant role of medicine and the hierarchical model of practice in ICU (Coombs, 2003).

Formal and Informal Roles and Rules

Nurses and physicians have defined roles related to patient care that can be a barrier to shared decision making (Coleman, 1998; Coombs & Ersser, 2004; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b). Physicians are responsible for decisions related to medical diagnoses and therefore control these decisions (Coleman, 1998; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b). While the physician's participation in care tends to be episodic, the nurse's role places them in a position to be intimately involved with the patients and their families for long shifts. As a consequence, they establish close relationships and often have an insider view of the situation (Coleman, 1998; Coombs & Ersser, 2004). However, nurses report feeling undervalued when this in-depth awareness of the patient and family is ignored, and their contribution in difficult situations is taken for granted (Coombs, 2003; Lingard et al., 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; Robinson et al., 2007). Despite these challenges, experienced nurses find ways to participate in decision making (Melia, 2001; Porter, 1991).

Research has also demonstrated that nurses and physicians have a limited understanding of the other's role, expectations and perspectives related to patient care (Baggs & Schmitt, 1997; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1998b; Viney, 1996). Limited communication and collaboration among members of the team can result in moral distress for nursing staff and moral dissonance for physicians, both of which can influence the process of decision making (Viney, 1996).

Formal and informal rules can influence decision making as well. Do not resuscitate (DNR) orders are seen as an unnecessary burden for families by some physicians. In contrast, some nurses see NOT having a DNR order as confusing and a barrier to decision making (Baggs et al., 2007). This may explain the proactive stance taken by some nurses to move DNR decision-making along (Melia, 2001; Robinson et al., 2007). Informal rules, such as discouraging nurse-initiated discussions with families (Baggs et al., 2007) or when to implement DNR decisions (Robinson et al., 2007), have the potential to generate conflict between nurses and physicians and impact participation in decision making (Baggs et al., 2007; Robinson et al., 2007).

Paternalistic Attitude versus Parental Autonomy

In order to facilitate SDM and preserve parental autonomy in this process, health care providers need to present the options (along with the pros and cons for each option) to the parents in an impartial way (Coleman, 1998; McHaffie et al., 2001). In reality, nurses and physicians report that options are usually discussed within the team first and consensus established prior to discussions with the parents (Coleman, 1998; McHaffie et al., 2001). The consensus view is then presented to the family with guidance or a recommendation as to the preferred medical option. This approach can result in paternalistic decision making on the part of the team, rather than preservation of parental autonomy in decision making (Coleman, 1998; McHaffie et al., 2001).

As well, the knowledge differential that exists between most parents and professionals, and different approaches used to communicate with parents (with wide variation in technique and effectiveness) impact on parents' understanding and comprehension of the their infant's condition (Coleman, 1998). This in turn influences parents' ability to be a full partners in the decision making process. There is therefore a built-in bias towards the authority of nurses and physicians rather than the autonomy of the parents when it comes to the process of decision making (McHaffie et al., 2001).

Knowledge Imbalance

The knowledge imbalance among members of the health care team and between the team and the family was the most commonly reported barrier to IPSDM - a constant theme mentioned in all but two studies (Baggs & Schmitt, 1995; Baumann-Holzle et al., 2005). Examples of factors within this theme included: differing professional and personal perspectives, previous experience, individual ownership of information and language, sources of knowledge and hierarchy of evidence, uncertainty of evidence, lack of continuity (team/care), lack of confidence or ability to assert voice, lack of ability to articulate or defend an opinion, overconfidence (knows all) and family perspectives and understanding.

The most common cause of the knowledge imbalance was the different professional and personal perspectives of members of the team (Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coombs, 2003; Coombs & Ersser, 2004; Kavanaugh et al., 2005; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; McHaffie et al., 2001; Melia, 2001; Porter, 1991; Robinson et al., 2007; Stern et al., 1991; Viney, 1996). Although acknowledged as one of the strengths of IP practice, working with professionals who have different training, values systems, priorities, responsibilities and expertise is a major challenge and a significant barrier to IPSDM.

Every person in the team – physician, nurse and parent – has a unique set of values, beliefs, experiences, opinions and knowledge that can effect how they cope with a particular situation. Even where there are concerted efforts to involve the whole team in decision making, this can pose problems. High level of uncertainty and defining ‘best interests’ for the patient poses particular challenges for decision making (Carros, 1997; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; McHaffie et al., 2001).

Additional factors that contribute to differing perspectives include: lack of continuity of medical coverage (Coombs & Ersser, 2004; McHaffie & Fowlie, 1998a; McHaffie &

Fowlie, 1998b; Melia, 2001), lack of nursing involvement in decisions to admit to an ICU or withdrawal of care (Melia, 2001) and emergency response – no time for an ethical debate so decisions are based on the information available at the time (Melia, 2001).

Physicians and nurses are also influenced by previous experience in both their professional capacity and personal lives (McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a; McHaffie et al., 2001). The effect of experience on nurses made them much more inclined to limit treatment than to extend it. Fewer physicians expressed the same perspective. However, both physicians and nurses expressed anxiety, regret and guilt about being unable to predict outcomes accurately (McHaffie & Fowlie, 1997).

The value placed on different sources of knowledge also contributes to a knowledge imbalance between nurses and physicians. They use and value different types of knowledge and consequently adopt different positions in the process of clinical decision making (Coombs, 2003; Coombs & Ersser, 2004; Viney, 1996). Some knowledge is shared and some is held and used by only one discipline (Coombs, 2003; Coombs & Ersser, 2004; Coleman, 1998; Lingard et al., 2004). Drinka and Clark (2000) assert that, “the person who controls the definition of the problem defines the range of options available to solve it” (p. 78), Therefore, ownership of knowledge and access to and understanding of information about the patient is key to the process of IPSDM.

Knowledge sources not accepted as valid by medicine are those areas that lack scientific credibility or that are perceived by physicians to be clinically superficial (e.g. choice of beds, bowel, skin, mouth and wound care) (Coombs & Ersser, 2004). Nurses see this knowledge as essential for patient management in ICU (Coombs & Ersser, 2004; Coombs, 2003). Physicians speak of bequeathing knowledge to nurses, indicating the strong belief by physicians in the hierarchical power relationship of the medial staff to nurses (Coombs & Ersser, 2004; Coombs, 2003).

Lack of confidence or ability to articulate and defend an opinion or assert your voice was a barrier to participation in the process of decision making (Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997). In one study, medical staff, who presented the clinical details of the patient during rounds, expected nurses to chip in afterward to alert the team to things that were missed out during the case presentations. However, the nurses did not always have the ability or confidence to do so (Coombs & Ersser, 2004). Overconfidence (knowing-all) was also a barrier to IPSDM, reducing the likelihood of team members seeking information from others (Baggs & Schmitt, 1997).

Nurses get to know their patients through direct care and through involvement with the family. This source of knowledge was not unique to nursing, but was more common in the discourse of nurses than of medical staff. Knowing the family was seen by nurses to be an important area of knowledge to inform patient management. Both medical and nursing staff was involved in supporting families, but both saw nurses possessing a greater focus on this area of knowledge. The knowledge that nurses gained from continuity of care (12 hour shifts or primary care) was brought to clinical decision making, however physicians use of this knowledge was variable (Coombs & Ersser, 2004). Physicians state they recognize the importance of nursing knowledge, but do not necessarily make use of it (Coombs & Ersser, 2004).

Parents' participation in decision making about their child's case is also influenced by a knowledge imbalance. Their role as parent accords them a certain authority. However, lack of knowledge, understanding of the situation and experience impacts on their ability to participate in decision making. As well, experience does not always result in increased understanding (as some parents emerge with erroneous ideas) (McHaffie et al., 2001; Coleman, 1998).

Time limitations

Time limitations are also a barrier to IPSDM. Shared decision making takes time (time to get to know participants, time for discussions, time to meet, time to deliberate over options) (Baggs & Schmitt, 1997; Coleman, 1998; Kavanaugh et al., 2005; Lingard et al., 2004; McHaffie et al., 2001). In an intensive care setting, there may be little opportunity to develop relationships and get to know the people you are caring for. It is also very difficult to time discussions for urgent or complex situations in such a way that all views and needs are respected (McHaffie & Fowlie, 1998b).

Unresolved decisional conflict

The final barriers to IPSDM are factors related to unresolved decisional conflict such as: professional tensions (doctor-nurse or doctor-doctor tensions) (Baggs & Schmitt, 1997; Baggs et al., 2007; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; Lingard et al., 2004; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; Melia, 2001; Robinson et al., 2007), disagreement about a case (Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; Melia, 2001; Porter, 1991; Robinson et al., 2007; Stern et al., 1991; Viney, 1996), moral distress or moral dissonance (Viney, 1996), uncertainty or the inability to let go (Baggs et al., 2007; McHaffie & Fowlie, 1997) and differing ethical perspectives about the quality of life versus use of technology (Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; Viney, 1996).

How team members perceive their colleagues can lead to tension and conflict within the team. Doctor-nurse tensions increase when nurses perceive physicians' behaviours and attitudes to be high-handed, indecisive, inconsistent and insensitive (McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b). On the other hand, nurses' behaviors that increase stress for physicians include being uncooperative, communicating poorly, not being supportive, not delegating well (McHaffie & Fowlie, 1998b) and being proactive about

decision making (Robinson et al., 2007). Nurses report feeling undervalued when they are left out of the discussions entirely, their contribution is not solicited or is ignored and care is simply delegated (McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a). Conflict between physicians about management plans can also have serious consequences resulting in inconsistency in care and increased conflict within the team, ultimately impacting on involvement in decision making (McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b).

Nurses and physicians often differ in their perspectives and disagree about a case (Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; Melia, 2001; Porter, 1991; Robinson et al., 2007; Stern et al., 1991; Viney, 1996). In one study of decision making in a pediatric intensive care unit (PICU), nurses perceived this professional disagreement occurred more often than the physicians (Stern et al., 1991). Nurses were less likely than physicians to report that their opinions were given appropriate weight during decision making (86% versus 97%; χ^2 $P<0.01$). The fact that nurses' opinions were given appropriate weight only 14% of the time, contributed to reported feelings of dissatisfaction among the nurses (Stern et al., 1991).

In a study about the ethical concepts and decision strategies used by physicians and nurses in an NICU, overcoming conflict within the team resulted in a group decision that was perceived to be an improvement over any individual judgment (Carros, 1997). Although collaborative decision making was perceived to reduce the individual risk or responsibility for that decision, this was still difficult to achieve (Carros, 1997).

Moral distress is a negative feeling that occurs when a person makes a moral decision but is not able to follow it through (Wilkinson, 1987). For nurses, moral distress is caused primarily by action of the ICU medical staff (e.g. continuance of futile treatment, lack of involvement of the nursing staff or family, apparent lack of clinical assessment by the medical staff, undermining of the relative-nurse relationship and patient death not managed

properly) (Viney, 1996). Experienced nurses who suffer from repeated moral distress may distance themselves from the situation as a way of coping (Viney, 1996). This can have a negative impact the decision making process.

Competing professional priorities are a significant barrier to the process of shared decision making and the provision of care. Physician practice is focused on saving lives and curing disease, sometimes making it hard for them to let go (Baggs et al., 2007; McHaffie & Fowlie, 1997). On the other hand, nursing practice emphasizes caring rather than curing and nurses tend to be ready to withdraw treatment sooner than physicians (McHaffie & Fowlie, 1997; Viney, 1996). However, nurses' close involvement gives them special insights, they also form emotional bonds with their patients and families, making it hard for them let go as well (McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b). It can be very difficult for nurses to provide care and support the family when a decision is made to continue or withdraw treatment without their involvement or against their better judgment (Baggs et al., 2007; McHaffie & Fowlie, 1997).

Both nurses and physicians acknowledge the importance of ethical knowledge on decision making about patient management (Coombs & Ersser, 2004; Viney, 1996). The value placed on quantity versus quality of life and use of technology differed between nurses and physicians and was a source of conflict (Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; Viney, 1996). Physicians and nurses also differ in their views about goals of treatment. Physicians "sometimes perceive death as a failure whereas nurses are trained to care rather than cure" (McHaffie & Fowlie, 1998a, p. 468).

What are the Facilitators of IPSDM?

A number of facilitators of IPSDM were described in these studies. The core process of collaboration involves working together (Baggs & Schmitt, 1997). Two major antecedent conditions to the core process of decision making were described. The first antecedent condition is being together. This involves being in the right place, having time,

having a forum for discussions as well as having appropriate knowledge (Baggs & Schmitt, 1997; Baggs et al., 2007; Baumann-Holzle et al., 2005; Carros, 1997; McHaffie & Fowlie, 1998a; Melia, 2001; Porter, 1991). The second antecedent condition is being receptive. This means being interested in collaboration and having respect and trust for the other profession (Baggs & Schmitt, 1997; Lingard et al., 2004; McHaffie & Fowlie, 1998a).

Having the right people involved in the decision making process is important. If you are not present you are not involved. If you are present you have to be involved to participate in the process of decision making. Nurses and physicians bring different information about patients. The information gathered from both groups facilitates patient care planning (Baggs et al., 2007; Baggs & Schmitt, 1997). The presence of the core team members and a forum for discussions, such as IP rounds, is essential for group decision making (Baggs et al., 2007; Carros, 1997).

In a study about end of life decision making (EOLDM), morning rounds provided an opportunity for all members of the professional team to plan together, and to discuss issues of concern (Baggs et al., 2007). Facilitating factors that shaped the communication patterns and decision making processes among providers included nurses being present during rounds and taking an active role in the discussions. If nurses were not present, they were not sought out. In addition, timing rounds so everyone could attend and having a physician present on rounds who was interested in nursing input, also facilitated discussions (Baggs et al., 2007). However, being present is not enough. Confidence in one's own judgment and the ability to contribute to case discussions is also essential for IPSDM (Coleman, 1998; Kavanaugh et al., 2005; McHaffie et al., 2001). In addition, lack of confidence in a situation has also been found to facilitate brainstorming and planning with other team members (Carros, 1997).

Other facilitators of IPSDM described in this literature were working together, joint problem solving, sharing information (Baggs & Schmitt, 1997; Carros, 1997; Kavanaugh et

al., 2005; McHaffie & Fowlie, 1998a), anticipating opportunities and emergency planning (Carros, 1997) and use of technology and rules (Baggs et al., 2007). Technology can be a trigger for EOLDM. For medical patients, decisions about tracheotomy and gastric tube insertions serve as an opportunity to initiate EOLDM discussions (Baggs et al., 2007). Advanced directives can also help families assert the need to follow patient wishes when members of the provider team do not agree (Baggs et al., 2007).

Discussion - Gaps in the Literature

The four most frequently cited facilitators identified in this review of the literature, based on the number of papers describing this issue, were: being available (place, time, key players, forum for discussions) (n=7/19), having appropriate knowledge (expertise, experience, and access to information) (n=6/19), working together, sharing information and joint problem solving (n=4/19) and having confidence to assert voice and to make decisions (n=4/19) (Table 10 – pages 121 to 122). These factors differ from the top four facilitators reported in two systematic reviews of SDM in clinical practice which found: being motivated to participate in SDM, expectancy of improved patient outcomes, expectancy of improved health care processes and the practicality of the process to be the most helpful factors (Gravel et al., 2006; Légaré et al., 2008a). In these reviews, the factors identified are focused on valuing the process of IPSDM and anticipation of positive effects while the facilitators identified in this realist review (being available to participate, having the knowledge, sharing information and problem solving and having the confidence to participate) are about precursors to the process and factors essential to successful implementation of IPSDM in intensive care.

A number of barriers to IPSDM were also identified (Table 10 – pages 121 and 122).The most common barriers, based on the number of papers describing this issue, were: differing professional and personal perspectives (n=15/19), disagreement about the case (n=13/19), power differential (n=12/19), role not valued (n=11/19) and tensions or

conflict between professionals (n=10/19). The next most commonly reported barriers (all presenting with equal frequency, n=6/19) included: lack of ability to articulate and defend opinion, individual ownership of information and professional language and having a paternalistic attitude, and family perspectives based on erroneous ideas. These factors differ from the top six barriers identified in two systematic reviews of SDM in clinical practice which found: time pressures, lack of agreement with the applicability of SDM for the patient, lack of agreement with the applicability of SDM for the clinical situation, preferences of the patient, lack of self-efficacy and asking the patient about preferred roles in decision making to be the most problematic factors (Gravel et al., 2006; Légaré et al., 2008a). These latter issues are more patient focused, whereas the barriers identified in this realist review are more specific to issues among health care providers. This may be the result of the intensive care focus of this realist review and the limited inclusion of families in these studies. These results are concerning and speak to the need for more research about family involvement in the IPSDM process. In addition, future research is needed to identify strategies to counter the IP barriers identified here.

Interpretation of evidence was identified as a barrier in both this review and two other systematic reviews of SDM in clinical practice (Gravel et al., 2006; Légaré et al., 2008a). In the Gravel / Légaré reviews, interpretation of evidence was related to the belief that specific elements of SDM were not supported by evidence (Gravel et al., 2006; Légaré et al., 2008a), whereas, in this realist review, interpretation of evidence was identified as a barrier because of the values placed on different forms of evidence by members of the IP team.

Challenge to autonomy was identified as a barrier in both the Gravel (2006) and Légaré (2008a) reviews about SDM in clinical practice and in this realist review. In all cases the perspective was similar. SDM is seen as a threat to the autonomy of some practitioners and is therefore a barrier to implementation. Shared decision making requires all members

of the IP team to acknowledge and respect the knowledge and expertise of all healthcare professionals regardless of occupation and formal position (Grinspun, 2007), including families (as advocates and surrogate decision makers). According to Grinspun (2007), “this requires dismantling of hierarchies and redistribution of power allocation within the team, within organizations and in society at large” (p. 1). Further research is needed to identify innovative methods to balance the positional power and control currently held by medicine in order to level the IPSDM playing field.

Another barrier to IPSDM, consistent across all reviews, had to do with self-efficacy and not believing in one’s ability to participate in SDM (Gravel et al., 2006; Légaré et al., 2008a). In this realist review, lacking the confidence to assert one’s voice and present a logical coherent argument was seen as a critical barrier to participation in IPSDM as well. This speaks to the need to ensure members of the IP team all have the knowledge, skills and confidence to be full participants in the process of IPSDM.

Time pressure (not having enough time to put SDM into practice) is the most often identified barrier to SDM (Gravel et al., 2006; Légaré et al., 2008a). Consistent with these findings, time limitations were identified as barrier in this realist review. Three perspectives were highlighted: limited time for collaboration / communication, limited time to decide in an emergency situation and limited time to develop relationships with the family because of inadequate staffing and workload. These factors stem from the critical nature of intensive care where patient acuity may be high, decisions may need to be made urgently and developing relationships can be a challenge. The perception that time limitations present a barrier to IPSDM is somewhat counter to findings that IPSDM improves the quality of the decision making process (Baumann-Holzle et al., 2005), facilitates exchange of information (Carros, 1997; Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004) and reduces duplication and confusion for families (Coleman, 1998). In addition, anticipating opportunities and advanced planning has been identified as a time saver and a facilitator of

IPSDM (Carros, 1997). More research is needed to understand the factors that create actual or perceived time barriers to IPSDM and how these barriers can be neutralized to facilitate IPSDM.

The final barrier to be discussed is related to knowledge. In the Gravel (2006) and Légaré (2008a) reviews about SDM in clinical practice, the issue is about lack of knowledge and familiarity with the SDM process and forgetting to implement SDM. However, in this realist review, the focus was more about the knowledge imbalance that exists between participants in the SDM process, differing perspectives, previous experience, individual ownership of information and language, lack of continuity of information, and the family perspective. Future research is needed to explore this knowledge gap and identify strategies to help practitioners draw on each others' knowledge and expertise rather than being continuously challenged by their differences.

Conclusion

Sixteen studies were included in this realist review of the literature about IPSDM in intensive care. A number of barriers and facilitators to the process of IPSDM were indentified. Despite being identified as a key attribute of IP practice (Baggs & Schmitt, 1988; Lemieux-Charles & McGuire, 2006) and advocated as an optimal model of treatment decision making (Charles et al., 1997), IPSDM is a challenge to operationalize in intensive care. Involving all health care providers in decision making in intensive care is important to the quality of the decisions made. IPSDM is the key but how this should be operationalized in intensive care settings and effective strategies to overcome the barriers are unclear.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

SD, along with members of her Doctoral Thesis Committee (BC, IDG, and JM), conceived the study. SD validated the methods and article selection, abstracted all included studies, analyzed the results and wrote the paper. IG participated in the selection and screening of the articles, quality appraisal of the studies and reviewed the paper. BC supervised the synthesis and reviewed the paper. IDG and JM were advisors for the synthesis and reviewed the paper. The librarian, IG and BC participated in the conception of the review, and provided comments on the search strategy. All authors have read, and approved the final version of this manuscript.

Figure 8. Search strategy results – interprofessional shared decision making in critical care

#	Searches	Results (AMED, EMBASE, Healthstar, Medline, Psychinfo)	Results (CINAHL, Cochrane Database)	TOTAL	Objectives
1	cooperative behavior.mp. or exp Cooperative Behavior/	45339			To identify collaborative practice
2	interprofessional relations.mp. or exp Interprofessional Relations/	84001			
3	group processes.mp. or exp Group Processes/	219320			
4	organizational culture.mp. or exp Organizational Culture/	94575			
5	work environment.mp. or exp Work Environment/	37579			
6	attitude of health personnel.mp. or exp Attitude of Health Personnel/	208254			
7	collaboration.mp. or exp COLLABORATION/	99094			
8	collaborative practice.mp. or exp Joint Practice/	1229			
9	team work.mp. or exp Teamwork/	10057			
10	teamwork.mp. or exp TEAMWORK/	16202			
11	"journal of interprofessional care"	2087			
12	or/1-11	657994	51716	709710	
13	(interdisc$ or transdisc$ or multidisc$).mp. [mp=ti, ot, ab, nm, hw, tc, id, sh, tn, dm, mf]	133482			To identify health care teams
14	(inter disc$ or trans disc$ or mult disc$).mp. [mp=ti, ot, ab, nm, hw, tc, id, sh, tn, dm, mf]	969			
15	(interprofess$ or inter profess$).mp. [mp=ti, ot, ab, nm, hw, tc, id, sh, tn, dm, mf]	76098			
16	patient care team.mp. or exp Multidisciplinary Care Team/	84289			
17	multidisciplinary care team.mp.	86			
18	interprofessional care team.mp.	2			
19	interdisciplinary care team.mp.	47			
20	transdisciplinary care team.mp.	0			
21	health care team.mp.	4760			
22	or/13-21	270910	17467	288377	
23	decision making.mp. or exp Decision Making/	395678			To identify decision making
24	decisionmaking.mp. or exp Decision Making, Clinical/	1406			
25	decision-making.mp.	322865			
26	shared decision making.mp.	3178			
27	joint decision making.mp.	302			
28	advocacy.mp. or exp PATIENT ADVOCACY/	69893			
29	or/23-28	459402	28245	487647	
30	12 and 22 and 29	9524	229	9753	
31	critical care.mp. or exp Critical Care/	281066			To identify critical care
32	intensive care.mp.	226306			
33	neonatal intensive care.mp. or exp Intensive Care, Neonatal/	28540			
34	exp Intensive Care Units, Pediatric/ or pediatric intensive care.mp.	52239			
35	or/31-34	416751	29606	446357	
36	30 and 35	562	23	591	
37	Remove duplicates from 36	269	3	272	FINAL RESULTS
39	Not critical care	8962	206	9168	
40	Final Result	293	26	319	

Table 6. *Selection criteria for the realist review*

Eligibility Criteria	
Includes an ***original collection of data*** *(multiple reports accepted if reporting different results)*	❒ Yes ❒ No
Reports ***empirical results of qualitative or quantitative research***	❒ Yes ❒ No
Participants include ***multiple (regulated) healthcare professionals*** and may include patients and / or families	❒ Yes ❒ No
Refers to ***shared decision making*** as: ❒ A process by which a healthcare choice is made by practitioners together with the patient (Légaré et al., 2008b; Weston, 2001; Towle & Godolphin, 1999) ❒ A collaborative process that enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided (Way et al., 2000) ❒ A joint process of decision making between health professionals and patients, or as decision support interventions including decision aids, or as the active participation of patients in decision making (Gravel et al., 2006)	❒ Yes ❒ No
If the term ***interprofessional shared decision making*** (IPSDM) is not used, makes reference to a process of shared decision making through use of terms such as: ❒ Interdependent or joint decision making ❒ Group process around decision making ❒ Collaboration about decisions ❒ Problem-solving between groups ❒ Participating in decision making ❒ Multidisciplinary / interprofessional decision making	❒ Yes ❒ No
Makes reference to the following ***characteristics of IPSDM***: ❒ More than one member of the team participates in the process of decision making ❒ Information sharing occurs (both the patient and health care professionals bring information and values to the process) ❒ A treatment decision is made and all parties agree to the decision (Charles et al., 1997).	❒ Yes ❒ No
Refers to clinical practice in critical care settings: ❒ Acute care ❒ Intensive care ❒ Neonatal or pediatric intensive care	❒ Yes ❒ No
Answers at least one of the following ***research questions***: ❒ With regards to the ***process of IPSDM*** in critical care: ○ ***What is the nature of IPSDM?*** ○ ***What is the nature of IPSDM for different participants?*** (Who should be involved) ○ ***For what types of decisions does IPSDM occur?*** ○ ***What are the mechanisms by which IPSDM works?*** (How) ○ ***What are the outcomes of IPSDM?*** ○ ***What are the barriers and facilitators of IPSDM?***	❒ Yes ❒ No
Article available in English	❒ Yes ❒ No
Exclusion criteria	
Studies limited to one healthcare professional / patient or family dyad	❒ Yes ❒ No
Primary care settings or community	❒ Yes ❒ No
Discussion articles or articles that present the results of the same study	❒ Yes ❒ No

Figure 9. Progress though the stages of the realist review

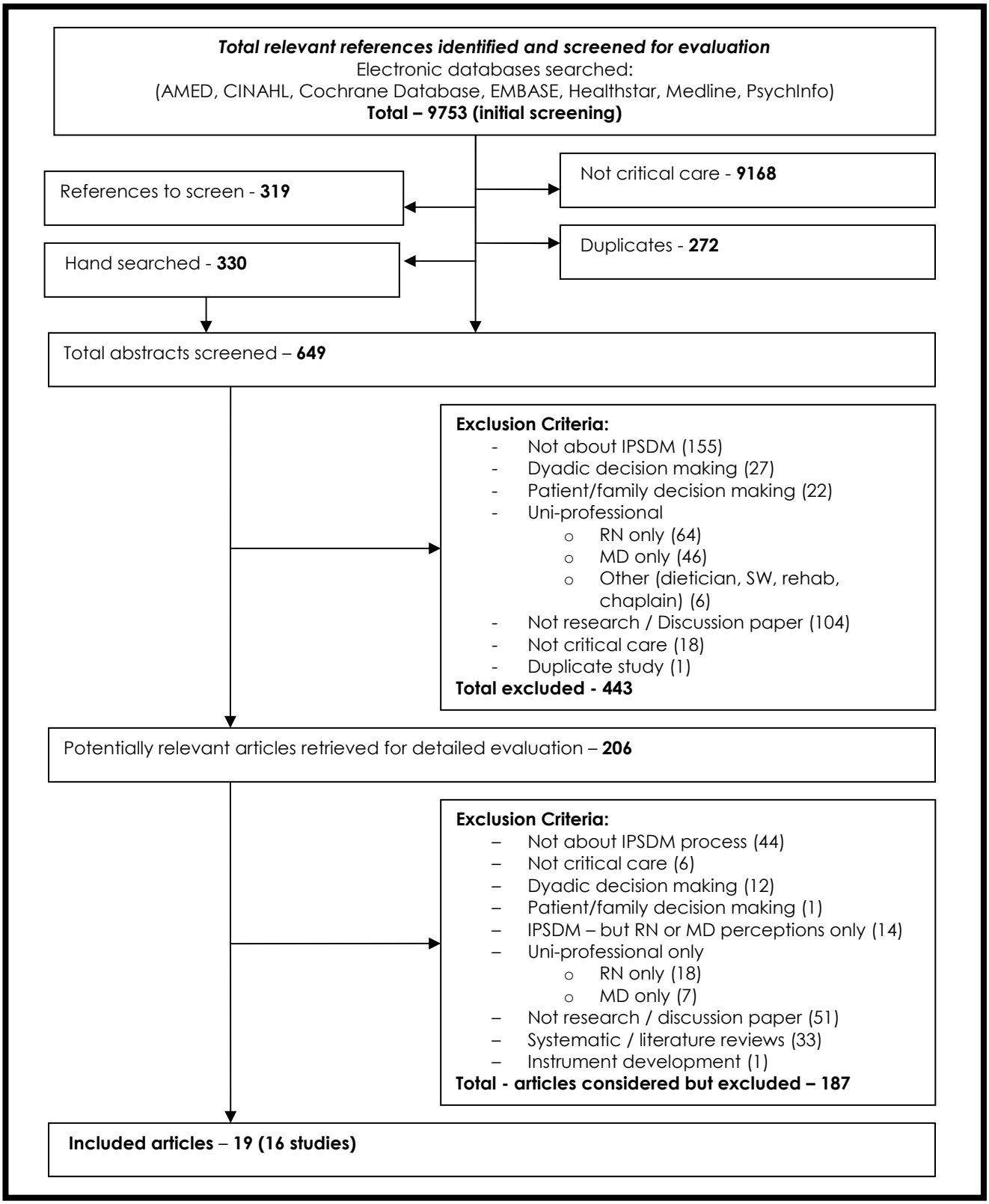


Table 7. *Quality assessment of included studies (quantitative studies)*

		Study Identification																		
	Criteria	1 B5	2 B7	3 B1	4 BH	5 CA	6 CL	7 C3	8 C4	9 K5	10 L4	11 M7	12 M8	13 M8	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
	About shared DM (S), inter-dependent or joint DM (J), group process around DM (G), collaboration in DM (C), problem solving between groups (PS), participating in DM (P), multidisciplinary / interprofessional DM	**2** **C**			**2** **J**														**2** **G**	
	Definition of type of 'decision making' provided	**0**			**0**														**0**	
	Total Score / Maximum possible score (4)	**2**			**2**														**2**	
1.	Question / objective sufficiently described?	**2**			**0**														**2**	
2.	Study design evident and appropriate?	**2**			**1**														**2**	
3.	Method of subject / comparison group selection or source of information / input variables described and appropriate?	**1**			**2**														**2**	
4.	Subject (and comparison group, if applicable) characteristics sufficiently described?	**2**			**1**														**2**	
5.	If interventional and random allocation was possible, was it described?	**N/A**			**N/A**														**N/A**	
6.	If interventional and blinding of investigators was possible, was it reported?	**N/A**			**N/A**														**N/A**	
7.	If interventional and blinding of subjects was possible, was it reported?	**N/A**			**N/A**														**N/A**	
8.	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?	**2**			**2**														**2**	
9.	Sample size appropriate?	**1**			**1**														**2**	
10.	Analytic methods described / justified and appropriate?	**1**			**1**														**2**	
11.	Some estimate of variance is reported for the main results?	**1**			**2**														**2**	
12.	Controlled for confounding?	**N/A**			**2**														**N/A**	
13.	Results reported in sufficient detail?	**2**			**2**														**2**	
14.	Conclusions supported by the results?	**1**			**2**														**2**	
	TOTAL SCORE / MAXIMUM SCORE	**15/20**			**16/22**														**20/20**	
	Percentage Score	**75**			**72.7**														**100**	

1(B5) - Baggs (1995) 2(B7) - Baggs (1997) 3(B1) - Baggs (2007) 4(BH) - Baumann-Holzle (2005) 5(CA) - Carros (1997) 6(CL) - Coleman (1997)
7(C3) - Coombs (2003) 8(C4) - Coombs (2004) 9(K5) - Kavanaugh (2005) 10(L4) - Lingard (2004) 11(M7) - McHaffie (1997) / (1997) 12(M8) - McHaffie (1998)
13(M8) - McHaffie (1998) 14(M1) - McHaffie (2001) 15(ME) - Melia (2001) 16(P1) - Porter (1991) 17(R7) – Robinson (2007) 18(S1) - Stern (1991)
19(V6) - Viney (1996)

Code: 2: Yes 1: Partial 0: No N/A: Not applicable

Table 8. *Quality assessment of included studies (qualitative studies)*

		Study Identification																		
	Criteria	**1 B5**	**2 B7**	**3 B1**	**4 BH**	**5 CA**	**6 CL**	**7 C3**	**8 C4**	**9 K5**	**10 L4**	**11 M7**	**12 M8**	**13 M8**	**14 M1**	**15 ME**	**16 P1**	**17 R7**	**18 S1**	**19 V6**
	Type of DM: Shared DM (S), inter-dependent or joint DM (J), group process around DM (G), collaboration in DM (C), problem solving between groups (PS), participating in DM (P), multidisciplinary / interprofessional DM		2 C	2 S		2 G	2 G	2 J	2 J	2 S	2 C	2 G	2 G	2 G	2 G	2 G	2 J	2 G		2 G
	Definition of 'decision making' included		0	0		0	0	0	0	0	0	0	0	0	0	0	2	0		0
	Total Score / Maximum possible score (4)		2	2		2	2	2	2	2	2	2	2	2	2	2	4	2		2
1.	Question / objective sufficiently described?		2	2		2	2	2	2	2	2	2	2	2	2	2	2	2		2
2.	Study design evident and appropriate?		2	2		2	2	2	2	2	2	2	2	2	2	2	2	2		2
3.	Context for study clear?		2	2		2	2	2	2	2	2	2	2	2	2	2	2	2		2
4.	Connection to a theoretical framework / wider body of knowledge?		1	1		2	2	2	1	2	1	1	1	1	1	2	2	2		1
5.	Sampling strategy described, relevant and justified?		2	1		1	1	2	2	1	1	2	2	2	2	1	1	2		2
6.	Data collection methods clearly described and systematic?		2	1		1	1	1	2	2	2	1	1	1	1	2	1	2		2
7.	Data analysis clearly described and systematic?		2	2		2	2	1	1	1	1	1	1	1	1	1	0	2		1
8.	Use of verification procedure(s) to establish credibility?		2	2		2	2	0	2	2	2	0	2	2	2	0	0	2		2
9.	Conclusions supported by results?		2	2		2	1	2	2	2	2	2	2	2	2	2	2	2		2
10.	Reflexivity of the account?		2	0		2	2	0	0	0	0	0	0	0	0	2	2	0		2
	TOTAL SCORE / MAXIMUM POSSIBLE SCORE (20)		19	15		18	17	14	16	16	15	13	15	15	15	16	14	18		18
	Percentage Score		95	75		90	85	70	80	80	75	65	75	75	75	80	70	90		90

1(B5) - Baggs (1995) 2(B7) - Baggs (1997) 3(B1) - Baggs (2007) 4(BH) - Baumann-Holzle (2005) 5(CA) - Carros (1997) 6(CL) - Coleman (1997)
7(C3) - Coombs (2003) 8(C4) - Coombs (2004) 9(K5) - Kavanaugh (2005) 10(L4) - Lingard (2004) 11(M7) - McHaffie (1997) / (1997) 12(M8) - McHaffie (1998)
13(M8) - McHaffie (1998) 14(M1) - McHaffie (2001) 15(ME) - Melia (2001) 16(P1) - Porter (1991) 17(R7) – Robinson (2007) 18(S1) - Stern (1991)
19(V6) - Viney (1996)

Code: 2: Yes 1: Partial 0: No N/A: Not applicable

Table 9. *Characteristics of included studies*

Characteristics	Details	n = 19
Study Setting / Country	US	7
	UK	10
	Europe	1
	Canada	1
Study Designs / Methods	Ethnography	5
	Grounded theory	1
	Phenomenology	1
	Questionnaires / surveys	3
	Interviews / focus groups / observation	9
Healthcare Providers (Participants in the study)	RN, MD	14
	RN, MD, SW, OT, PT	1
	RN, MD, SW, ethicist, pharmacist, chaplain	1
	RN, MD, parents	3
Year of Publication	1991	2
	1992	
	1993	
	1994	
	1995	1
	1996	1
	1997	4
	1998	2
	1999	
	2000	
	2001	2
	2002	
	2003	1
	2004	2
	2005	2
	2006	
	2007	2
Journals	Acta Paediatrica	1
	British Journal of Midwifery	1
	Critical Care	1
	Critical Care Nursing Quarterly	1
	Dissertations	2
	Health Bulletin	1
	Intensive and Critical Care Nursing	1
	Journal of Advanced Nursing	2
	Journal of Critical Care	1
	Journal of Medical Ethics	1
	Journal of Pediatric Nursing	1
	Nursing in Critical Care	1
	Nursing Times Research	1
	Palliative Medicine	1
	Research in Nursing and Health	2
	Social Science and Medicine	1
Author's Professional Affiliations	Physician	13
	Nurse	27
	Social Worker	1
	Psychologist	1
	Physical Therapist	1
	Midwife	4
	Unknown	6

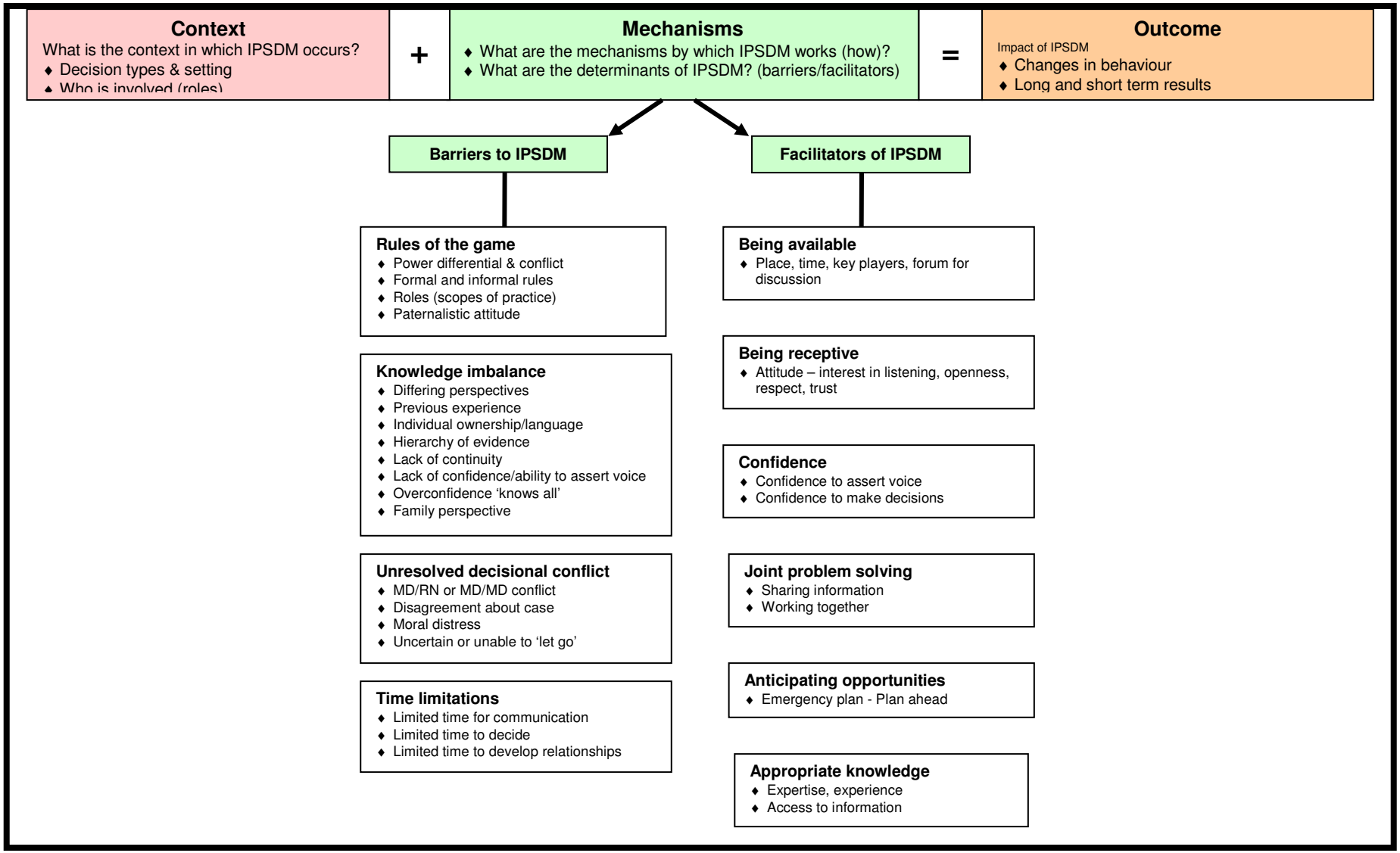
Table 10. *Taxonomy of results (barriers and facilitators of IPSDM)*

Section / Topic	1 BA5	2 BA7	3 B07	4 BH5	5 CA7	6 CL8	7 C3	8 C4	9 K5	10 L4	11 M7	12 M81	13 M82	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
What are the determinants of IPSDM?																			
1. Barriers to IPSDM																			
a. Rules of the Game																			
Power differential & conflict (control / voice)	✱	✱				✱	✱	✱			✱	✱	✱	✱	✱	✱			✱
Formal and informal rules (i.e. DNR orders)			✱					✱		✱							✱		✱
Roles (scopes of practice / role not valued)		✱			✱	✱	✱	✱		✱	✱	✱	✱				✱		✱
Paternalistic attitude versus parental autonomy		✱				✱					✱			✱			✱		✱
b. Knowledge Imbalance																			
Professional and personal perspectives differ		✱	✱		✱		✱	✱	✱		✱	✱	✱	✱	✱	✱	✱	✱	✱
Previous experience / presumed association					✱						✱	✱	✱	✱					
Individual ownership of information / professional language						✱		✱		✱		✱	✱						
Sources of knowledge / hierarchy of evidence							✱	✱		✱									✱
Uncertainty of evidence							✱	✱					✱						
Lack of continuity (team / care)			✱					✱				✱	✱		✱				
Lack of confidence or ability to assert voice			✱			✱	✱	✱			✱								
Lack of ability to articulate & defend opinion						✱	✱	✱		✱	✱								
Overconfidence – 'knows all'		✱																	
Family perspective (understanding versus erroneous ideas)			✱		✱	✱						✱		✱					✱

Section / Topic	1 BA5	2 BA7	3 B07	4 BH5	5 CA7	6 CL8	7 C3	8 C4	9 K5	10 L4	11 M7	12 M81	13 M82	14 M1	15 ME	16 P1	17 R7	18 S1	19 V6
c. Time Limitations																			
Limited time for collaboration / communication		*				*				*									
Limited time to decide (emergency)									*					*					
Limited time to develop relationships with family (i.e. inadequate staffing, workload)									*	*				*					
d. Unresolved Decisional Conflict																			
MD/RN or MD/MD tensions / conflict		*	*			*	*	*		*		*	*		*		*		
Disagreement about the case		*	*		*		*	*			*	*	*		*	*	*	*	*
Moral distress																			*
Uncertain, unable or not ready to 'let go'			*								*								
Differing ethical perspectives (value QOL / technology)								*			*		*						*
2. Facilitators of IPSDM																			
Being available (place, time, key players, forum for discussions)		*	*	*	*							*			*	*			
Being receptive (attitude: interest in collaborating, listening, openness, questioning, mutual respect, trust)		*								*		*							
Having appropriate knowledge (expertise, experience) & access to information		*			*		*	*						*					*
Working together / joint problem solving / sharing information		*			*				*			*							
Confidence to 'assert voice' / make decision					*	*			*					*					
Anticipating opportunities / emergency plan					*														
Technology / rules (i.e. advance directives)			*																

1(BA5) - Baggs (1995)
2(BA7) - Baggs (1997)
3(B07) - Baggs (2007)
4(BH5) - Baumann-Holzle (2005)
5(CA7) - Carros (1997)
6(CL8) - Coleman (1998)
7(C3) - Coombs (2003)
8(C4) - Coombs (2004)
9(K5) - Kavanaugh (2005)
10(L4) - Lingard (2004)
11(M7) - McHaffie (1997) / (1997)
12(M81) - McHaffie (1998)
13(M82) - McHaffie (1998)
14(M1) - McHaffie (2001)
15(ME) - Melia (2001)
16(P1) - Porter (1991)
17(R7) – Robinson (2007)
18(S1) - Stern (1991)
19(V6) - Viney (1996)

Figure 10. Interprofessional shared decision making in critical care (barriers and facilitators of IPSDM)



CHAPTER SIX

Article 3

Interprofessional Shared Decision Making In NICU: A Survey of the Interprofessional Healthcare Team

This chapter presents the results of a survey of the interprofessional healthcare team in NICU. The purpose of the survey was to explore perceptions of core members of an interprofessional team (nurses, physicians, respiratory therapists, and other professionals) about collaboration and satisfaction with the decision making process across three decision types (triage, chronic condition management, values sensitive decisions). The methods, analysis of data and results of the survey are presented in the following manuscript developed for publication.

Potential Target Journal: Journal of Interprofessional Care

Author Guidelines:

Abstract – 200 words

Article - 5000 words

Interprofessional Shared Decision Making In NICU: A Survey of the Interprofessional Healthcare Team

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Abstract

Introduction: The purpose of this study was to determine how different members of an interprofessional (IP) team (nurses, physicians, respiratory therapists and other professionals) perceived collaboration and satisfaction with the decision making process across three decision types (triage, chronic condition management, values sensitive decisions) in a neonatal intensive care unit (NICU).

Methods: All members of the IP team at a tertiary care NICU in Canada who consented to the study were sent a modified version of the Collaboration and Satisfaction about Care Decisions (CSACD) instrument (Baggs, 1994). The CSACD was originally designed to measure nurse-physician collaboration in making specific patient care decisions in an intensive care unit. A total of 96 completed surveys were returned, giving a response rate of 81.4%.

Analysis: Descriptive statistics were generated to describe the characteristics of the study sample group and perceptions about IP collaboration and satisfaction about health care decisions. Collaboration scores were calculated for each participant, professional group and the IP team. The Pearson product-moment correlation coefficient was used to investigate the relationship between perceived collaboration about decision-making and satisfaction with the decision making process. Inter-group comparisons across different decision types were also calculated.

Results: The majority of statistically significant differences in professional perspectives about decision making were about triage decisions. Nurses and respiratory therapists were more likely than other groups to feel the decision making process was inadequate. There was a strong, positive correlation between perceived collaboration in decision-making and satisfaction with the decision making process.

Conclusions: Findings from this survey suggest that healthcare professionals' views differ about what constitutes optimum IPSDM; IPSDM does not happen if healthcare professionals perceive their concerns are not heard; and the nature of the decision (decision type) is an important influencing factor for IPSDM.

Keywords: interprofessional, shared decision making, collaboration, intensive care

Statement of the Problem

Interprofessional (IP) practice is a process by which professionals from different disciplines collaborate to provide an integrated and cohesive approach to patient care (D'Amour et al., 2005). Shared decision making (SDM), a key component of IP practice (D'Amour et al., 2005), enables the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided (Way et al., 2001).

Shared or collaborative decision making has been identified as an optimal model of treatment decision making (Charles et al., 1997). Collaborative decision making in the intensive care unit (ICU) has been associated with lower rates of risk-adjusted mortalities and higher level of nurse and resident job satisfaction (Baggs et al., 1999) and improved end-of-life care (Puntillo & McAdam, 2006). Poor decision-making processes have also been shown to contribute to the occurrence of critical incidents (Reader et al., 2006), while team member contributions during ICU patient decision making rounds have been associated with a reduction in adverse event rates (Jain et al., 2006). However, for successful outcomes to be achieved by IP teams, it is essential that all members communicate their unique perspectives and knowledge, and that their contributions are visible and understandable to the other members of the team (McCloskey & Maas, 1998).

A systematic review, consisting of 28 studies from 10 countries, explored the barriers and facilitators to implementing SDM in clinical practice and found that little is known about SDM from the perspective of health professionals other than physicians (Gravel et al., 2006). Another recently completed realist review, which included 15 studies from four countries, explored the processes of shared decision making in intensive care (Chapters 4 and 5). Findings primarily addressed nurse and physician interactions about ethical decision making and barriers to interprofessional shared decision making (IPSDM). No studies have explored this concept from the perspective of the full team or as related to different types of decisions.

The purpose of this study was to determine how different members of an IP team of nurses, physicians, respiratory therapists and other professionals perceived collaboration and satisfaction with the decision making process across three decision types, triage, chronic condition management and values sensitive decisions, in a neonatal intensive care unit (NICU). Triage decisions were defined as decisions for health problems requiring alternate levels of professional care or expertise, for example, emergency response and transfer to level III NICU or need for cardiology or surgical services. Chronic condition management decisions were defined as those decisions necessary to manage critically ill infants with complex care needs, for example, use of inotropes, nutrition, respiratory support or sepsis/immune system issues. Values-sensitive decisions were defined as those decisions with two or more options that require families and the IP team to consider their values associated with the benefits and harms related to each option, for example, resuscitation, initiation of treatment, surgical interventions, and withdrawal of care or palliation. These decision types were selected because they represent three very different patient situations for which decisions are made in NICU. Comparison across decision types helped to clarify whether IPSDM happens for all decisions or in only certain situations.

Methods

Conceptual Framework

The Shared Decision Making and Health Care Team Effectiveness Model, developed for this study, is based on concepts from a recent systematic review of the health care team effectiveness literature (Lemieux-Charles & McGuire, 2006) and a decisional conflict framework (Légaré et al., 2006) (Figure 3 – page 21). This model illustrates the relationships among components of IP practice, clinical decision making, team effectiveness, and health care outcomes. It is a logical and comprehensive framework to guide exploration of the decision making process within the IP team.

Study Setting and Sample Population

A tertiary care NICU in Canada that provides complex care to approximately 300 infants per year requiring specialist care was the setting for the study. The members of the IP team in this unit included nurses, physicians, respiratory therapists, pharmacists, occupational and physiotherapists, dieticians, social workers and pastoral care.

Procedure

Ethical approval was received from the Research Ethics Boards at the participating hospital and the local university. Key stakeholders and managers of the NICU were approached to ascertain their interest in the project. The Medical and Nursing Directors of the NICU were provided with an information letter about the study, which was then circulated to the IP team and posted in the NICU. Information sessions for all staff were also provided, to answer questions and address concerns.

Following the information sessions, all members of the IP team working in the NICU were sent a copy of the Information Sheet and Consent Form and a copy of the Collaboration and Satisfaction about Care Decisions (CSACD) instrument (Baggs, 1994) via internal mail. They were invited to participate in the survey in order to ensure broad representation. To ensure the confidentiality of participants' identities, surveys were numbered and a sealed ballot box was provided in the NICU for returned surveys. Two email reminders were sent to the team at weekly intervals beginning two weeks after the questionnaires were distributed using a modified Dillman process (2000). Completion of the survey was used as an indication of implied consent to participate in this phase of the study.

The CSACD is a valid and reliable instrument (Baggs, 1994) that was originally designed to measure nurse-physician collaboration in making specific patient care decisions in an intensive care unit (ICU). The instrument consists of nine items. The first six items measure critical attributes of collaboration (i.e. planning together, open

communication, shared responsibility, cooperation, consideration of concerns, and coordination) that are scored from 1 (strongly disagree) to 7 (strongly agree) on a Likert-type scale. The seventh question is a global measure of collaboration scored from 1 (no collaboration) to 7 (complete collaboration). The last two items measure satisfaction with the decision making process and the decision and are scored from 1 (not satisfied) to 7 (very satisfied). A seven point scale was chosen by the developers because it offered enough choice to provide variance in responses (Baggs, 1994). The total possible collaboration score (questions 1-7) is 7 to 49, with a higher score indicating more collaboration in the decision making process.

Content validity for the collaboration scale is supported by the scale's development from a literature review (Baggs & Schmitt, 1988) and by review of the questions by nursing and medical experts in collaborative practice (Baggs & Schmitt, 1995). Criterion validity is supported through correlation of the global collaboration question with the six critical attribute items (correlation coefficient of 0.87) (Baggs, 1994; Dougherty & Larson, 2005). Reliability and construct validity have been demonstrated in a pilot study (n=58) (Baggs, 1994). Cronbach's alpha (a measure of the internal consistency and reliability of the instrument) was reported to be .98 in a nursing sample and .93 for the medical residents for the six critical attributes of collaboration (Baggs & Schmitt, 1995; Dougherty & Larson, 2005). Construct validity was supported by a principal factor analysis, that produced a two-factor solution (one for collaboration and one for satisfaction) (Baggs, 1994; Baggs & Schmitt, 1995). The six critical-attribute collaboration items explained 75% of the variance in collaboration. The Eigenvalue for the collaboration factor was 4.5. Factor loading for the six items ranged from 0.82 to 0.93 (Baggs, 1994; Dougherty & Larson, 2005).

The version of the instrument used for this study is provided in Appendix 3 (pages 271 to 273). Minor modifications were made to the original instrument (with permission) (Appendix 8 – pages 281 and 282) for use with an IP team in NICU. The instrument was

also formatted to address three different clinical decision types: triage decisions, chronic condition decisions and values sensitive decisions (Stacey et al., 2008).

Analysis

Descriptive statistics (frequencies, means and percentages) were generated to describe the characteristics of the study sample group and perceptions about IP collaboration and satisfaction about health care decisions. A collaboration score was calculated for each participant by adding his/her individual responses to questions 1 through 7. Mean collaboration scores for each professional group and the IP team as a whole were also calculated. The Pearson product-moment correlation coefficient was used to investigate the relationship between collaboration about decision-making and satisfaction with the decision making process. Inter-group comparisons of collaboration for different types of decisions (triage, chronic condition management and values-sensitive decisions) were also conducted.

Analysis of Groups

Data from research about groups can be measured at the individual, group or dyad level. At the individual level each person within the group contributes to a single score, such as some aspect of collaboration. Group level measures calculate a single index of group membership or productivity. For dyad-level measures within the group, each individual is paired with each of the other group members (Kashy & Kenny, 2000).

Collaboration and satisfaction about care decision making (CSACD), the outcome variable for this study, was measured at the individual level. Individual-level outcome measures are the most common type of measure in dyadic and group research. With individual outcome measures, each member of the dyad or group supplies an outcome score, and the members' scores may differ from one another (Kashy & Kenny, 2000).

The participants in this study were asked to consider three different decision types: triage, chronic condition and values sensitive decisions. ANOVA (analysis of variance) was

chosen as the most appropriate analysis technique to measure differences among groups in this study. A post hoc analysis with Scheffe pairwise comparison procedure was used to determine if there were differences among groups. The criterion for significance was set a priori at $\alpha = 0.05$. The Scheffe post hoc test is customarily used with unequal sample sizes such as found in this data set (Jones, 2009).

Results

Missing Data

There were a total of 96 participants in the sample consisting of nurses (n=68), physicians (n=13), respiratory therapists (n=8) and other health professionals (n=7). The sample size of analyses varied. Just over 96% of respondents answered all of the questions for the three decision types. Upon recommendation from the statistician, the decision was made to complete the analyses with the existing data set (without imputation). Since the missing data constituted less than 10% of the total data set, the impact on the statistical results and p-values would not be substantial (Day et al., 1998).

Characteristics of the Sample Group

The collaboration survey was distributed to 118 members of the IP team in NICU. A total of 96 completed surveys were returned, giving an overall response rate of 81.4% (nurses n=68/85, RR-80%; physicians n=13/15, RR-86.7%; respiratory therapists n=8/11, RR-72.7%; and other health professionals n=7/7, RR-100%). Although the majority of participants were nurses (n=68, 70.8%), other key members of the IP team were also represented (physicians – n=13, 13.5%; respiratory therapists – n=8, 8.3%; other health professionals – n=7, 7.3%). The majority of participants were female (n=86, 89.6%), with university education (n=61, 62.3%) and extensive experience in both their professional roles (more than 15 years experience - n=53, 55.2%) and work in NICU (more than 15 years experience - n=41, 42.7%). Most participants worked either days or a combination of days and nights (n=84, 87.5%). These results reflected the total population of health care

professionals working in the NICU. Detailed demographic and professional information is presented in Table 11 (page 144)

Characteristics of the Collaboration and Satisfaction Scores

Professional group mean collaboration scores varied from a low score of 21.88 (RT – triage decisions) to a high score of 41.67 (OHP – chronic condition decisions) (Figure 12 – page 145; Table 12 – page 146). The teams' mean collaboration score was lowest for triage decisions (31.23 out of 49, SD 7.82). The team mean collaboration score for values sensitive decisions was slightly higher (31.41 out of 49, SD 8.08) and perceived collaboration around decision making for chronic condition decisions was highest (33.73 out of 49, SD 7.12). These scores fell just above the middle score (28) of the possible range (7-49) for satisfaction. This suggests that the team as a whole perceived the extent of collaboration around decision making in this NICU was less than it could be (Table 12 – page 146).

Mean values for reports of satisfaction with the decision making process (question 8) were all above the median score (4) of the possible range (1-7) for satisfaction, except for respiratory therapists' rating for triage decision making (mean - 3.38). Physicians and other health professionals were consistently more satisfied with the decision making process than nurses and respiratory therapists (triage decisions, p=0.001*;* chronic condition decisions, p<0.001; values sensitive decisions, p=0.002) (Table 13 – page 147).

Mean values for reports of satisfaction with the decisions made (question 9) were above the median score (4) of the possible range (1-7) for satisfaction for all groups and all decision types. Mean scores for satisfaction with the decision were highest for triage decisions with values sensitive decisions rated the lowest (Table 13 – page 147).

Collaboration in decision-making and satisfaction with the decision making process were highly correlated for nurses across all decision types and for physicians related to chronic condition and values sensitive decisions. The relationship between variables was

also strong (r=0.700) [Guidelines for Interpretation, Table 14 – page 148 (Cohen, 1988)] for respiratory therapists with respect to triage decisions (although it did not reach statistical significance – probably due to small sample sizes in the group), and chronic condition decisions. There was also a strong correlation (r=0.837) between collaboration in decision-making and satisfaction with the decision making process for other health professionals with respect to triage decisions (although this relationship did not reach statistical significance – once again probably due to small sample sizes in the group), and values sensitive decisions (r=0.942, $p<0.01$) (Table 14 – page 148).

One-Way Analysis of Variance (ANOVA)

A one-way analysis of variance was carried out to compare perceptions across different types of decisions (triage, chronic condition management and values-sensitive decisions) and professional groups. Results indicated statistically significant differences across professional groups in the following:

- Triage decisions for planning, communication, cooperation, consideration of concerns, coordination, satisfaction with the decision making process,
- Chronic condition decisions for all aspects of decision making (planning, communication, cooperation, consideration of concerns, coordination, collaboration, satisfaction with the decision making process, satisfaction with the decision) except shared responsibilities, and
- Values sensitive decisions for all aspects of decision making (planning, communication, cooperation, consideration of concerns, coordination, collaboration, satisfaction with the decision making process, satisfaction with the decision) except shared responsibilities.

Detailed results can be viewed in Table 13 (page 147) and Table 15 (pages 149 to 151).

Discussion of Results

The majority of statistically significant differences in professional perspectives on decision making were about triage decisions. Although nurses reported that two aspects of the decision making process were not optimal: planning and consideration of concerns, respiratory therapists were most discontented with five elements of the decision making process related to triage decisions: planning together, open communication, cooperating, consideration of concerns and coordinated decision making. Despite being significantly less satisfied with the shared decision making process than physicians and other health professionals, respiratory therapists were not dissatisfied with the decisions that were made.

Chronic condition decisions were the next most problematic decision type. However, the issues within this category were primarily due to nursing discontent with four aspects of the decision making process: planning, open communication, cooperating and consideration of concerns. In addition, nurses were significantly less satisfied with the shared decision making process than physicians and other health professionals and they were significantly less satisfied than physicians with the actual decisions made. This pattern is consistent with findings from earlier studies (Baggs, Ryan, Phelps, Richeson, & Johnson, 1992; Baggs & Schmitt, 1995; Baggs et al., 1997). Respiratory therapists were also significantly less likely than other health professionals to feel members of the IP team in NICU plan together to make decisions about patient care.

Although values sensitive decisions were the least problematic, the issues that existed primarily revolved around differences in opinions between nurses and physicians. All aspects of the decision making process were of issue except shared responsibilities and coordination of patient care planning. Nurses were also less likely than physicians to be satisfied with the decision making process and the decisions made in NICU. Respiratory therapists were significantly less likely than physicians to feel that members of the IP team

cooperate together to share in the decision making process, and consider concerns from all members of the IP team when making decisions about patient care.

Collaboration scores for the other health professionals group were higher than the other groups about triage and chronic condition decisions and they were also the most satisfied of all groups with the decision making process and decisions made. Physicians' collaboration scores were consistently higher than those of nurses or respiratory therapists and they were more satisfied with the decision making process. An earlier study about nurse / physician collaboration in ICU reported similar results (Baggs et al., 1997). Nurses' collaboration scores were relatively stable across all decision types. Respiratory therapists' collaboration scores were lower than the physicians' and other health professional groups across all decision types. Nurses and respiratory therapists were more likely than other groups to feel the decision making process was inadequate.

There was a strong positive correlation, defined as r = 0.50 to 1.0 (Cohen, 1988), between perceived collaboration in decision-making and satisfaction with the decision making process, with high levels of satisfaction with the decision making process associated with higher levels of perceived collaboration in decision-making (Table 14, page 148). The relationship was smaller for physicians than for nurses consistent with other studies (Baggs et al., 1992; Baggs & Schmitt, 1995; Baggs et al., 1997), respiratory therapists and other health professionals. This result supports the concept that other members of the health care team may value collaboration in decision making more than physicians do (Fagin, 1992; Baggs et al., 1997) and that physicians do see their input as most important to a good decision.

The findings of this survey are clinically relevant in that some members of the IP team, primarily respiratory therapists and nurses, reported shared decision making for triage, chronic condition or values sensitive decisions is less than optimal. The factors underlying this discontent are associated with key components of a SDM process (e.g.

planning, communication, sharing information and consideration of concerns). According to McCloskey and Mass (1998), for successful patient outcomes to be achieved by IP teams, it is essential that all members of the team communicate their perspectives and knowledge, and that their contributions are understandable and valued by the other members of the team. Results of this survey suggest that discontent about the decision making process may not only decrease professional satisfaction, but potentially may result in decisions being made without all the facts,

Levels of collaboration during the decision making process are influenced by the severity of patient conditions. Some physicians believe that they are the primary decision makers and do not need to collaborate with others (Williams, 1992). Traditionally, the ultimate decision maker in intensive care is the physician (Viney, 1996). Team communication processes tend to be more democratic and decisions are made after input from all team members when patient illnesses are well understood (Patel & Arocha, 2001). However, for more complicated patients, senior physicians tend to make key decisions autocratically (Patel & Arocha, 2001). Shared decision making depends on the willingness of the physician leader to listen, share decision making and support collaborative structures (e.g. rounds) as a way to facilitate care coordination (Baggs et al., 2007). Although the physician group in this study reported that the IP team was very collaborative in decision making, this view was not shared by other members of the team.

Another explanation for the different views found might be that nurses, physicians, respiratory therapists and other health professionals may define and interpret collaboration and the process of shared decision making differently. Differences in power, roles and responsibilities within a unit can lead practitioners to have different perceptions about whether events are collaborative or not (Baggs & Schmitt, 1997).

The professional viewpoints found in the survey may also be due to differing perspectives about which decision types are conducive to IPSDM. It appears that a more

collaborative approach is perceived to be the norm when it comes to values sensitive decisions than with triage and chronic condition decision making. This approach may be related to people believing there is little time during triage decision making to discuss issues in any depth and chronic condition management tends to require more input from other health professionals, increasing the deliberations and time required for decision making.

Being receptive, having respect and trust for other professions and being willing to consider different perspectives is critical to the success of a shared decision making process (Baggs & Schmitt, 1997). Infants with respiratory problems requiring ventilator support are common in NICU. Respiratory therapists have special expertise and play an essential role in triage decision making related to management of respiratory problems and ventilator support in the NICU. In addition, nurses believe they bring a unique perspective to the team discussions; however they often feel their contribution is undervalued and their voice is not heard (McHaffie & Fowlie, 1998b). Therefore, if the respiratory therapists and nurses feel their perspective is not included in decision making, they may feel disenfranchised from the process. Other health care providers have a more limited focus and therefore many not see themselves as needing to be involved in triage decision making, for example. They participate on an as needed basis rather than continuously even though they may attend daily decision making rounds.

The perception of ownership and process of trade of commodities are mechanisms by which team collaboration is achieved or undermined in complex, high-pressure settings (Lingard et al., 2004). Recognition of others' possession of knowledge and skills is part of the smooth collaborative functioning of the team. Individual ownership can create interdisciplinary tension when team members feel their ownership of particular knowledge and skills is not recognized (e.g. nurses' intimate knowledge of the patient or respiratory therapists' knowledge of ventilator management) (Lingard et al., 2004). When the issues of ownership and trade of commodities are not addressed, tensions accumulate and

collaboration erodes (Lingard et al., 2004). Collective ownership of a commodity provides a foundation for group identity. It promotes collaboration between members of the team (Lingard et al., 2004). Ownership of commodities could explain the group variation in this study. Perhaps the respiratory therapists and nurses felt that their knowledge and skills were less valued by the team, while physicians and other health professionals perceived patient care to be collectively owned and knowledge and skills adequately shared to facilitate decision making. Further exploration is warranted.

Open communication and the ability to participate in discussions are essential for effective IPSDM in intensive care. Lack of open communication was identified in this study as an issue by respiratory therapists for triage decisions and by nurses for chronic condition and values sensitive decisions. However, the factors contributing to the different perspectives are unclear. Other research has revealed that nurses find it difficult to speak up during decision making and fewer nurses than physicians feel that disagreements in the ICU are properly resolved and that input from nurses about patient care is well received (Thomas, Sexton, & Helmreich, 2003; Reader, Flin, Mearns, & Cuthbertson, 2009). A recent systematic review to develop a team performance framework for the intensive care unit, identified three elements of communication as essential components of the team decision making process: a) junior team members able to discuss decisions with team leader, b) input from junior team members being well received and c) reduced discussion during emergencies and in situations of extreme pressure (Sexton, Thomas, & Helmreich, 2000; Reader et al., 2009). Further exploration is required to fully explain the communication issues in this NICU setting.

Despite disagreeing about most of the steps in the decision making process, all groups seem to be in agreement that responsibilities for patient care planning are shared. However, it is not clear from the results of this survey if respondents feel that decision making responsibilities are shared appropriately, equitably or just some of the time.

Results from this survey provided further insight into the process of shared decision making illustrated in the Shared Decision Making and Healthcare Team Effectiveness Model (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006). Key results are summarized in Figure 11 (page 141). Recognizing and understanding these results can help to improve the process of IPSDM.

Figure 11. Key results

- IPSDM involves planning, open communication, cooperation, shared responsibilities, consideration of concerns, coordination and collaboration among members of the IP team.
- IPSDM may be jeopardized if healthcare professionals perceive their concerns are not heard
- Healthcare professionals' views differ about what constitutes optimum IPSDM. Nurses and respiratory therapists were more likely than other groups to feel the decision making process was inadequate.
- The nature of the decision (decision type) is an important influencing factor for IPSDM.

Methodological Issues and Limitations

There are two potential limitations to this study: social desirability bias and generalizability of findings. Social desirability bias is a term used to describe the tendency of respondents to reply in a manner that will be viewed favorably by others. Care was taken during this study to ensure the confidentiality of participants' identity by using anonymous surveys, providing ballot boxes for returned surveys and reporting aggregated results by professional group.

The goal of this study was to explore IPSDM in depth. Therefore, this survey was conducted in one NICU and the sample group was limited to those practitioners currently working in this unit [limiting numbers for some of the professional groups (e.g. respiratory

therapy and other health professionals)]. In addition, the survey used limited descriptions for each of the three decision types presented to the participants (triage, chronic condition and values sensitive decisions). These factors may limit the generalizability of results. Replication of this study in different intensive care settings using vignettes of different decision types to provide participants with consistent cases on which to base their answers, may strengthen the validity of results.

The other health professional group answered fewer questions related to triage or chronic condition decisions than did the physicians, nurses or respiratory therapists groups. It is not clear whether this is because they feel less involved in triage or chronic condition management decisions and therefore do not have an opinion, they just chose to not answer the question or they skipped the first two sections to get to the values sensitive questions that were of more relevance to their practice.

Despite these potential limitations, a number of factors do demonstrate the reliability and validity of the study findings. The data collection instrument was adapted from a valid and reliable instrument (CSACD) (Baggs, 1994) that has been used to measure collaboration and satisfaction about care decisions in intensive care settings. The processes used for data collection were simple, transparent and are reproducible. There was an excellent response rate and representation across all professional groups. In addition, the results demonstrated both statistically significant and clinically relevant differences between professional groups and across decision types.

Conclusions

This study explored perceptions about collaboration and satisfaction with the decision making process across different professional groups and decision types in NICU. There was significant variation in professional perspective about collaboration and satisfaction with the decision making process in NICU. Although limited to one NICU environment, the fact that approximately 82% of the IP healthcare team participated gives

these findings substantial weight. However, the results from this study did not provide a complete picture of the processes involved in decision making among members of the IP team therefore, a qualitative study to explore professional perspectives in more depth is warranted.

When care providers do not collaborate and come to decisions mutually, the potential for decreased quality of care increases. Providers not involved in the decision making process may go beyond or may deliver less care than the level ordered, or may withdraw emotionally from the patient (Baggs & Schmitt, 1995; Watts et al., 1990). Collaborative or shared decision making is the key. Findings from this study have expanded our knowledge about IPSDM and provided a baseline for in depth study of the issues of IPSDM in NICU.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

SD, along with members of her Doctoral Thesis Committee (BC, IDG, and JM), conceived the study. SD conducted the survey, analyzed the results and wrote the paper. IG participated in the analysis and reviewed the paper. BC supervised the process and reviewed the paper. IDG and JM were advisors for the study and reviewed the paper. All authors have read, and approved the final version of this manuscript.

Table 11. *Participant distribution*

	Category	Frequency	Percent
Professional Group	Nurse	68	70.8
	Physician	13	13.5
	Respiratory Therapist	8	8.3
	Other Health Professional	7	7.3
	Total	**96**	**100.0**
	Missing	**0**	**0**
Gender	Male	10	10.4
	Female	86	89.6
	Total	**96**	**100**
	Missing	**0**	**0**
Education Completed	College Diploma	30	31.2
	University - Undergraduate Degree	31	32.3
	University – Graduate Degree	30	30
	Other	2	2.1
	Total	**93**	**96.9**
	Missing	**3**	**3.1**
Work Experience	Less than 1 year	2	2.1
	1-2 years	10	10.4
	3-5 years	10	10.4
	6-10 years	14	14.6
	11-15 years	5	5.2
	More than 15 years	53	55.2
	Total	**94**	**97.9**
	Missing	**2**	**2.1**
Work in NICU	Less than 1 year	8	8.3
	1-2 years	9	9.4
	3-5 years	14	14.6
	6-10 years	15	15.6
	11-15 years	6	6.2
	More than 15 years	41	42.7
	Total	**93**	**96.9**
	Missing	**3**	**3.1**
Work Schedule	Permanent days	19	19.8
	Permanent nights	8	8.3
	Combination of days and nights	65	67.7
	Total	**92**	**95.8**
	Missing	**4**	**4.2**

Figure 12. Professional group mean collaboration scores (across decision type)

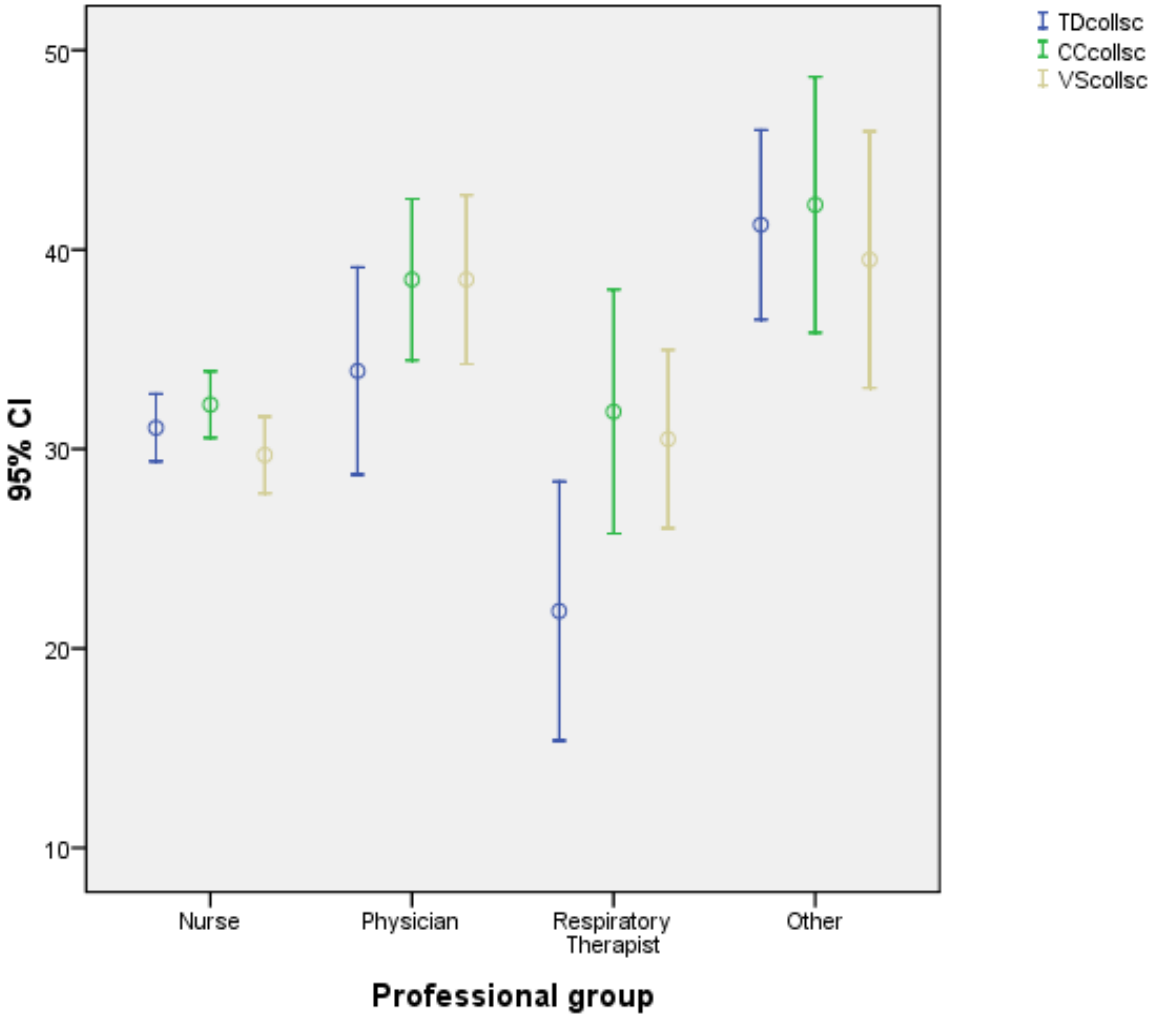

Table 12. *Professional group and team mean collaboration scores (questions 1-7 CSACD)*

Decision Type	Triage Decisions				Chronic Condition Decisions				Values Sensitive Decisions			
Group	**Mean**	**SD**	**Range**	**n**	**Mean**	**SD**	**Range**	**n**	**Mean**	**SD**	**Range**	**n**
RN	31.26	6.89	14-43	67	32.26	6.70	14-45	66	29.55	7.18	10-44	66
MD	33.92	8.18	23-46	12	38.69	6.14	27-49	13	38.77	6.46	26-47	13
RT	21.88	7.77	9-34	8	31.88	7.32	20-41	8	30.50	5.35	20-37	8
OH	41.25	2.99	38-45	4	41.67	3.39	38-47	6	36.29	7.04	26-43	7
Mean Team Score	**31.23**	**7.82**	**9-46**	**91**	**33.73**	**7.12**	**14-49**	**93**	**31.41**	**8.08**	**10-47**	**94**

RN = nurses MD=physicians RT=respiratory therapists OH=other health professionals

Collaboration Scores = sum of questions 1-7 CSACD Instrument (total possible score 7-49)

Table 13. *Interprofessional collaboration about patient care decision making across three decision types*

Decision Type	Triage			Chronic Condition			Values Sensitive		
	N	Mean	Sig	N	Mean	Sig	N	Mean	Sig
Q1: *Plan together*									
Nurse	68	4.42		67	4.57		67	3.93	
Physician	13	4.77		13	5.69		13	5.54	
Respiratory Therapist	8	2.50		8	4.50		8	4.62	
Other Health Prof	5	6.20		6	6.33		7	5.29	
Total	**94**	**4.40**	**.000**	**94**	**4.83**	**.000**	**95**	**4.31**	**.001**
Q2: *Open communication takes place*									
Nurse	68	4.91		67	5.00		67	4.51	
Physician	13	5.54		13	6.00		13	5.85	
Respiratory Therapist	8	3.12		8	4.62		8	4.62	
Other Health Prof	4	6.50		6	6.33		7	5.43	
Total	**93**	**4.91**	**.000**	**94**	**5.19**	**.002**	**95**	**4.77**	**.003**
Q3: *Responsibilities are shared*									
Nurse	68	4.33		67	4.57		66	4.15	
Physician	13	4.69		13	4.77		13	4.69	
Respiratory Therapist	8	3.25		8	4.62		8	4.75	
Other Health Prof	5	5.00		6	5.67		7	4.86	
Total	**94**	**4.32**	**.067**	**94**	**4.67**	**.242**	**94**	**4.33**	**.232**
Q4: *Cooperate together*									
Nurse	68	4.63		67	4.71		67	4.35	
Physician	13	4.69		13	5.92		13	5.77	
Respiratory Therapist	8	3.38		8	4.75		8	4.12	
Other Health Prof	5	6.00		6	6.17		7	5.29	
Total	**94**	**4.61**	**.005**	**94**	**4.97**	**.000**	**95**	**4.59**	**.000**
Q5: *Concerns are considered*									
Nurse	68	4.29		67	4.47		67	4.13	
Physician	12	5.17		13	5.77		13	5.92	
Respiratory Therapist	8	3.25		8	4.38		8	4.00	
Other Health Prof	5	6.00		6	6.17		7	5.43	
Total	**93**	**4.40**	**.000**	**94**	**4.75**	**.000**	**95**	**4.46**	**.000**
Q6: *Decision-making is coordinated*									
Nurse	67	4.29		66	4.45		67	4.31	
Physician	13	4.62		13	5.23		13	5.46	
Respiratory Therapist	8	2.88		8	4.25		8	4.12	
Other Health Prof	5	5.20		6	5.50		7	5.00	
Total	**93**	**4.26**	**.003**	**93**	**4.61**	**.036**	**95**	**4.50**	**.029**
Q7: *Collaboration occurs*									
Nurse	67	4.43		66	4.52		67	4.34	
Physician	13	4.77		13	5.31		13	5.54	
Respiratory Therapist	8	3.50		8	4.75		8	4.25	
Other Health Prof	5	5.20		6	5.50		7	5.00	
Total	**93**	**4.44**	**.051**	**93**	**4.72**	**.040**	**95**	**4.54**	**.006**
Q8: *Satisfied with the decision making process*									
Nurse	67	4.50		66	4.22		66	4.08	
Physician	13	5.38		13	5.69		13	5.69	
Respiratory Therapist	8	3.38		8	4.75		8	4.50	
Other Health Prof	5	5.80		6	6.17		7	5.14	
Total	**93**	**4.60**	**.001**	**93**	**4.60**	**.000**	**94**	**4.42**	**.002**
Q9: *Satisfied with decisions*									
Nurse	67	4.89		66	4.69		67	4.44	
Physician	13	5.46		13	5.62		13	5.62	
Respiratory Therapist	8	4.38		8	4.50		8	4.50	
Other Health Prof	5	5.60		6	5.83		7	5.29	
Total	**93**	**4.96**	**.097**	**93**	**4.88**	**.004**	**95**	**4.67**	**.019**

Table 14. *Correlations between amount of collaboration and satisfaction with the decision-making process*

Decision Type	Triage Decisions	Chronic Condition Decisions	Values Sensitive Decisions
Group	**Correlation Coefficient (Pearson r)**		
RN	**.742**** (n=67)	**.807**** (n=66)	**.849**** (n=66)
MD	.281 (n=12)	**.735**** (n=13)	**.554*** (n=13)
RT	.700 (n=8)	**.825*** (n=8)	.425 (n=8)
OH	.837 (n=4)	.262 (n=6)	**.942**** (n=7)

RN = nurses MD=physicians RT=respiratory therapists OH=other health professionals

**** Correlation is significant at the 0.01 level (2-tailed)**

*** Correlation is significant at the 0.05 level (2-tailed)**

Guidelines for Interpretation (Cohen, 1988)
r=.10 to .29 small (weak)
r=.30 to .49 medium
r=.50 to 1.0 large (strong)

Table 15. *Significant differences across professional groups and decision types*

Triage Decisions	Chronic Condition Decisions	Values Sensitive Decisions
**Question 1: ***Plan together*		
An analysis of variance indicated a statistically significant differences among groups for triage decisions, F (3, 90) = 8.713, p<0.001; chronic condition decisions, F (3, 90) = 7.269, p<0.001; and values sensitive decisions, F (3, 91) = 6.401, p=0.001. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
Respiratory therapists were significantly less likely than nurses (p=0.003), physicians (p=0.004) and other health professionals (p<0.001) to feel members of the interprofessional team in NICU planned together to make decisions about patient care. ***Nurses*** were significantly less likely than other heath professionals (p=0.048) to feel members of the interprofessional team in NICU planned together to make decisions about patient care.	***Respiratory therapists*** were significantly less likely than other health professionals (p=0.039) to feel members of the interprofessional team in NICU planned together to make decisions about patient care. ***Nurses*** were significantly less likely than physicians (p=0.019) and other health professionals (p=0.007) to feel members of the interprofessional team in NICU planned together to make decisions about patient care.	***Nurses*** were significantly less likely than physicians (p=0.003) to feel members of the interprofessional team in NICU planned together to make decisions about patient care.
**Question 2: ***Open communication takes place*		
An analysis of variance indicated a statistically significant differences among groups for triage decisions, F (3, 89) = 9.399, p<0.001; chronic condition decisions, F (3, 90) = 5.463, p=0.002; and values sensitive decisions, F (3, 91) = 5.129, p=0.003. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
Respiratory therapists were significantly less likely than nurses (p=0.002), physicians (p<0.001) and other health professionals (p<0.001) to feel open communication between members of the interprofessional team in NICU takes place for patient care decision-making.	***Nurses*** were significantly less likely than physicians (p=0.045) to feel open communication between members of the interprofessional team in NICU takes place for patient care decision-making.	***Nurses*** were significantly less likely than physicians (p=0.006) to feel open communication between members of the interprofessional team in NICU takes place for patient care decision-making.
**Question 3: ***Responsibilities are shared*		
**Question 4: ***Cooperate together*		
An analysis of variance indicated a statistically significant differences among groups for triage decisions, F (3, 90) = 4.565, p=0.005; chronic condition decisions, F (3, 90) = 8.374, p<0.001; and values sensitive decisions, F (3, 91) = 6.632, p<0.001. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
Respiratory therapists were significantly less likely than other health professionals (p=0.006) to feel members of the interprofessional team in NICU cooperate together to share in the decision making process.	***Nurses*** were significantly less likely than physicians (p=0.002) and other health professionals (p=0.012) to feel members of the interprofessional team in NICU cooperate together to share in the decision making process. The majority of ***physicians*** and other health professionals were very satisfied with the decisions made selecting similar responses to the question (MD n=9 and AH n=4 selected 6 on the Likert scale).	***Nurses*** were significantly less likely than physicians (p=0.002) to feel members of the interprofessional team in NICU cooperate together to share in the decision making process. ***Respiratory therapists*** were significantly less likely than physicians (p=0.024) to feel members of the interprofessional team in NICU cooperate together to share in the decision making process.

Triage Decisions	Chronic Condition Decisions	Values Sensitive Decisions
Question 5: *Concerns are considered*		
An analysis of variance indicated a statistically significant differences among groups for triage decisions, F (3, 89) = 6.502, p<0.001; chronic condition decisions, F (3, 90) = 6.866, p<0.001; and values sensitive decisions, F (3, 91) = 7.598, p<0.001. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
Respiratory therapists were significantly less likely than physicians (p=0.015) and other health professionals (p=0.004) to feel concerns from all members of the interprofessional team in NICU are considered when making decisions about patient care. ***Nurses*** were significantly less likely than other health professionals (p=0.042) to feel concerns from all members of the interprofessional team in NICU are considered when making decisions about patient care.	***Nurses*** were significantly less likely than physicians (p=0.011) and other health professionals (p=0.021) to feel concerns from all members of the interprofessional team in NICU are considered when making decisions about patient care.	***Nurses*** were significantly less likely than physicians (p=0.001) to feel concerns from all members of the interprofessional team in NICU are considered when making decisions about patient care. ***Respiratory therapists*** were also significantly less likely than physicians (p=0.026) to feel concerns from all members of the interprofessional team in NICU are considered when making decisions about patient care.
Question 6: *Decision-making is coordinated*		
An analysis of variance indicated a statistically significant differences among groups for triage decisions, F (3, 89) = 5.042, p=0.003; chronic condition decisions, F (3, 89) = 2.970, p=0.036; and values sensitive decisions, F (3, 91) = 3.143, p=0.029. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
Respiratory therapists were significantly less likely than nurses (p=0.022) physicians (p=0.018) and other health professionals (p=0.011) to feel patient care decision making is coordinated between all members of the interprofessional team in NICU.	Although a difference between groups was observed (p=0.036), the post hoc tests (Scheffé) could not detect between which groups the difference(s) occurred.	Although a difference between groups was observed (p=0.029), the post hoc tests (Scheffé) could not detect between which groups the difference(s) occurred.
Question 7: *Collaboration occurs*		
An analysis of variance indicated statistically significant differences among groups for condition decisions, F (3, 89) = 2.890, p=0.040; and values sensitive decisions, F (3, 91) = 4.473, p=0.006. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
	Although a difference between groups was observed (p=0.040), the post hoc tests (Scheffé) could not detect between which groups the difference(s) occurred.	***Nurses*** were significantly less likely than physicians (p=0.011) to feel collaboration between all members of the interprofessional team in NICU occurs for patient care decision making.
Question 8: *Satisfied with the decision making process*		
An analysis of variance indicated a statistically significant differences among groups for triage decisions, F (3, 89) = 6.070, p=0.001; chronic condition decisions, F (3, 89) = 7.592, p<0.001; and values sensitive decisions, F (3, 90) = 5.481, p=0.002. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
Respiratory therapists were significantly less satisfied than physicians (p=0.007) and other health professionals (p=0.011) with the interprofessional shared decision making process in NICU.	***Nurses*** were significantly less satisfied than physicians (p=0.006) and other health professionals (p=0.011) with the interprofessional shared decision making process in NICU.	***Nurses*** were significantly less satisfied than physicians (p=0.004) with the interprofessional shared decision making process in NICU.

Triage Decisions	Chronic Condition Decisions	Values Sensitive Decisions
Question 9: ***Satisfied with the decisions*		
An analysis of variance indicated a statistically significant differences among groups for chronic condition decisions, F (3, 89) = 4.864, p=0.004; and values sensitive decisions, F (3, 91) = 3.490, p=0.019. Further analyses with Scheffé post hoc comparison criterion indicated the following significant differences between groups:		
	Nurses were significantly less satisfied than physicians (p=0.043) with the decisions that were made. The majority of ***physicians*** were very satisfied with the decisions made selecting similar responses to the question (MD n=9 selected 6 on the Likert scale).	***Nurses*** were significantly less satisfied than physicians (p=0.039) with the decisions that were made. The majority of ***physicians*** were very satisfied with the decisions made selecting similar responses to the question (MD n=9 selected 6 on the Likert scale).

CHAPTER SEVEN

Article 4

Perceptions of the Interprofessional Team about the Nature of Shared Decision Making In NICU

This chapter presents the results of the qualitative phases of this study. Interviews with members of the IP team were completed to explore perceptions about the nature of IPSDM in an NICU. Observations of IP team decision making interactions during morning rounds for four complex cases provide data for comparison. The methods, analysis of data and findings are presented in the following manuscript developed for publication.

Potential Target Journal:
The Qualitative Report (TQR)

Author Guidelines:

Abstract – no word limit provided

Text – no word limit provided

"The length of submitted works may vary greatly. Since *The Qualitative Report* is not restricted by the economics of paper, contributors can concentrate on the particularities of their paper at hand and let those considerations shape the length of their narrative rather than an arbitrary limit of words or pages." (http://www.nova.edu/ssss/QR/Editorial/contrib.html)

Perceptions of the Interprofessional Team About The Nature of Shared Decision Making In NICU

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Abstract

Background: The process of shared decision making (SDM), a key component of interprofessional (IP) practice, provides an opportunity for the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided. A realist review of the literature that explored the processes of SDM in intensive care found little is known about SDM except from the perspective of physicians and nurses. The aim of this study was to explore all IP team members' perspectives about the nature of IPSDM in an NICU.

Methods: A qualitative descriptive approach was used, consisting of semi-structured interviews with a sample group (n=22) of members of an IP team working in a tertiary care NICU in Canada. Observations of IP team decision making interactions during morning rounds for four complex cases were also completed.

Findings: Participants indentified four key roles in IPSDM: leaders, clinical experts, parents, and synthesizer. Participants perceived that IPSDM happens through collaboration, sharing, and weighing options, evidence and credibility of opinions put forward. Participants described consensus as the most common method of reaching a decision.

Conclusions: Findings from this study identified key concepts of IPSDM in an NICU, increased awareness of the perception of IPSDM across professional groups and clarified understanding of the roles that different members of the IP team can play in the decision making process.

Keywords: interprofessional, shared decision-making, intensive care, deliberation

Introduction

Interpretations of shared decision making (SDM) in the literature range from dyadic decision making between a patient and a single professional group, usually physicians (Towle & Godolphin, 1999; Légaré et al., 2010b), to an interprofessional (IP) approach to SDM, involving the IP team collaborating to identify best options, and supporting patient involvement in decision making about those options (Légaré et al., 2010b; Légaré et al., 2010a), to a focus on clinical SDM within the IP team (Way et al., 2001). In this later form of SDM, members of the IP team collaborate to reach a common understanding of the patient situation, identify care options and deliberate about best choices for optimal outcomes.

The process of SDM, a key component of IP practice (D'Amour et al., 2005), provides an opportunity for the separate and shared knowledge and skills of care providers to synergistically influence the care (Way et al., 2001). Shared or collaborative decision making has been identified as an optimal model of treatment decision making (Charles et al., 1997). Collaborative decision making in the Intensive Care Unit (ICU), has been associated with lower rates of risk-adjusted mortalities, higher levels of nurse and resident job satisfaction (Baggs et al., 1999) and improved end-of-life care (Puntillo & McAdam, 2006). Poor decision-making processes have also been shown to contribute to the occurrence of critical incidents (Reader et al., 2006), while team member contributions during ICU patient decision making rounds have been associated with a reduction in adverse event rates (Jain et al., 2006). However, for successful outcomes to be achieved by IP teams, it is essential that all members communicate their unique perspectives and knowledge, and that their contributions are visible and understandable to the other members of the team (McCloskey & Maas, 1998).

A systematic review about the barriers and facilitators to implementing SDM in clinical practice (Gravel et al., 2006; Légaré et al., 2008a) and a realist review of the literature that explored the processes of SDM in intensive care (Chapter 4 and 5), found

little is known about SDM except from the perspective of physicians and nurses. Given that health care professionals have different scopes of practice, roles and responsibilities, their understanding of IPSDM and how it occurs may also differ. Results of a survey about collaboration and satisfaction with the decision making process in NICU (Chapter 6) provided evidence to this effect. The majority of statistically significant differences in professional perspectives about decision making were about triage decisions. Nurses and respiratory therapists were more likely than other groups to feel some components of the decision making process (e.g. planning, open communication, consideration of concerns) were inadequate, reinforcing the need for further investigation.

The aim of this qualitative study was to explore the process of interprofessional shared decision making (IPSDM) in a neonatal intensive care unit (NICU). Specific objectives were to identify perceptions about key roles and processes involved in IPSDM in NICU, and factors that promote or hinder the process. This article is the first of a two part series of articles which presents the findings from interviews with members of the IP team in NICU about the nature of IPSDM. Article 2 will discuss knowledge exchange within the IP team and the strategies used to ensure the voices of different professionals are heard during IPSDM interactions.

Conceptual Framework

The Shared Decision Making and Health Care Team Effectiveness Model (Figure 3 page 21) [based on concepts from a recent systematic review of the health care team effectiveness literature (Lemieux-Charles & McGuire, 2006) and a decisional conflict framework (Légaré et al., 2006)] was used to guide exploration of concepts related to IPSDM. This model illustrates the relationships among components of IP practice, clinical decision making, team effectiveness and health care outcomes. The current study specifically focuses on the central aspect of the model, the decision making process as it occurs among members of the IP team (green triangle in Figure 3 – page 21).

Methods

A qualitative descriptive approach (Sandelowski, 2000; Sandelowski, 2010; Thorne, 2009) was selected, consisting of semi-structured interviews with members of the IP team working in NICU, and observations of decision making interactions during rounds. Qualitative descriptive studies, which draw from the principles of naturalistic inquiry, are especially useful for identifying the who, what, and where of an event, and answering questions of special relevance to practitioners and policy makers (Sandelowski, 2000; Sandelowski, 2010). Ethics approval for this study was received from the Research Ethics Boards at the participating hospital and the university.

Study Setting

A tertiary care NICU in Canada was the study setting. This unit provides complex care to approximately 300 infants a year requiring specialist care. The core members of the IP team include nurses, physicians, respiratory therapists, pharmacists, occupational and physical therapists, dieticians, social workers and pastoral care workers.

Sampling Strategy

A sample group of members of the IP team was recruited to participate in interviews. Recruitment was carried out using purposive sampling to ensure maximum capture of NICU IP team perspectives and exploration of the common and unique manifestations of IPSDM (Patton, 2002; Sandelowski, 2000; Sandelowski, 2010). Purposive sampling provides information-rich cases for in-depth study of the subject matter (Patton, 2002). It was estimated that 12 to 20 participants would be required to achieve theoretical redundancy with maximum variation sampling with two factors (in this case professional group and level of experience) (Morse, 2000; Kuzel, 1999; Guest, Bunce, & Johnson, 2006). To achieve theoretical saturation of concepts, Interviews continued until no new

themes emerged after three additional interviews were completed (Morse, 1995; Bowen, 2008).

Procedure (interviews)

Semi-structured interviews (ranging from 30-90 minutes in duration) were completed. Interviews were conducted over a four month period using an interview guide with open-ended questions designed to explore participants' perceptions of different facets of IPSDM (Table 16 – page 179). During the data collection process, interviews were reviewed, analyzed and insights were pursued in subsequent interviews (Melia, 2001). Interviews were audio taped with permission.

Procedure (observations)

Observations of IP team decision making interactions during morning rounds were also completed. Four complex cases were followed over a two week period, resulting in two to three observational sessions for each case. Team members present for IP rounds during an observation day were approached by a nurse educator at arms length to the study to reconfirm their consent to be observed during IP team decision-making interactions. Verbal consent was also obtained from parents if they were present during rounds. This consent process was repeated before every observation session because the configuration of the team changed over time due to rotating schedules.

In order to enhance the trustworthiness of the results, the researcher and a research assistant collected data simultaneously without interrupting the process of care planning. For each decision making interaction observed, hand written notes were kept describing: participants by profession, patient issues presented, types of decisions and factors considered, areas of disagreement, nursing input and concerns and parent's perspective(s), as expressed by themselves or a team member on their behalf. Following each observation session, debriefings with selected participants were undertaken in order to clarify questions and capture perspectives about the team interactions. Findings reported in this paper are

primarily drawn from the interviews. Observational data is used to substantiate the interview data where applicable.

Analysis

The audio-tapes were transcribed verbatim and entered into the NVivo 8© software program (QSR International, 2008). Data were anonymized to maintain confidentiality of the site, individual participants and the patient population. A constant comparative method (Glaser & Strauss, 1967) was used to summarize and analyze the data. In keeping with a qualitative descriptive approach, coding was driven by the data, using an inductive approach for content analysis (Sandelowski, 2000; Sandelowski, 2010).

Content analysis is a method of analyzing written, verbal or visual information (Cole, 1988; Elo & Kyngas, 2007). Content analysis "may be used with either qualitative or quantitative data….in an inductive or deductive way" (Elo & Kyngas, 2007, p. 109) depending on the purpose of the study. An inductive approach is used if there is limited or fragmented knowledge about the subject matter (Lauri & Kyngas, 2005) as is the case with this study. In inductive content analysis, categories are derived from the data, information is first classified or coded and then grouped into like categories and the analysis moves from the specific to the general (Chinn & Kramer, 1999).

Initially, transcripts of the interviews were read several times for a general sense of the content. The questions from the interview guide provided the initial organizing framework for analysis. Individual responses to each question were grouped together to form the meaning units for qualitative analysis (Graneheim & Lundman, 2004). Responses were also coded into alternate relevant categories where applicable. Grouped responses were then reviewed for similarities and recurring ideas (Owen, 1984), condensed meaning units were identified and then clustered into specific themes and sub-themes (Graneheim & Lundman, 2004), and grouped by profession.

Observation data were transcribed into a descriptive summary of each case that included a synopsis of the patient problems and current status of the infant, participants present during rounds, the discussion points, the decisions made, disagreements and perspectives about the decision making process obtained through follow-up with selected members of the IP team. This provided behavioral data for comparison with the perceptions of members of the IP team obtained during the interviews.

Rigor

Key determinants of trustworthiness of qualitative studies are credibility, transferability, dependability and confirmability of the data (Lincoln & Guba, 1985). Credibility was enhanced by decreasing the potential for reactivity [the influence of the researcher on the setting or the individuals studied (Maxwell, 2005)] and by acclimatizing staff to researcher presence and establishing rapport (Spano, 2005). The researcher was an insider in the setting, which enhanced her credibility, facilitated acceptance and access to the environment, created trusting relationships with participants, and facilitated recruitment and data collection. Credibility of the study was also enhanced through participant validation. A selected group of participants were invited to review the findings. Overall, the participants agreed that the concepts identified in the model made sense, the relationships between concepts were appropriate and the model resonated with the reality of their experiences.

Transferability of the findings was enhanced through creation of thick description of the context of the study, the participants, the data, the analysis process and the interpretive meaning of findings with respect to previous research (Cutcliffe & McKenna, 1999). The richness of the description allows the reader to judge the reliability of the data and interpretation of findings and the extent to which these findings can be transferred to other settings.

Dependability was established through triangulation of: data through different perspectives of healthcare professionals about similar events, methods through interviews and observations and, investigators by using multiple observers. Confirmability was established by verifying processes and findings through purposive sampling, investigator responsiveness to participants throughout the interview and observation process, and saturation of concepts during inquiry (Morse, Barrett, Mayan, Olson, & Spiers, 2002). As a consequence, trustworthiness of these findings is enhanced.

Findings

Characteristics of the Sample Group

A total of 22 audio-taped interviews were completed: nurses (10), physicians (5), respiratory therapists (3), and other health professionals (4). The majority of participants were female (96%), worked full time (77%), were very experienced NICU practitioners (73%), and worked a combination of days and nights (64%) in their respective roles in the NICU. The majority of interviews were completed face-to-face (73%); however two participants were interviewed together at their request. Four interviews were carried out by phone (Table 17 – page 180).

Features of IPSDM

Participants discussed several key features of IPSDM in NICU. The themes that emerged included: IPSDM as a feasible mode of decision making in NICU, structures for IPSDM (key participants and roles), the process of IPSDM (collaboration, sharing, weighing, professional voices being heard, and building consensus) and effects on decision quality and the staff. A visual representation of the findings and the relationship between these features of IPSDM has been developed (Figure 13 – page 181). These features represent the IPSDM processes within the green triangle of The Shared Decision Making and Health Care Team Effectiveness Model (Figure 3 page 21) developed for this study. An overview of the findings is presented below with some example quotes for illustration.

IPSDM as a Mode of Decision Making in NICU – Is It Feasible, Effective, Efficient?

Although nurses and other health professionals reported IPSDM was not an efficient method of decision making in intensive care because the babies are so complex, many resources are involved in decision making, and rounds take a long time, all professional groups reported that it was feasible in this setting. Nurses and other health professionals described IPSDM as effective because more options are considered in order to make the best decision for the baby.

> **(RN4)** I find because there's so many resources involved with the decision-making, because our babies are so complex, that it involves so many levels …It is not efficient, …..It takes a lot longer.
>
> **(RN7)** I think [it's more feasible] in NICU more than anywhere….because everyone has more complicated issues… more people are involved…That's when you need coordination and multi-disciplinary team

Physicians went one step further and described IPSDM as not only feasible and effective but also essential in an NICU setting in order to protect the patient, ensure objectivity of decision making, avoid missing something, counter bias and increase buy-in among the IP team members for decisions made for the plan of care. Although all health care providers are responsible for the care they provide, the physicians carry ultimate responsibility for the infants' care and therefore, they may feel a greater need to verify their perspectives with other experts.

Information obtained during observations of IP patient care rounds corroborated these findings. Despite the challenges of gathering the team and the time consuming nature of patient care rounds, members of this IP team engaged in an IPSDM process during rounds. Team members reported this process to be the norm in this unit. However, results of an earlier survey to explore IP team members' perceptions about collaboration and satisfaction with the decision making process found that some members of the team perceived the extent of collaboration in decision making in this NICU was less than it could be (Chapter 6). Data obtained through interviews provides insight into these findings.

Key Participants / Roles

Participants identified four key roles important to IPSDM: a leader who facilitates shared decision making and, in some cases, takes responsibility for the decision; professional experts who provide information and insight into the case; the parents acting as surrogate decision makers; and someone who synthesizes the information. One of the physicians described this latter role.

> **(MD1)** Sometimes there are many ideas that are brilliant, but they are not feasible….At this point you try to find alternatives… This is very important…for the benefit of the baby….I'm a connector. I'm the person that connects things…I try to make sense of all the inputs…Generally the physician …is the mastermind…..all this information coming at you, and [you] try to make sense of it….It's one of the most difficult things to do

Although participants universally acknowledged the important role parents play, and the need for their involvement in the decision making process, there were diverse views about when and how the parents should be involved.

During observations, all four roles were visible. The physician in charge generally functioned as the leader to facilitate the decision making process, and each expert (e.g. nurse, respiratory therapist, pharmacist or social worker), was called upon during rounds to provide input specific to their professional expertise. Most of the time, physicians synthesized the information. However, there were occasions where other members of the IP team functioned in this role, such as the nurse during discussions for discharge planning or the respiratory therapist during discussions for optimizing ventilation. Parents were also present during morning rounds on occasion and were observed to participate by asking questions, providing perspective or presenting their values and preferences related to the situation. Although most of the decision making observed involved IP team deliberations about effective care decisions, examples of decision making related to preference sensitive decisions were also observed, such as for withdrawal or continuation of care.

The Process of IPSDM

Five key themes emerged from the data related to the process of IPSDM: collaboration, sharing, weighing, professional voice being heard, and building consensus.

Collaboration

Participants from all four professional groups agreed that IPSDM happens through a collaborative process of working together to identify the options in order to make a well-informed decision that takes all voices into account. Respondents used words such as a brainstorming, open discussion, the effort of more than one brain and working as a team to illustrate this perspective. One of the nurses identifies the joint effort required to gather the facts and deliberate about options in order to reach the best decision.

> **(RN9)** It's a collaborative process, where everybody's voice is listened to, and then there's a joint decision made, on whatever issue has been addressed.

Sharing

Participants in this study interpreted sharing three different ways: sharing information or professional expertise only, sharing in the deliberation about options or sharing in the decision itself. Respondents emphasized the importance of sharing information or contributing professional expertise to the case as an essential part of the IPSDM process. There was general agreement across all professional groups about the importance of having as much information as possible from as many perspectives as possible to make a well-informed decision in the best interests of the baby. During observations, the process of sharing knowledge and professional expertise and seeking information from experts was clearly evident as part of IPSDM.

> **(OHP1)** You're sharing everybody's knowledge, and everybody's knowledge is coming from a different focus….Somebody might just have a different perspective all of a sudden that shines a different light on the situation that may be the solution. So you have to listen to all of that.

The second interpretation of sharing highlighted by some of the nurses, other health professionals and one physician is about sharing in the deliberation about options. From

their perspective, IPSDM involves more than just sharing information, but it goes one step further, requiring the team to sift through all available information, deliberate and identify options for consideration. The ultimate goal during these deliberations is to draw on the expertise within the team to come up with options. This process was observed on a number of occasions. However, for deliberation about options to occur, information sharing within the team must happen first.

> **(OHP1)** It's a brainstorming type of session, where we offer what we can, what knowledge we can, what ideas, what suggestions, and what alternatives to identify the options.

However, most commonly, the interpretation of sharing involved not only the deliberation about options, but sharing in the decision itself. This view was expressed by some nurses, physicians and other health professionals.

> **(RN7)** I would share my nursing expertise with the group and how my visions of what should be decided… from my profession….Everyone gives their input and then together we make a decision on the care plan, or the issue that's at hand.

Weighing

According to participants, another important aspect of IPSDM involves weighing the options (pros/cons), weighing the evidence and weighing the credibility of an opinion. Participants from all four professional groups spoke about weighing the options as a key step in the IPSDM process. Weighing the options involved having all the facts necessary to address each issue, sifting through the facts and synthesizing the information, and brainstorming about the risk/benefits or pros/cons for each option.

> **(RN4)** Everyone had the opportunity to give some pointers…and those pointers should include…the risks and the benefits…the pros and cons…as many facts that you can have to make the best decision.

> **(RT3)** You are contributing to the options on the table…the things that might be considered…divulging your concerns, your suggestions…In your opinion, what's the best route for this particular case.

Two additional examples of weighing were described by some of the nurses, physicians and respiratory therapists. In these examples participants spoke about the importance of weighing different forms of evidence and weighing the credibility of the opinion put forward by those involved in the discussions.

> **(RN7)** We need to weigh both…research and practice-based experiential evidence…Those two have to be part of it…..When inter-disciplinary teams work the best, is [when] they have both.
>
> **(MD5)** I think that everybody's opinion is very valid … I weigh very strongly some people's opinion versus other people's opinion… [Someone] who I may not have as much confidence in

The process of weighing options, weighing the evidence and weighing credibility of opinion was apparent during observations. For example, one day the issue being discussed by the IP team was about improving access for frequent blood gas sampling for a critically ill, ventilated infant. The nurses suggested insertion of an umbilical artery line to facilitate blood gas sampling and decrease the stress to the infant of frequent radial artery stabs. The physicians opposed this idea because of concern for increased risk of sepsis. The team deliberated about the pros/cons and risks/benefits to the infant for each option. Although both sides were advocating for the infant and had evidence to support the benefit of their claims, each option carried with it some risk. In the end the team found middle ground, and consensus was reached to delay insertion of a central line until cultures were negative.

The IP conflict that occurred during these deliberations stemmed from two sources: the weight or value placed on different forms of evidence, such as, randomized control trials of sepsis with central line insertion versus observational studies of infant pain, and the weight or priority given to the risks versus benefits for each option. Both professional groups valued the evidence and perceived the opinions put forward by the other side as credible. However, greater weight was placed on risk by the physicians than the nurses who perceived benefits to the infant as a more urgent need in the situation. Both nurses and physicians described the decision as difficult despite having the best interests of the infant at heart and having evidence available to support the options. The nurses, who were actually responsible for obtaining the blood samples, had a more difficult time reaching the consensus view because they were more directly affected by the infant's pain experience and the challenges of repeated radial artery blood sampling than the physicians.

Understanding each other's perspectives was central to finding the common ground and reaching consensus.

Professional Voice Being Heard

Respondents from all four professional groups spoke about the importance of ensuring that their professional voice was heard during the process of IPDSM so that all essential information is available for consideration. Participants talked about the influence one voice can have if the voice is heard, understood, and credible in the eyes of the team. Speaking out in opposition was identified as an important step in coming to a shared decision and ensuring their silence was not interpreted as agreement. This is especially important in situations where time is an issue.

> **(RN1)** You can disagree around the decision but…because of the integrity of the discussion that you've had…an individual….may come to a different endpoint than they were at the beginning of the discussion because of the discussion around the table….I think that [non-agreement] is part of the process of coming to a shared decision.
>
> **(OH3) I**f people don't go out grumbling….I believe that people are satisfied
>
> **(MD5)** As patient advocates…you need to get those other opinions out…You don't have time to survey them…but their opinion may be very important.

Building Consensus

Consensus was the most common method described by participants for reaching a decision. However, when the question of consensus was probed in this study, it became clear that consensus meant slightly different things to different people. To some participants consensus meant achieving full agreement within the team or finding common ground through understanding and insight.

> **(RN4)** Having consensus… means everyone is in agreement…This is the right plan.

To other participants, consensus meant the acceptance of another view, agreeing to disagree, rather than full agreement. This suggests giving in to the rest of the group and could be a manifestation of groupthink.

> **(RN8)** Whether we agree or agree to disagree, "Okay, I've heard your opinion…and we're not going to agree on that, but I've taken your opinion"

> **(RN2)** I don't think you have to agree. I think you have to be able to live with their decision…If they've given me good rationale as to why they've chosen something different from what I would choose, ……then I think I could live with the decision…..and feel I'd had a voice in the whole.

A number of strategies were reported to facilitate achievement of consensus: providing input / exploring options, discussing and listening, respecting input provided by others and understanding / uncovering the meaning of best options.

> **(RN9) I**t's the act of people being listened that a picture emerges….If we really sit down and talk, that something will emerge…I have been humbled because I've listened to somebody else who has…thrown up a very different perspective of things. And then,…because I've listened to what they've said, I thought…they have a huge point here that I didn't take into account quite like that.

One of the respiratory therapists emphasized how important the diversity of opinion was to reaching consensus.

> **(RT1)** Every perspective about a decision to be made is there for a reason. It's neither really right nor wrong. And we've arrived at that perspective because of our varied backgrounds, or varied experiences. And so there isn't necessarily a right answer. But then, in keeping with the spirit of patient-centered, family-focused decision-making in a collaborative fashion, it may take…some understanding of the different perspectives before you can reach consensus. So, the more you can uncover in an honest, open fashion, the more likely you're going to reach consensus.

One of the physicians talked about the benefits of achieving consensus within the team. Not only does consensus make working together easier, it facilitates finding common ground, it reinforces the plan, it decreases bias and makes the provision of care easier for those who are responsible to carry out the plan.

> **(MD2)** If you have the consensus it means that you cannot be completely wrong.

> **(MD2)** I think consensus is there to say, yes that was correct…It's definitely easier to work in a field where people agree than where people disagree…It's so difficult to do something because you have an order to do something, but you don't agree with it?

During observations, it was clearly evident that the IP team used consensus to reach many decisions. Both true agreements and some people simply agreeing to disagree were observed. For the most part, the later situation occurred when consensus by agreement had not been achieved but the decision needed to be made. In a sense, agreeing to disagree represented a compromise in order to move forward.

Barriers to Achieving Consensus

Despite the fact that consensus building has been identified as important for IPSDM, achieving consensus within an IP team can be a challenge. Respondents highlighted three barriers: lack of information, differing professional values and power differential within the IP team. Lack of information can result because the common knowledge that exists between members of the IP team or simply because people with something to say, who have valuable insight, just don't speak up.

> **(RN5) B**ecause of the common knowledge, we're not always in discussion and debate about plan….
>
> **(OHP3)** Once we have discussed it fully…if people do not go out grumbling…I believe that …the team members are satisfied. One has to verbalize thoughts.

Respondents also perceived differing professional values were an obstacle to achieving consensus. Physicians emphasized the importance of 'doing no harm' to ensure the best interests of the patient were considered.

> **(MD5)** Everybody has different values…you're not going to come to a consensus necessarily on values… It comes down to the basic principles…do no harm.

The final barrier to consensus decision making identified by respondents from all four professional groups had to do with the power differential within the team and the control exerted by some physicians in making the final decision. As one nurse said:

> **(RN7)** I think when we're sharing, we're trying to get to a consensus of what the decision should be, but I think in the end if we don't agree…the physician will, if they're strong on their hold….they allow everyone to have an opinion but they'll ultimately make their decision.

Outcomes of IPSDM

The main outcome of IPSDM, identified by participants, was making a well-informed decision. Well-informed decisions take into account all voices, are based on empirical evidence and experience, are made after weighing pros and cons for each option, and are made in the best interests of the infant.

> **(RN4)** Shared decision-making…all members of the team involved with the decision, whatever that has to be, having the opportunity to provide input…in order to be able to make a well-informed decision.

Respondents emphasized that a decision that takes into account multiple perspectives is a better decision than one that is made without examining all the facts.

> **(RT1)** If we are caring for a patient that's….complex, we need to have multiple perspectives to come up with the right decision for that patient.

A secondary outcome of IPSDM identified by participants was that team members feel valued as participants in the decision making process. Ultimately this resulted in increased morale in the group.

> **(RN5)** It makes each member feel valued….It's so important to have like different perspectives on decisions….and it's definitely contributed...to morale.

During observations, it was evident when team members felt involved in the IPSDM process, when they felt their input was valued, understood and contributed to the final decision. Talk was positive and comments such as: "I feel like I finally got my message across" or "What an excellent plan" were heard. When questioned about satisfaction with the decisions that had been made during patient care rounds, there was definitely agreement among participants when they felt an optimal decision had been made.

Discussion

Inclusion of professional experts and parents or surrogate decision makers in the process of decision making has been acknowledged in a number of other studies (Baggs & Schmitt, 1995; Baggs et al., 2007; Baumann-Holzle et al., 2005; Carros, 1997; Coleman, 1998; Kavanaugh et al., 2005; Lingard et al., 2004; Melia, 2001; Robinson et al., 2007; Viney, 1996).

Although, participants acknowledged the important role parents play in the decision making process, further research is needed to understand the issues involved in and strategies needed to support parent involvement in the process of IPSDM and whether the inclusion of a decision coach on the IP team [as identified by Stacey and colleagues (2008)] would facilitate parent involvement in this process.

Having a leader to facilitate the IPSDM process and someone to synthesize multiple sources of data were new roles identified as key to the process of IPSDM. These roles require expertise with IPSDM process, conflict management skills, competencies managing debate, critical appraisal skills and an ability to synthesize large amounts of diverse information as the IP team deliberates about the evidence and the pros and cons of the options.

The concept of collaboration as a key component of IPSDM is consistent with the literature on IP practice in which collaboration is described as a process that requires professional boundaries be crossed if each participant is to contribute to improvements in client care and consider the input of the other professionals (D'Amour et al., 2005). Joint problem solving and working together have been acknowledged as facilitators of IPSDM in intensive care in a number of other studies (Baggs & Schmitt, 1997; Carros, 1997; Kavanaugh et al., 2005; McHaffie & Fowlie, 1998a).

The concept of sharing has been identified as a key component of IP collaborative practice (D'Amour et al., 2005) and was also identified by participants in this study as an essential component of IPSDM. However, sharing meant different things to different people: sharing information, sharing in the process of deliberations or sharing in the decision itself. The importance of sharing information and professional expertise to enhance team collaboration was also emphasized in a study by Lingard and colleagues (2004). This study reported that team collaboration is achieved or undermined in the complex environment of an ICU through the perception of ownership and process of trade of commodities. In the ICU environment valued commodities such as specialized knowledge or technical skills are negotiated or exchanged during IP interactions (Baggs & Schmitt, 1997; Carros, 1997; Lingard et al., 2004). Recognition and acceptance of the knowledge and skills others possess is necessary for team collaboration (Lingard et al., 2004). For example, the physician’s knowledge of disease pathology, the respiratory therapist’s knowledge about

ventilation support or the nurses' knowledge about intravenous infusions, medication administration or blood sampling must be recognized and respected by other team members.

Research indicates that the key holders of knowledge are often in a position of power in the decision making process (Coombs, 2003; Coombs & Ersser, 2004) and valuing and sharing knowledge about the patient in a process of trade, helps to facilitate not only the exchange of information but an exchange of power as team members negotiate with one another (Carros, 1997; Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004). Although the concept of sharing was not new, the different interpretations offered by these participants suggests inconsistencies between expectations and reality of IPSDM can create confusion and dissatisfaction with the process.

The concept of weighing the evidence and weighing the pros and cons of each option identified by participants is also consistent with other studies about IPSDM in NICU (Carros, 1997; Kavanaugh et al., 2005; McHaffie et al., 2001). However, participants also emphasized the need to weigh the credibility of an opinion during IPSDM. This idea is consistent with research that indicates that practitioners are more likely to collaborate with people they perceive have pertinent knowledge. Nurses and physicians perceive more experienced practitioners to be more knowledgeable, and therefore more competent and good people with whom to collaborate (Baggs & Schmitt, 1997; McHaffie et al., 2001). However, what determines credibility is not clear.

Understanding each others' role, has been identified as is one of the important elements of IP collaboration (D'Amour & Oandansan, 2005; Xyrichis & Ream, 2008). McMurtry (2007) states that "team members do not need to learn much, if anything, about each other's cognitive maps" (p. 41) in order to collaborate in decision making. However, findings from this study counter this view by acknowledging the importance of weighing opinion and expertise (or judging credibility) as an essential part of the IPSDM process.

Judging credibility may not require knowing everything a colleague knows, but according to the participants in this study, members of an IP team need to be informed about the expertise and experience of their colleagues in order to judge whether their opinion is credible.

Participants in this study stressed the importance of ensuring their professional voices were heard during IPSDM to optimize the decisions made. The perspective that a decision that takes into account multiple perspectives is a better decision than one that is made without examining all the facts is consistent with the findings of an ethnographic study about IPSDM (Carros, 1997). This study about discharge planning in an NICU reported a similar outcome - a group decision was better than an individual decision (Carros, 1997).

Consensus was the most common method described by participants for reaching a decision. Consensus is defined as "group solidarity in sentiment and belief" (Mirriam-Webster, 2009) and involves all participants having the opportunity to present, amend and veto proposals. Emphasis is on agreement rather than differences in opinion, and selection of the most logical solution possible (Dressler, 2006). Consensus building was identified as a key step in ethical decision making in NICU in two other studies (Baumann-Holzle et al., 2005; McHaffie et al., 2001) where options were discussed among the team and a consensus view was established before meeting with the parents. Melia (2001) explored ethical decision making in an ICU and found that nurses and physicians perceived the achievement of consensus to be a highly desirable means of ensuring solidarity of the team, essential for good patient care, and a symbol of team strength.

However, McMurtry (2007) takes the stand that consensus decision making is inappropriate and in fact unnecessary in the context of IP teams because of the potential for groupthink and decisions based on the lowest common denominator rather than a composite of expert opinion. Groupthink is defined as: "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members'

strivings for unanimity override their motivation to realistically appraise alternative courses of action" (Janis, 1972, p. 9). Findings from this study give some credence to this opinion since some participants' perceived consensus to include agreeing to disagree.

However, participants also emphasized the importance of speaking out, challenging thought and putting forward different perspectives in the process of building consensus. This perception is consistent with the literature on groupthink which advocates debate and consideration of all possible alternatives (Janis & Mann, 1977; Janis, 1971; Neubauer, 2003). McCloskey and Mass (1998) emphasized the importance of members of IP teams expressing their individual perspectives to avoid groupthink. If a group is very cohesive, they may agree, but on the wrong thing. This can result in less questioning and fewer potential ideas and opinions being put forward. However, if they differ in perspective and have the capability to express their opinions, the diversity of options increases and therefore the range of options to be considered are greater. Managing debate has been identified as a core competency essential to build consensus around best possible solutions in adaptive organizations (Neubauer, 2003). The findings from this study suggest that having the expertise to manage debate is essential for IPSDM as well.

Respondents highlighted three barriers to achieving consensus: lack of information, differing professional values, and power differential within the IP team. Lack of information can be an iatrogenic problem created because of blurred boundaries and common knowledge that exists among members of the IP team (Rushmer, 2005). Therefore, it is important for all members of the IP team to voice opinions, and challenge ideas to optimize decision making and avoid groupthink.

False consensus is a consequence of having insufficient, inaccurate or no information about a case, such as when IP team members are not present to provide input about ventilation changes, infant response to a treatment or family status or when the parents are not present to provide input about their preferences. The false consensus effect

may result in biased judgments or decisions (Jones & Roelofsma, 2000; Ross, Greene, & House, 1977).

Competing professional priorities also present a significant barrier to determining the best interests of the patient. Physician practice is focused on saving lives and curing disease, sometimes making it hard for them to let go (Baggs et al., 2007; McHaffie & Fowlie, 1997). On the other hand, nursing practice emphasizes caring rather than curing and nurses tend to be ready to withdraw treatment sooner than physicians (McHaffie & Fowlie, 1997; Viney, 1996). However, while nurses' close involvement gives them special insights, they also form emotional bonds with patients and families, making it hard for them let go as well (McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b).

According to participants in this study, power differentials also present a barrier to achieving consensus. This perception is consistent with other literature about IPSDM where power disparity and conflict have been identified as an issue (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a; McHaffie et al., 2001; Melia, 2001; Porter, 1991; Viney, 1996). Power differential and conflict can arise because of knowledge and role diversity within a health care team (Coombs, 2003). In the ICU, decision making continues to be strongly driven by the medical knowledge base and authority. As the key holders of medical knowledge, the medical staff are therefore in the powerful role of decision maker (Coombs, 2003). Other sources of knowledge and roles, such as those held by nurses, are less valued by physicians, resulting in tension between nursing and medicine (Coombs, 2003; Coombs & Ersser, 2004). Attempts to deal with this issue that focused on the interpersonal development of nurses rather than challenging the dominant role of medicine have proven ineffective (Coombs, 2003).

Overcoming this power differential and achieving true equity in decision making within an IP team can be a challenge. Therefore, it is important to establish clear rules of

engagement for IPSDM about how decisions are to be made, under what circumstances, involving which participants, for which decisions (e.g. effective care / preference sensitive decisions), and how conflicts are to be resolved.

Strengths and Limitations

Limitations of this study include: transferability of findings, social desirability bias and recall bias. The goal of this study was to gather detailed information and explore IPSDM within a team. Therefore, the sample group was limited to those practitioners working in the unit at the time of data collection. Replication of this study in different intensive care settings would help to increase the validity of results.

Social desirability bias is a term used to describe the tendency of respondents to reply in a manner that will be viewed favorably by others (Donaldson & Grant-Vallone, 2002). According to Dillman (2000), ”face-to-face interviews have the highest probability for producing socially desirable answers” (p. 63). Although influence of social desirability bias could not be completely alleviated, the impact was limited through voluntary participation, ensuring confidentiality of responses by using anonymous audio-taped interviews and transcripts, and reporting only anonymized results.

Data collected during the interviews was based on participant self report. Although self-report provided information about the participants’ knowledge and understanding of the IPSDM process and their perceived roles in the process of IPSDM, the results may be colored by participants’ interpretation and recall of the facts (Adams, Soumerai, Lomas, & Ross-Degnan, 1999). However, participants recruited for this study were all familiar with the IP model of practice in this unit, an interview guide was used to probe the professional perspectives about the IPSDM process and multiple perspectives were obtained across all professional groups making up the IP team. In addition, observations of IP rounds provided a benchmark for comparison with interview findings.

Despite these limitations, a number of factors demonstrate trustworthiness. This was an exploratory study and the processes used for data collection were simple, transparent and reproducible. These facts, along with participation of key informants from four professional groups, a rich data source collected during the interviews and saturation of concepts gives these findings substantial weight.

Conclusions

Findings from this study have identified key concepts of IPSDM in an NICU and provided valuable insight into the process of shared decision making illustrated in the Shared Decision Making and Healthcare Team Effectiveness Model (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006) (Figure 3, page 21), increased our awareness of the perception of IPSDM across professional groups and improved understanding of the roles that different members of the IP team can play in the decision making process. Health care providers involved in shared decision making in NICU are important to the quality of the decisions made. IPSDM will not occur unless all professional groups involved value this collaborative form of decision making, have the skills to participate in the process and work together to establish protocols to facilitate this decision making process.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

SD, along with members of her Doctoral Thesis Committee (BC, IDG, and JM), conceived the study. SD conducted the interviews, coded the verbatim transcripts, analyzed the results and wrote the paper. BC supervised the process, independently codes some of the transcripts, provided expert review of the thematic analysis and reviewed the paper. IDG and JM were advisors for the study, provided expert review of the thematic analysis and reviewed the paper. IG provided peer review of the thematic analysis and reviewed the paper. All authors have read, and approved the final version of this manuscript.

Table 16. *Interview guide*

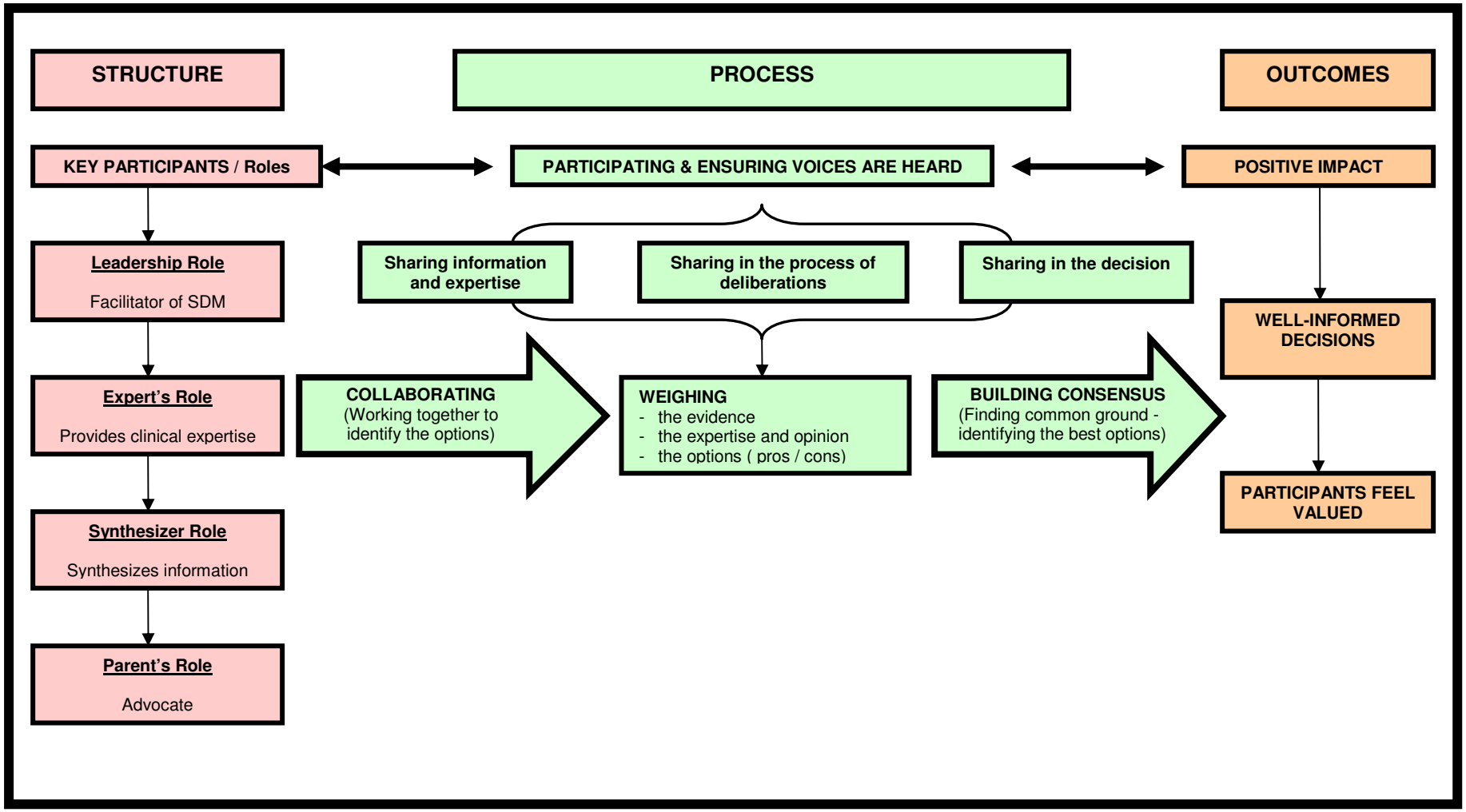
Interview Guide	
1.	What does the term 'shared decision-making' mean to you? Can you define it for me?
2.	Do you think shared decision-making is a feasible, effective and efficient way of making decisions in NICU?
3.	How do you know when shared decision-making occurs? What would I need to look for to tell me it had happened?
4.	Are all decisions shared among members of the interprofessional team in NICU or only certain decisions? a. Can you give me examples of decisions that are shared among members of the interprofessional team? b. Can you give me examples of decisions that are ***NOT*** shared among members of the interprofessional team?
5.	What do you think fosters shared decision-making in NICU?
6.	What are barriers to shared decision-making in NICU?
7.	What are the most important factors that the interprofessional team should consider when making a decision (i.e. evidence, values, resources, parent preference, or other factors)?
8.	How do parents factor into the process of interprofessional shared decision-making?
9.	Should parents be involved in the interprofessional shared decision-making process? If so, when should they be brought into the discussions?
10.	What is a 'quality decision' or the 'best decision'?
11.	How does an interprofessional team make a 'quality decision'?
12.	How do we know when a 'quality decision' has been reached?
13.	Each member of an interprofessional team sees the patient / family situation through their own professional lens (i.e. medicine, nursing, respiratory therapy, social work, pharmacy etc.). Therefore, a. How do we determine the lens to judge the patient / family situation by? b. How do we determine which options are best for each patient / family situation?
14.	Is there overlap in your area of expertise with other members of the team? Does the amount of overlap determine how much your expertise is taped?
15.	What is your (professional) 'voice' in the process of decision-making? What do you bring to the discussion?
16.	How do you ensure your 'voice' is heard in the decision making process?

Table 17. *Participant characteristics*

Category	Participant Characteristics	(n=22)	%
Profession	RN	10	45.5
	MD	5	22.7
	RT	3	13.6
	OHP	4	18.2
Gender	Male	1	4.5
	Female	21	95.5
NICU Experience	Very experienced (> 10 years)	16	72.7
	Experienced (5-10 years)	5	22.8
	Somewhat experienced (2-5 years)	1	4.5
	Novice (< 2 years)	0	0
Work Rotation	Days	6	27.3
	Nights	2	9.1
	Combination (days/nights)	14	63.6
Full / Part Time Status	Full time	17	77.3
	Part time	5	22.7
Interview	Face-to-face (individual)	16	72.7
	Phone (individual)	4	18.2
	Group (1 group of 2 participants)	2	9.1

Code: RN (nurses), MD (physicians), RT (respiratory therapist), OHP (other health professionals)

Figure 13. Key findings from informants – The nature of IPSDM



CHAPTER EIGHT

Article 5

Persuasive Knowledge Exchange within the Interprofessional Team: A Strategy to Support Interprofessional Shared Decision Making

This chapter presents the results of the qualitative phases of this study. Interviews with members of the IP team were completed to understand how different professional groups perceive their role as effective participants in the process of IPSDM and how they ensure their voices are heard. Observations of IP team decision making interactions during morning rounds for four complex cases provide data for comparison. The methods, analysis of data and findings are presented in the following manuscript developed for publication.

Potential Target Journal:
The Qualitative Report (TQR)

Author Guidelines:

Abstract – no word limit provided

Text – no word limit provided

"The length of submitted works may vary greatly. Since *The Qualitative Report* is not restricted by the economics of paper, contributors can concentrate on the particularities of their paper at hand and let those considerations shape the length of their narrative rather than an arbitrary limit of words or pages." (http://www.nova.edu/ssss/QR/Editorial/contrib.html)

Persuasive Knowledge Exchange within the Interprofessional Team: A Strategy to Support Interprofessional Shared Decision Making

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Abstract

Background: The process of shared decision making (SDM), a key component of interprofessional (IP) practice, provides an opportunity for the separate and shared knowledge and skills of care providers to synergistically influence the client / patient care provided. The aim of this study was to understand how different professional groups perceive their role as effective participants in the process of IPSDM and how they ensure their voices are heard.

Methods: A qualitative descriptive approach was used consisting of semi-structured interviews with a sample group (n=22) of members of an IP team working in a tertiary care NICU in Canada. Observations of IP team decision making interactions during morning rounds for four complex cases were also completed.

Findings: The strategies identified by participants, to ensure their voices were heard during the process of IPSDM, clustered into six themes: knowing your audience, creating a credible message, being an effective messenger, getting your message across, consideration of expected outcomes, and power and control issues. Successful participation in the process of IPSDM requires participants to have the knowledge and skills to create and deliver persuasive messages to counter power disparity within the team.

Conclusions: Findings from this study have enhanced understanding of how different members of the team participate in the IPSDM process, and highlighted effective strategies to ensure professional voices are heard, understood and considered during deliberations.

Keywords: interprofessional, shared decision-making, intensive care, deliberation

Introduction

Shared decision making (SDM), identified as an optimal model of treatment decision making (Charles et al., 1997) and a key component of interprofessional (IP) practice (D'Amour et al., 2005), enables the separate and shared knowledge and skills of care providers to synergistically influence the patient care provided (Way et al., 2000). Poor decision-making processes have been shown to contribute to the occurrence of critical incidents (Reader et al., 2006). Shared decision making in the intensive care unit has been associated with improved patient outcomes, nurse and resident job satisfaction (Baggs et al., 1999), improved end-of-life care (Puntillo & McAdam, 2006) and reduced adverse event rates (Jain et al., 2006).

For IP teams to be successful it is essential that all members have the opportunity to contribute their unique perspectives and knowledge to the discussions and that their input is understood and valued by the other members of the team (McCloskey & Maas, 1998). However, a number of barriers to SDM have been reported through systematic reviews of the literature (e.g. patient characteristics, clinical situation, lack of self-efficacy and time pressure) (Gravel et al., 2006; Légaré et al., 2008a). In addition, a realist review of the literature about IPSDM in intensive care revealed power differentials and conflict, paternalistic attitude, lack of confidence or ability to assert voice, and differing perspectives about the clinical situation and hierarchy of evidence are also barriers to this process of decision making (Chapter 5). Little is known about SDM from the perspective of health professionals other than physicians (Gravel et al., 2006; Légaré et al., 2008a) and how to operationalize SDM to ensure the different professional perspectives essential to the decision making process are considered. No studies have explored this concept from the perspective of an IP team.

The purpose of this study was to explore IPSDM in a neonatal intensive care unit (NICU) to identify strategies to facilitate this process. The primary study used a mixed

methods approach consisting of a survey of members of the IP team to explore perceptions about collaboration and satisfaction with the decision making process, interviews with members of the IP team to explore the processes used for IPSDM in NICU and observations of the IPSDM during patient care rounds. The purpose of this paper is to report on selected findings that address knowledge exchange within the IP team and the processes involved to ensure professional voices are heard during the process of IPSDM.

Conceptual Framework

The Shared Decision Making and Health Care Team Effectiveness Model (Figure 3 – page 21) [based on concepts from a systematic review of the health care team effectiveness literature (Lemieux-Charles & McGuire, 2006) and a decisional conflict framework (Légaré et al., 2006)] was used to guide exploration of concepts related to IPSDM. This model illustrates the relationships between components of IP practice, clinical decision making, team effectiveness and health care outcomes. Participants in the SDM making process could include health care professionals and the patient, the family or other surrogate decision makers. The current study specifically focuses on the central aspect of the model (the IPSDM process) and the perceptions of members of the IP team (green triangle in Figure 3 – page 21).

Methods

A qualitative descriptive approach (Sandelowski, 2000; Sandelowski, 2010; Thorne, 2009) was selected, consisting of semi-structured interviews with members of the IP team working in NICU, and observations of decision making interactions during rounds. Ethics approval for this study was received from the Research Ethics Boards at the participating hospital and the university.

Study Setting

A tertiary care NICU in Canada was the study setting. This unit provides complex care to approximately 300 infants a year requiring specialist care. The core members of the

IP team include nurses, physicians, respiratory therapists, pharmacists, occupational and physical therapists, dieticians, social workers and pastoral care workers.

Sampling Strategy

A sample group of members of the IP team was recruited to participate in interviews. Recruitment was carried out using purposive sampling to ensure maximum capture of the NICU IP team perspective and exploration of the common and unique manifestations of IPSDM (Patton, 2002; Sandelowski, 2000; Sandelowski, 2010). Purposive sampling provides information-rich cases for in-depth study of the subject matter (Patton, 2002). It was estimated that 12 to 20 participants would be required to achieve theoretical redundancy with maximum variation sampling with two factors (in this case professional group and level of experience) (Morse, 2000; Kuzel, 1999; Guest et al., 2006). To achieve theoretical saturation of concepts, interviews continued until no new themes emerged after an additional three interviews were completed (Morse, 1995; Bowen, 2008).

Procedure (interviews)

Interviews, ranging from 30-90 minutes in duration, were completed. Interviews were conducted over a four month period using a semi-structured interview guide with open-ended questions designed to explore participants' perceptions of different facets of IPSDM (Table 18 – page 213). Interviews were audio-taped with permission. During the data collection process interviews were reviewed, analyzed and insights were pursued in subsequent interviews (Melia, 2001).

Procedure (observations)

Observations of IP team decision making interactions during morning rounds were also completed. Four complex cases were followed over a two week period resulting in two to three observational sessions for each case. Team members present for IP rounds during an observation day, were approached by a nurse educator at arms length to the study, to reconfirm their consent for observation during IP team decision-making. Verbal consent

was also obtained from parents present during rounds. This consent process was repeated prior to every observation session because the configuration of the team changed over time.

To enhance the trustworthiness of the results, the researcher and a research assistant collected data simultaneously without interrupting the process of care planning. For each decision making interaction observed, hand written notes were kept describing participants by profession, patient issues presented, types of decisions and factors considered, areas of disagreement, nursing input and concerns, and parent's perspective(s), as expressed by themselves or a team member on their behalf. Following observation sessions, debriefings with selected participants were undertaken, in order to clarify questions and capture perspectives about the team interactions. Findings reported in this paper are primarily drawn from the interviews. Observational data was used to substantiate the interview data where applicable.

Analysis

The audio-tapes were transcribed and entered into the NVivo 8© software program (QSR International, 2008). Data were anonymized to maintain confidentiality of the site, the unit, individual participants and the patient population. A constant comparative method (Glaser & Strauss, 1967) was used to summarize and analyze the data.

Initially, transcripts of the interviews were read several times to get a general sense of the content. The questions from the interview guide provided the initial organizing framework for the content analysis. Individual responses to each of the questions were grouped together to form the meaning units for the qualitative analysis (Graneheim & Lundman, 2004). Grouped responses were then reviewed for similarities and recurring ideas (Owen, 1984), condensed meaning units were identified and the condensed meaning units were then clustered into specific themes, sub-themes (Graneheim & Lundman, 2004) and grouped by profession.

Observation data was transcribed into a descriptive summary of each case that included a synopsis of the patient problems and current status of the infant, participants present during rounds, the discussion points, the decisions made, disagreements and perspectives about the decision making process obtained through follow-up with selected members of the IP team. This provided behavioral data for comparison with the perceptions of members of the IP team obtained during the interviews.

Rigor

Key determinants of trustworthiness of qualitative studies are credibility, transferability, dependability and confirmability of the data (Lincoln & Guba, 1985). Credibility was enhanced by decreasing the potential for reactivity [the influence of the researcher on the setting or the individuals studied (Maxwell, 2005)] by acclimatizing staff to researcher presence and establishing rapport (Spano, 2005). The fact that the researcher was an insider in the study setting enhanced her credibility, facilitated acceptance and access to the research environment, created trusting relationships with potential participants, and facilitated recruitment and data collection. Credibility of the study was also enhanced through participant validation. A selected group of participants was invited to review the findings. Overall, the participants agreed that the concepts identified in the model made sense, the relationships between concepts were appropriate and the model resonated with the reality of their experiences.

Transferability of the findings was enhanced through creation of thick description of the context of the study, the participants, the data, the analysis process and the interpretive meaning of findings with respect to previous research (Cutcliffe & McKenna, 1999). The richness of the description allows the reader to judge the reliability of the data and interpretation of findings and the extent to which these findings can be transferred to other settings.

Dependability was established through the use of data triangulation (different perspectives of healthcare professionals about similar events), method triangulation (through interviews and observations) and investigator triangulation (use of multiple observers). Confirmability was established by verifying processes and findings through purposive and maximum variation sampling, investigator responsiveness throughout the interview and observation process, and saturation of concepts during inquiry (Morse et al., 2002). As a consequence, trustworthiness of these findings is enhanced.

Findings

Characteristics of the Sample Group

A total of 22 audio-taped interviews were completed: nurses (10), physicians (5), respiratory therapists (3) and other health professionals (4). The majority of participants were female (96%), worked full time (77%), were very experienced NICU practitioners (73%) and worked a combination of days and nights (64%) in their respective roles in the NICU. The majority of interviews were completed face-to-face (73%); however two participants were interviewed together and four interviews were carried out by phone (Table 19 – page 214).

Effective Knowledge Transfer Strategies within the Interprofessional Team

Participants provided many examples of effective strategies they have used to facilitate knowledge exchange and uptake during the process of IPSDM in NICU. Six themes emerged: knowing your audience, creating a credible message, being an effective messenger, getting your message across, anticipating outcomes and power and control issues. A visual representation of the findings and the relationship between concepts has been developed in Figure 14 (page – 215). These concepts illustrate components of the IPSDM process represented by the green triangle of The Shared Decision Making and Health Care Team Effectiveness Model (Figure 3 page 21) developed for this study. An overview of the findings is presented below with some example quotes for illustration.

Knowing Your Audience

The first theme that emerged from the key informant interviews was related to the target audience. This meant knowing the audience, knowing who can effect change, and being perceptive about non verbal cues during team deliberations.

Knowing your audience involves understanding the personalities, attitudes and expertise within the group. It is also means using different language depending on who is receiving the message (e.g. parents or health care professionals), and knowing how much knowledge is shared in order to tailor the message appropriately.

> **(RN5)** It depends on who you're directing your information to….If I am explaining to a parent,…if I'm reiterating what happened on rounds,….I would use different language if it's a physician.

> **(RT3)** Over time you learn to pick your battles…You get to understand the dynamics of the personalities that you're with….Sometimes it's difficult to get your message across…..Ultimately, it's how well they are good listeners.

Participants also stressed the importance of knowing who is accountable and directing the message to the appropriate person in authority, the person who can effect change.

> **(RN9)** Sharing that perspective with [person 2] because they perceived her as a person in authority who would be able to effect change

The final component of this theme was being perceptive about non-verbal cues within the group. An important aspect of being involved in SDM is not only to listen and hear those who speak up, but also pay attention to the silence and not to assume silence means agreement.

> **(MD5)** This is the decision, or this is where we're leaning, does anybody disagree...and why do you disagree… That person, who's frowning in the corner…knows something, or has a feeling about something…that's not being brought out… So I look around the room and try to be perceptive of others… Is everybody smiling…or frowning?

Although feedback from three of the four professional groups included information about the target audience, the perspectives across groups were somewhat different. Nurses talked about tailoring your message to fit the audience (e.g. parents or physician) and knowing who is accountable for the decision and who can effect change. This suggests that nurses are strategic in selecting the most appropriate audience for their message.

Respiratory therapists talked about picking battles, demonstrating a tactical approach in selecting the audience; however this frame of reference is somewhat less collaborative than the examples described by the nurses. The other health professional groups did not talk about audience selection at all. This may be because they are only consulted when their expertise is needed. Therefore, their audience is pre-determined and perhaps less of a consideration.

Physicians were the only group to stress the importance of being attuned to the non-verbal aspects of communication, reading the target audience and seeking input when necessary. This process of pulling information from the target audience, in order to facilitate knowledge exchange and uptake is a knowledge translation strategy that has been reported in the literature to effectively link research (evidence) to action (World Health Organization, 2004; Lavis, 2004; Lavis, Lomas, Hamid, & Sewankambo, 2006).

Observations of IP rounds also support the theme of knowing your audience. Although all team members provided their input to the audience present during rounds, questioning was selective and directed to the specific professional responsible for that aspect of the care (e.g. the nurse for immediate status or overnight changes, the respiratory therapist for respiratory status or ventilation, the pharmacist for medications or drug interactions, the dietician for specialized formulae, the social worker for family coping or community resources and the physician for medical management plans).

Creating a Credible Message

A second theme that emerged from the key informant interviews was about creating a credible message. Two critical aspects were emphasized: the first was how you framed the message and the second involved reinforcing your message to facilitate uptake by other members of the IP team.

Framing the Message

All participants recognized research evidence and the valuable contribution of experienced members of the team as essential to decision making. However, as illustrated in the quotes below, other forms of evidence were also used to frame the message.

> **Research Evidence (Scientific evidence)**
> **(RN7)** We need…both research and practice-based experiential evidence.
>
> **Clinical Evidence (Current status of infant and family – the facts)**
> **(OHP3)** Once my assessment is done….. It's very important for me to document that on the health chart, and then communicate any specific issue which has to have a little bit more attention with the medical team.
>
> **Professional Experience (Professional knowledge, tacit knowledge)**
> **(RN7)** Inter-disciplinary teams work the best, when they have both (evidence and experience)… It doesn't work when you have young nurses and young new residents that are just coming their first day…and nobody has the experience.
>
> **Practice-Based Evidence (What has worked before for self and others)**
> **(RT3)** You have to show concrete data that that didn't work, for them to accept your original suggestion….You have to be willing to show them that you've been there, done it, tried it, it didn't work.
>
> **Patient / Family Evidence (Advocacy – defending patient/family rights)**
> **(RN1)** You come to the table with…advocacy for the parents…you advocate for the babies' comfort and their development and growth within the family. I think you have to do it, in order to be heard.

Observations also revealed that knowledge about the availability of health care resources was also considered important to members of the IP team. For example, knowledge about human resources available for staffing in the unit or for transport of patients, knowledge about the availability of resources (e.g. numbers of high frequency ventilators onsite), and knowledge about site specific outcome data used to counsel parents on different aspects of care, was used by members of the IP team during IPSDM deliberations.

Reinforcing the Message

Aside from using different forms of evidence to frame the message and increase its credibility, participants also emphasized the need to reinforce or bring attention to the message. Reinforcing the message involved personalizing the message, speaking up, speaking often and being persistent or being a "squeaky wheel". Reinforcing the message was also about speaking from experience, and suggesting solutions.

> **(RN1)** Being a squeaky wheel…bringing forth opinion and evidence, and advocacy.
>
> **(RN9)** You have to identify the problem, and then you have to have put in some thought as to how to solve it…. It's great to identify an unworkable situation or something that you think is going to be, is going to impact negatively. It's really so much better to be able to identify that problem but also provide or suggest some solutions….or pose some questions that may open some doors to some problem solving.

Participants from all four professional groups talked about framing or supporting their message using research evidence, clinical facts as well as experience. Nurses, respiratory therapists and other health professionals provided examples of strategies they have used to reinforce their message to increase its persuasive value. This suggests that practitioners, in the context of the IPSDM process, see themselves as having to push the message out to the other members of the team in order to be heard. Pushing information out to the target audience in order to facilitate knowledge exchange and uptake is a knowledge translation strategy which has been reported in the literature to effectively link research evidence to action (World Health Organization, 2004; Lavis, 2004; Lavis et al., 2006).

While the physicians talked about having to consider both evidence and experience and backing up their opinions with facts, they did not talk about the need to persuade others per se. This may be related to the hierarchy that exists within the team with the physicians needing to rely less on persuasion than other members of the team to ensure their voice is heard.

Information obtained during observations of IPSDM substantiates these views. Three exemplars are provided here. First, use of evidence to backup or frame opinions was consistent across all professional groups during rounds. Where the groups differed was on the type of evidence they used. Physicians most commonly provided research evidence (e.g. RCT evidence) although this type of evidence was also provided by some other health professionals. Nurses and respiratory therapists most commonly provided clinical evidence

(e.g. infant's status) or experiential evidence (e.g. past experience) when backing up their opinions.

The second example involves an interaction that occurred when a nurse, who was advocating for increased pain control for her patient, provided descriptive details to back up her point that the infant was experiencing pain. The physician was initially not convinced and the nurse had to revisit this point numerous times, continuously reframing the message and providing more detailed examples to back up her opinion in order to convince the physician that pain medication was required. Had she not persisted, or not been able to relate the infant's clinical status to specific clinical and research evidence that substantiated the need, the point would have been bypassed and the patient needs would not have been met. This nurse was experienced, confident, an advocate for the infant, informed and very convincing. In the end, the physician was able to see the situation from her perspective, understand the issue and together they came up with a solution which satisfied the need. The third example demonstrates a non-collaborative strategy used by physicians to get their message across to other members of the team. With respect to inconsistencies in practice noted to be an issue, a physician was heard to say, "I just have to write it as an order to ensure it is carried out. They'll see the order and I won't have to worry about it being done". This is an example of the power differential that exists on the team.

Being an Effective Messenger

The third theme that emerged from the interviews was about being an effective messenger. Three aspects were emphasized: being present and participating in the discussion, the demeanor of the messenger and the confidence and credibility of the messenger during delivery of the message.

Being Present and Participating in the Discussion

Being an effective messenger involves not only being present but having the confidence to provide input to the discussions. However, it is not sufficient to just speak up.

Participants emphasized the importance of communicating so everyone understands, using a language that is understood and backing up opinions with evidence that is meaningful for others. Body language and position within group, although less obvious, were also reported to be key factors that influenced how a messenger is perceived.

> **(RN3)** If you're not there, you have no voice, so decisions will be made and you may or may not agree with them, but that's too bad, you didn't have a voice.
>
> **(RN4)** But some nurses actually will use their body language to position themselves within the group…it's your physical presence, your presence at the bedside…..being prepared for rounds… these are rounds for my patient.

Nurses, other health professionals and physicians all talked about the importance of being present and speaking out during discussions in order to have a voice in decision making. This presents special challenges for IPSDM when all members of the team may not be available for discussions at the time decisions need to be made. For example, there is only one respiratory therapist on during each shift and that individual may be attending to the needs of more than one infant, and may be pulled from rounds at any time. Nurses spoke about presence from the perspective of positioning themselves within the group. This strategy suggests that, for nurses, presence and speaking out are not enough to ensure they are heard. They need to be more assertive, in order to push their message out to the team.

Demeanor of the Messenger

The second point emphasized by participants was how important the demeanor of the messenger is to the delivery of a message. Character and personality are important determinants of having a strong voice. It depends on the expert providing the evidence how the message is received. Effective interpersonal and communication skills are essential and presenting yourself in a manner that people will be receptive to and that is conducive to others listening. Effective messengers are respectful of others, respected themselves, strong and trusted, and they are perceived to be credible members of the team.

> **(MD3) A**re you respected? Are you not respected? Are you presenting yourself in a manner that's conducive to other people even listening...Are you butting in…Are you suggesting … Are your opinions valid...Do you have sound background for bringing them up…such that people…can even entertain them as an option…Because if you're just talking nonsense, then people aren't going to listen…..It's all just in the demeanor… It's all in the way that it's brought… to other people's attention.

All four professional groups spoke about the demeanor of the messenger and how important this factor was to whether a message was valued and taken into consideration during decision making.

Confidence and Credibility

Participants indicated that being seen as a credible messenger comes with experience and team members who present their case with confidence are the ones who get listened to. It is important to do more listening than talking in order to fully grasp where others are coming from. In addition, effective messengers work to get people on their side, listening to them and trusting and understanding their perspective.

> **(RN7)** People do listen to me, because they trust me….It doesn't mean they agree with me always, but they do trust me… When I'm teaching new nurses… I really express [the importance of] being confident in yourself… Nurses need to learn…how to present their case with…confidence, because that's… that's who gets listened to.

> **(RT3)** It depends on the character, your personality, and who you are….My voice was quite small, starting off…But the more confident you become and realize that you're able to pick up on certain cues….My voice is stronger now.

Information obtained during observations of IPSDM once again substantiates these views. Two exemplars are provided. The first example illustrates the importance of presence. Although every attempt was made to delay rounds until all members of the team were present, to round up the team and sequence the order the infants that were discussed so the essential personnel were available, sometimes the full team was not present for discussions. When this occurred, there was an attempt to address a question on behalf of the absent member with other members giving feedback or recommendations (e.g. ventilator setting changes in absence of the respiratory therapist; medication questions in absence of the pharmacist; family coping questions in absence of the Social Worker etc). Other times, the question was just deferred until the missing team member could be reached. However, there were examples during IPSDM where the decision taken by the

team was altered after contact with the expert was re-established. This outlines the importance of being present and being in a position to provide input to the team for quality decisions to be made. It also demonstrates the inefficiencies in IPSDM experienced by the team when there are delays or reversals of decisions that people thought had been resolved.

The second example has to do with the demeanor of the messenger. This was clearly evident during observations where the credibility of the messenger was lowered simply because of the way a message was delivered. Attention was easily diverted and no one listened. There is a fine line between selling, being persistent, being assertive and persuasive and being perceived as having a confrontational demeanor. The former facilitate knowledge exchange, the latter shut down communication channels and the opportunity to get your message across.

Getting Your Message Across

The fourth theme that emerged from the key informant interviews was about getting the message across in order to facilitate IPSDM. Three aspects were described: use of formal and back channel communication pathways and effective communication processes.

Formal Channels

The IP team meets daily for formal patient care rounds to review the patient status, discuss issues and make short and long term plans to meet the infant's care needs. Participants acknowledged this as an ideal opportunity to convey their perspectives and interact with other team members to discuss the issues. Team case conferences are also used to facilitate team discussions and decision making.

> **(OHP3)** Because the parents are there most of the time, it is sometimes difficult to talk…So some things are said in my office, or during a case conference.

Patient advocacy was frequently described by participants as a trigger to facilitate the exchange of information during IPSDM.

> **(RN1)** You come to the table… and you advocate for the parents….you advocate for babies' comfort and their development and their…. growth within the family…You have to do it, in order to be heard, in a manner that uses…..real clinical evidence-based.

Back Channels

However, knowledge exchange also occurred through back channels. One approach involved scheduling time (e.g. meeting privately following rounds or sitting down with someone to have a chat) or targeting specific individuals (e.g. picking up the phone, passing the message on to the next peer or looking for a time and appropriate place to make your point). Another strategy involved catching people on the fly (e.g. going up to the person to offer more or dig deeper, catching hold of the doctor in the afternoon or waiting an hour and trying again). The quotes below illustrate this notion of doing what ever works to get a message across.

> **(RT2)** I have no qualms picking up the phone to talk directly to a physician if I don't understand clearly what they wanted from me, or if I don't think it's in the best interests of the child, you know what? I don't have to wait for rounds, I can do it after, I can do it during… I don't feel that all decisions are made during that time…. I'll sit somebody down, and I'll have a chat with them so that they can understand why, where I'm coming from.

> **(OHP1)** You feel for a time and an appropriate place to make… your point. And that might not be at that instance…But it might be after rounds where you could go up to the person that you were having the previous discussion with, and just offer more, or dig a little deeper without, you know, stopping the process and creating a situation.

Use of Effective Communication Strategies

Participants also described specific communication strategies that helped to get their message across. These strategies included: asking pertinent questions, not interrupting, asking for clarification, waiting for a response, listening and verifying. Effective exchange of information also requires the messenger to be organized and focused during their "5 minutes of airtime", to use repetition, and to ensure a message is received and understood.

> **(RN4)** Being organized…, getting to the point…highlighting what are your patient concerns for…your five minutes of air time…being very focused.

> **(MD1)** Communication, communication, communication….which means wait…listen, understand what the person said, verify this, and then after say, "I have to say this. Listen to me now. Now is my turn."…This is communication….and then be sure that the other person understands… what you meant by that….What the message is? Is it received?

All four professional groups talked about use of different transfer methods to facilitate uptake of information and ensure their voices were heard. However, nurses and physicians talked the most about the effective communication processes they used rather than formal or back channel communication pathways. Nurses emphasized the importance of being focused and being efficient about getting the message across (using their limited air time well). Physicians, in their leadership role, presented facts to inform and solicit agreement rather than as a way of persuading as was the case for the other members of the team. Other health professionals and respiratory therapists emphasized use of all three approaches to get their message across. This may speak to the fact that they are not always present for rounds and must use multiple strategies to ensure their voice is heard.

Information obtained during observations of IPSDM once again supports these views. Two exemplars are provided: effective communication processes and back channel communication. The first example is an illustration of using your five minutes of airtime well. Nurses, for the most part, were very adept at presenting about their patients. In fact, the more succinct and to the point they were, the more they seemed to be able to hold the attention of the attending physician, particularly if it was a hectic morning with lots of interruptions. The other important skill nurses demonstrated was to be able to remain focused on what they were saying and come back to their important points or issues in spite of constant interruptions that occurred.

Use of formal channels of communication during rounds was repeatedly observed. However, back channel communications were also observed. For example, quiet side bar conversations happened frequently, phone calls were made from the room to ask an expert about a key piece of information relevant to the case or pass on information to them (e.g. pharmacist, surgeon, discharge planning nurse, skin care nurse, PICC insertion team, infectious disease specialist etc.) or catching hold of an expert who happened to come into the unit about another issue, were all common practices.

Expectations of IPSDM

The fifth theme that emerged from the key informant interviews was related to expectations of IPSDM. Participant responses were focused around two main expectations: knowing that their professional perspectives were considered during decision making and that the decision addressed infant and family needs.

Professional Perspectives were Considered

Ensuring their message was listened to, heard, and understood by other members of the group was essential to a successful IPSDM process. A number of examples were cited as indications that the message was received and that the team got it (e.g. input was verified as received understood, input was acknowledged by other members of the team as valuable, questions followed back on what was said and opinions were actually integrated into the solution).

> **(RN9)** The questions that you ask follow back on what somebody has said….Somebody who listens to you and somebody who hears what you say, and feeds back to you a question that shows you that they listened to you…..really hear or understand what you were trying to say.

> **(MD1)** At the other end, there is a reception……and there is an answer….or, there is an understanding, communication arrives…Yes you understand what I mean, you do not have the answer, and you have to think about it.

Ensuring the Decision Addressed Infant and Family Needs

The actual endpoint decision was less important to participants than the processes used to reach that decision. A decision was generally acceptable if it could be rationalized by all, it was made following consideration of the opinions of all participants, it addressed infant and family needs, and it was made in the best interests of the child.

> **(RN2)** I may not agree with the decision but, I know that we've looked at the decision from the RT [perspective], we've looked at the parents' perspective, which I think is the most important. We've looked at the perspective from the nurses, what they feel is important about this decision…and as long as they can rationalize why they've come up with that decision…that would make me be able to live with the decision.

> **(RT2)** If it's in the best interests of the child…I'll sit somebody down, and I'll have a chat with them so that they can understand why, where I'm coming from….I am (persistent).

Nurses, other health professionals and physicians all emphasized the importance of ensuring all perspectives were considered. Respiratory therapists on the other hand spoke mostly about the needs of the babies and families and ensuring decisions take into consideration the best interests of the child.

Information obtained during observations of IPSDM once again substantiates these views. Two exemplars are provided. Nurses were strong advocates for the infant. Time and time again, a nurse would work to sway the group to see her point of view in relation to perceived needs of the infant and / or family. For example, it might be related to the need for a mother to hold (kangaroo care) her infant for the first time, the need to support breastfeeding, the need to establish or increase pain control for an infant, the need to pace care to give the infant some uninterrupted sleep. Many examples were observed where nurses demonstrated their frustration with the decision making process because they felt the needs of the infant and or family had not been met.

The other aspect of this theme was also evident during observations – ensuring all perspectives were considered in coming to a decision. This was a priority when the team was grappling to come to a decision for complex issues. Decisional conflict within the team was also evident during some of these discussions. The basis of the conflict stemmed from differing priorities of each of the team members, how best interests of the infant were defined, whether all team members had been able to provide input during discussions, how evidence was valued by different members of the team and whether the decision was urgent or not. In essence, team members who were uncomfortable with a decision that was made often felt this way because they perceived all perspectives necessary to make an informed decision had not been considered.

Although collectively, participants described using these strategies to ensure their voices were heard during the process of IPSDM, during observations, clinicians did not always adhere to every element. A number of exemplars provide evidence to support this

observation. In one case observed during rounds, the nurse presented her concerns about some feeding issues the baby was experiencing. However, she did not seem to be cognizant of how her demeanor and approach (body language, background position within the group, rambling, little use of evidence) was affecting receipt of this message by the physician (not attentive, multi-tasking, interrupting, impatient to move on). In the end a more concise and focused message that was backed up with evidence might have been more effective in helping her get her input across.

In a number of cases, team members were observed to use multiple methods to convey their message (e.g. speaking out during rounds, documentation of information, phone contact or back channel communication). In other words, although they were very persistent, the messengers did not always consider whom the most appropriate audience for their message should be. A lot of energy was spent on talking about issues, but not necessarily to person in the best position to effect change. Often the audience was simply defined by who was present. This speaks to the need to ensure that all the necessary participants are present for discussions to be effective.

Some messengers were very sensitive to how they came across during rounds (their demeanor), however they used a less than assertive approach when sending their messages (e.g. backing down at the first challenge). In some cases the messenger was credible, had wonderful demeanor, did a great job in articulating her concerns, framed the message appropriately to make her point, spoke to the most appropriate person but did not ever verify whether the message was received, understood and accepted by the team. In other words, the resulting decision was made without consideration of this information. Sometimes the message itself was just not clear or evidence was not used to back up the points the messenger was making, resulting in loss of credibility of that messenger in the eyes of the other members of the team.

Power and Control Issues

The final theme to emerge from key informant interviews is related to power, control and ownership of information and aspects of care. One of the nurses described how some professionals perceive themselves to be caretakers (or owners) of certain aspects of care. Being perceived as just the custodian (or babysitter) versus an official caretaker diminishes your effectiveness as a messenger.

> **(RN3)** Certain professional bodies feel that they have ownership of….one piece of the baby's body to look after and they really do feel…a sense of ownership, and that we're just custodians….but they're the ones that are the official caretakers.

Other participants described power disparity within the IP team when they spoke about responsibility for the decision.

> **(RN3) A**lmost always it's the physician that makes that final decision…That's a question of accountability…Who's ultimately going to be accountable for what happens to this baby?
>
> **(AH1)** Ultimately, the physician is going to be the one that has to make the final decision, but I feel that we are all contributing information….weighing pros and cons…It is a triangular vision of power, and the physician…is at the peak and is responsible.
>
> **(MD2)** It depends whether it's…a treatment decision, or a medical approach decision, or whether it's a social situation, or the well-being of the patient decision…I think the person involved in the decision is…the one who really holds the responsibility on their shoulders? Legally the final responsibility is to the MD.

Discussion

Participants provided many examples of the strategies they have used to ensure their voices are heard during IPSDM. Evidence from the literature is presented here which gives credence to these findings. Two discussion points are highlighted: knowledge exchange within the IP team and persuasive communication.

Knowledge Exchange

Many of the strategies described by participants used to facilitate knowledge exchange during IPSDM clustered into themes that are consistent with knowledge translation (KT) research. For example, in order to facilitate dissemination of research evidence, it is important to consider to whom the research knowledge should be transferred

(Lavis, Robertson, Woodside, & McLeod, 2003). According to Lavis and colleagues (2003), this means knowing:

> Who can act on the basis of the information; who can influence those who can act; which of these target audiences can we expect to have the most success and finally, which messages pertain most directly to each of these individuals or groups (p. 225).

A very similar message was brought forward by participants in this study that emphasized tailoring the message to fit the audience is important for IPSDM.

Participants' perspectives are also consistent with the literature on evidence-based practice in which different forms of knowledge are seen to be fundamental to professional practice and decision making (Titchen, 2000). There are five potential sources of knowledge described in the literature relevant to informing clinical practice (Stetler, 2001; Goode & Piedalue, 1999; Rycroft-Malone, 2004; DiCenso, Ciliska, & Guyatt, 2005; Haynes, Devereaux, & Guyatt, 2002). The first type of knowledge is research evidence. The second type of knowledge is that gained from clinical experience, also known as tacit knowledge (Titchen, 2000) or clinical expertise (Haynes et al., 2002; DiCenso et al., 2005). The third type of knowledge is based on patient and family preferences and actions. The fourth is knowledge about the local context of care (e.g. quality data, chart reviews, other operational and evaluation data) and health care resources. The fifth and final source of knowledge fundamental to practice and decision making is about the clinical state, setting and circumstances. Participants' perceptions were consistent with this literature and included examples of all five sources of information.

Transfer of research evidence has also been found to be more effective if it is presented in the form of actionable messages, and includes solutions as part of the message (Cordeiro et al., 2007; Lavis et al., 2003). Again, this is a very similar message to that presented by the participants in this study who emphasized that framing the message

with evidence, reinforcing the message and suggesting solutions improves uptake of the message by other members of the IP team.

The third point for discussion is about how important the credibility of the messenger is to successful knowledge transfer (Cordeiro et al., 2007). Opinion leaders who are seen as credible messengers have been used to facilitate knowledge transfer (Lavis et al., 2003). According to participants in this study, credibility of the messenger is also essential for IPSDM. In that context, each member of the IP team may represent his/her professional view and function as an opinion leader or spokesperson for his/her profession.

Having the confidence and ability to participate in discussions about a case and to present logical, coherent arguments to other members of the team has been identified in other studies as an important determinant of whose voice is heard and listened to (Carros, 1997; Coombs, 2003; Coombs & Ersser, 2004; McHaffie et al., 2001; Porter, 1991). However, what gives value to a message varies among different professional groups. In an ethnographic study about medical hegemony as a barrier to IP practice in intensive care (Coombs & Ersser, 2004), medical staff expressed frustration with the inability of nurses to defend their arguments on rounds (Coombs & Ersser, 2004). Therefore, disseminating information is not enough. Communicating in a way that your message is understood and valued by the other members of the IP team is essential to IPSDM.

The fourth theme is related to use of effective communication strategies. According to KT research, interactive communication between the purveyors of research and audiences is most effective (Cordeiro et al., 2007). Once again, findings from this study are consistent with this evidence in that participants described use of interactive engagement between members of the IP team, such as use of face to face meetings and verifying information to ensure the message is received and understood to facilitate knowledge exchange.

Use of boundary objects has been identified as an effective way of getting a conversation going and facilitating dialogue among members of diverse groups. A boundary object is a “neutral entity around which information can be exchanged that helps create the conditions ….for dialogue on other more serious matters” (Gibbons, 2008, p. 4). The key elements of a boundary object are that it encourages allegiance among individuals and increases willingness of participants to not just compromise but to improvise (Gibbons, 2008) in order to come to a shared understanding of the situation. Patient or family advocacy was often used as a way to engage members of the IP team in discussions and could be considered an example of a boundary object in this study.

Participants described use of both formal and back channel communication pathways to get their message across during IPSDM. Gibbons (2008) refers to use of transactional spaces as a way to facilitate the exchange of information at the boundaries between subcultures. Transaction or trading of information promotes the search for a common language to reconceptualize the issue and reach common understanding of the situation (Gibbons, 2008). Gibbons (2008), also stipulates that, “boundary objects and their associated transaction spaces, are key entities if cooperation is to be established, consensus generated and knowledge produced” (p. 4). IPSDM requires members of the IP team to interact effectively to develop a shared understanding of the patient situation and evidence from this study suggests that effective use of boundary objects and transactional spaces can facilitate this process.

Finally, KT research indicates that transfer of evidence is facilitated by considering the expected outcomes of the transfer (Lavis et al., 2003; Cordeiro et al., 2007). Participants in this study also described IPSDM in terms of expected outcomes: to reach a decision that takes into consideration all evidence and is made in the best interests of the infant.

Power and Control Issues and Persuasive Knowledge Exchange

The second discussion point is related to power diversity within the IP team and its effect on IPSDM. Power is defined as the capability of one party to exert influence on another to act in a prescribed manner (Panteli & Tucker, 2009). According to The Power/Interaction Model, social influence over other may be based on: a) referent power (delegated authority or positional power), b) legitimate power (social position or professional status), c) expert power (knowledge and expertise), d) informational power (persuasion), e) coercive and f) reward power (Raven, 1993; Raven, 2008). Shared decision making implies participants are equals in decision making. However, by definition, members of an IP team in an intensive care environment are not all equal. Someone is ultimately responsible for the decision and, as pointed out by participants, this is often the physician. In the ICU, decision making continues to be strongly driven by medicine, maintaining physicians in the powerful role of decision maker (Coombs, 2003) and reinforcing knowledge and positional power diversity within the IP team.

Research literature indicates that equality among professionals, one of the basic characteristics of collaborative practice (Henneman, Lee, & Cohen, 1995; King, 1990), is impeded when there are power differences among the professionals in a team (Henneman et al., 1995; Lockhart-Woods, 2000; Reese & Sontag, 2001; San Martin-Rodriguez et al., 2005). Therefore, SDM as a key attribute of IP collaborative practice (Baggs & Schmitt, 1988; Lemieux-Charles & McGuire, 2006) may also be impeded when there are power differences among the professionals on the team.

The findings from this study are consistent with the literature in which power disparity and conflict are described as barriers to IPSDM (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Coleman, 1998; Coombs, 2003; Coombs & Ersser, 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998b; McHaffie & Fowlie, 1998a; McHaffie et al., 2001; Melia, 2001; Porter, 1991; Viney, 1996). Since higher status professions can sway the treatment

plan (Sands et al., 1990; Reese & Sontag, 2001), it is essential that practice models address the positional power and knowledge power disparity which are a reality in an IP team to ensure equitable participation in the process of decision making is possible.

Persuasive knowledge exchange provides leverage for members of the IP team when power disparity has the potential to limit the SDM process. Persuasion can occur through central or peripheral routes (Mason, 2001). The central route involves thoughtful processing of information, accurate reflection of the arguments and analysis of the information contained in the message (Mason, 2001; Petty & Cacioppo, 1981). This process requires attention, understanding, integration of new information, evaluation of ideas (Mason, 2001) and is more likely to result in stable opinion change (Mason, 2001; Stiff, 1994; Woods & Murphy, 2001). The peripheral route to persuasion is based more on contextual cues, such as length and comprehensibility of the message, the pleasantness of the environment in which the message is conveyed (Mason, 2001) or communicator credibility (Stiff, 1994; Woods & Murphy, 2001). Individuals who change their opinion because of peripheral cues may be more easily engaged but are more likely to change their opinion again because their new view is not based on thoughtful processing of the message (Mason, 2001). Therefore, consideration of both central and peripheral routes for persuasion is important.

The quality of the message is critical to the persuasive process (Mason, 2001). Messages that are easy to comprehend, have clear arguments, are coherent and plausible and are presented by credible authors (Mason, 2001; Murphy, 2001) are highly correlated with persuasiveness and success in bringing about change in opinion. Strongly persuasive messages also address conflicting points of view and include arguments for the advantages of one over the other (Vosniadou, 2001). These factors are consistent with the examples described by participants in this study emphasizing the importance of both the message

and the messenger and use of central and peripheral routes to enhance the persuasive impact of a message.

Findings from this study suggest that knowledge exchange, through persuasive communication and debate, is important during IPSDM. To be a persuasive means having the skills to be an effective messenger, to craft credible messages and to use creative ways to get the message across. This approach provides all members of the IP team with the skills to participate in IPSDM, it ensures all voices are heard, and it encourages thoughtful processing of the information to optimize quality decision making.

Strengths and Limitations

Limitations of this study include: transferability of findings, social desirability bias and recall bias. The goal of this study was to explore IPSDM in depth through the experiences and perceptions of the IP team in one NICU. Therefore, the sample group was limited to those practitioners working in the unit at the time of data collection. Replication of this study in different intensive care settings would help to increase the validity of results.

Social desirability bias is a term used to describe the tendency of respondents to reply in a manner that will be viewed favorably by others (Donaldson & Grant-Vallone, 2002). According to Dillman (2000), “face-to-face interviews have the highest probability for producing socially desirable answers” (p. 63). Although influence of social desirability bias could not be completely alleviated, the impact was limited through voluntary participation, ensuring confidentiality of responses by using anonymous audio-taped interviews and transcripts, and reporting only anonymized results.

Data collected during the interviews was based on participant self-report. Although self-report provided information about the participants’ knowledge and understanding of the IPSDM process and their perceived roles in the process of IPSDM, the results may be colored by participants’ interpretation and recall of the facts (Adams et al., 1999). However, participants recruited for this study were all familiar with the IP model of practice in this unit,

an interview guide was used to probe the professional perspectives about the IPSDM process and multiple perspectives were obtained across all professional groups making up the IP team. In addition, observations of IP rounds provided a benchmark for comparison with interview findings.

Despite these limitations, a number of factors demonstrate trustworthiness. This was an exploratory study, and the processes used for data collection were simple, transparent and reproducible. These facts, along with participation of key informants from four professional groups, a rich data source collected during the interviews and saturation of concepts gives these findings substantial weight.

Conclusions

IP team decision making involves integration of information and perceptions from team members (Zsambok, 1997). The health care providers involved in decision making in intensive care are important to the quality of the decisions made. Since “the person who controls the definition of the problem defines the range of options available to solve it” (Drinka & Clark, 2000, p.78), it is essential to find ways for members of the IP team to be equal players in the process so that adequate information is available and decision making takes into account all voices.

Information gleaned through key informant interviews and observations of decision making interactions during patient care rounds demonstrated that IPSDM is an interactive process that requires participants to have knowledge, skills and confidence to participate fully in the process. Findings from this study have expanded our knowledge about the IPSDM process and provided insight into the process of SDM illustrated in the Shared Decision Making and Healthcare Team Effectiveness Model (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006), improved understanding of how different members of the team participate in the IPSDM process, and highlighted effective strategies to ensure professional voices are heard, understood and considered during deliberations.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

SD, along with members of her Doctoral Thesis Committee (BC, IDG, and JM), conceived the study. SD conducted the interviews, coded the verbatim transcripts, analyzed the results and wrote the paper. BC supervised the process, independently codes some of the transcripts, provided expert review of the thematic analysis and reviewed the paper. IDG and JM were advisors for the study, provided expert review of the thematic analysis and reviewed the paper. IG provided peer review of the thematic analysis and reviewed the paper. All authors have read, and approved the final version of this manuscript.

Table 18. *Interview guide*

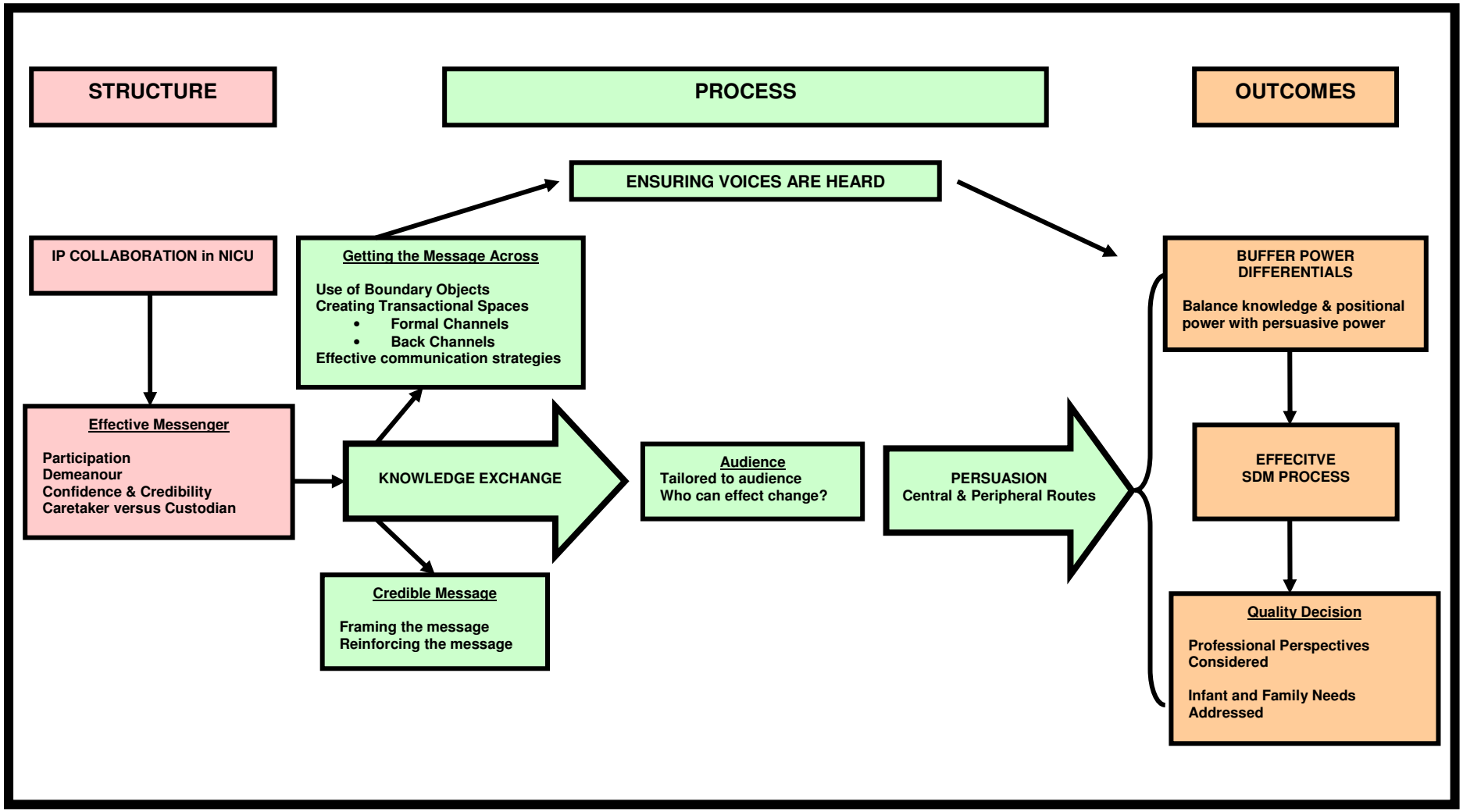
Interview Guide	
1.	What does the term 'shared decision-making' mean to you? Can you define it for me?
2.	Do you think shared decision-making is a feasible, effective and efficient way of making decisions in NICU?
3.	How do you know when shared decision-making occurs? What would I need to look for to tell me it had happened?
4.	Are all decisions shared among members of the interprofessional team in NICU or only certain decisions? a. Can you give me examples of decisions that are shared among members of the interprofessional team? b. Can you give me examples of decisions that are ***NOT*** shared among members of the interprofessional team?
5.	What do you think fosters shared decision-making in NICU?
6.	What are barriers to shared decision-making in NICU?
7.	What are the most important factors that the interprofessional team should consider when making a decision (i.e. evidence, values, resources, parent preference, or other factors)?
8.	How do parents factor into the process of interprofessional shared decision-making?
9.	Should parents be involved in the interprofessional shared decision-making process? If so, when should they be brought into the discussions?
10.	What is a 'quality decision' or the 'best decision'?
11.	How does an interprofessional team make a 'quality decision'?
12.	How do we know when a 'quality decision' has been reached?
13.	Each member of an interprofessional team sees the patient / family situation through their own professional lens (i.e. medicine, nursing, respiratory therapy, social work, pharmacy etc.). Therefore, c. How do we determine the lens to judge the patient / family situation by? d. How do we determine which options are best for each patient / family situation?
14.	Is there overlap in your area of expertise with other members of the team? Does the amount of overlap determine how much your expertise is taped?
15.	What is your (professional) 'voice' in the process of decision-making? What do you bring to the discussion?
16.	How do you ensure your 'voice' is heard in the decision making process?

Table 19. *Participant characteristics*

Category	Participant Characteristics	(n=22)	%
Profession	RN	10	45.5
	MD	5	22.7
	RT	3	13.6
	OHP	4	18.2
Gender	Male	1	4.5
	Female	21	95.5
NICU Experience	Very experienced (> 10 years)	16	72.7
	Experienced (5-10 years)	5	22.8
	Somewhat experienced (2-5 years)	1	4.5
	Novice (< 2 years)	0	0
Work Rotation	Days	6	27.3
	Nights	2	9.1
	Combination (days/nights)	14	63.6
Full / Part Time Status	Full time	17	77.3
	Part time	5	22.7
Interview	Face-to-face (individual)	16	72.7
	Phone (individual)	4	18.2
	Group (1 group of 2 participants)	2	9.1

Code: RN (nurses), MD (physicians), RT (respiratory therapist), OHP (other health professionals)

Figure 14. Key findings from informants - Persuasive knowledge exchange within the IP team



CHAPTER NINE

Integration of Results and Discussion

Summary of Results - Research Questions 1 and 2

A realist review of the literature was completed to synthesize research evidence about IPSDM in intensive care to determine the context, mechanisms and outcomes of this form of decision making and the barriers and facilitators to this process (Chapter 4 and 5). Nineteen articles representing 16 studies were retained for synthesis. The majority of studies included in this review dealt with ethical and end of life decision making. Although there was some application of routine clinical decision making, there were no studies that examined issues of IPSDM about specific decision types, such as triage or emergency decisions, chronic condition management decisions or values sensitive decisions.

The mechanisms critical to the process of IPSDM included having access to information and being knowledgeable, sharing, borrowing, and trading information, and reaching consensus by coming to a shared perceptual reality about the patient and family situation. Participating in discussions and being able to present logical, coherent arguments were essential skills. Values important to IPSDM included having respect for and trust of other professionals, and valuing different perspectives.

The outcomes of IPSDM have been shown to benefit patients, families, and health care providers working in intensive care settings. In addition, IPSDM has been shown to increase team effectiveness, improve the quality of the decision making process and the decisions made, and impact positively on health service delivery.

However, gaps in the literature exist. The majority of studies were limited to nurse - physician decision making. Although there was discussion about the importance of reaching consensus there was no discussion about how to reach consensus and what determines consensus versus groupthink. There was also limited information available about how to

overcome individual and IP decisional conflict when different professional perspectives, priorities and power differentials are at play. Thus further study was warranted.

Summary of Results - Research Questions 3 and 4

Following the realist review of the literature, a survey of core members of an IP team in NICU was completed to probe perceptions about collaboration and satisfaction with the decision making process across three decision types: triage, chronic condition management and values sensitive decisions (Chapter 6). Data from the survey provided baseline information for in-depth exploration of the processes involved in IPSDM in this unit. Perceptions about the extent of collaboration in decision making varied across professional groups and by decision type. Nurses and respiratory therapists were more likely than other groups to feel certain components of the decision making process (e.g. planning, communication, cooperation and consideration of all concerns) were less than optimal. The majority of statistically significant differences in professional perspectives about decision making were about triage decisions. Further in-depth exploration was required to understand the basis for these differences.

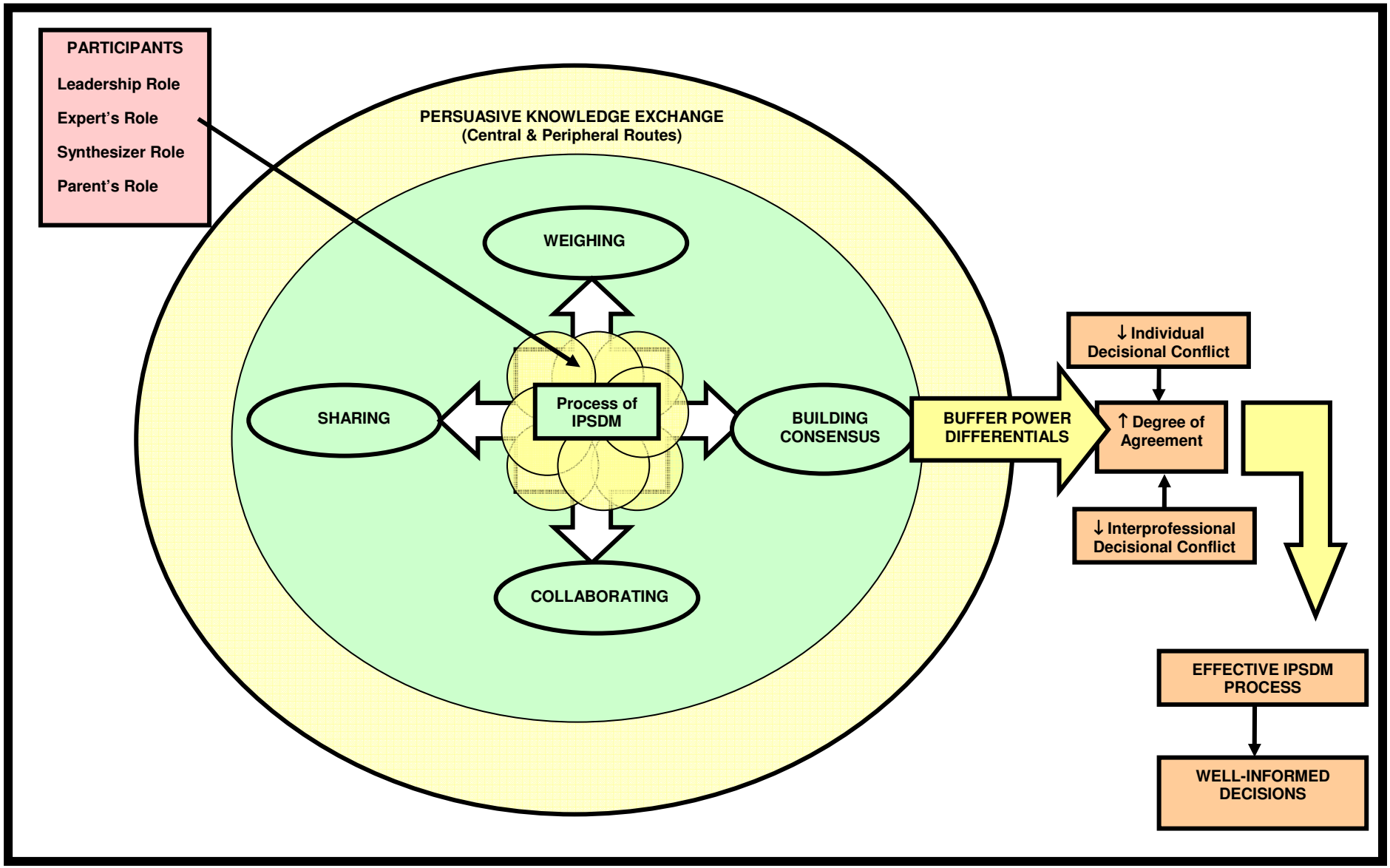
Summary of Results - Research Questions 5, 6, 7 and 8

Following completion of the survey, semi-structured interviews with members of the IP team working in NICU and observations of decision making interactions during morning rounds were carried out. The data from the interviews and observations provided information from selected participants about the meaning of IPSDM, the key roles involved in IPSDM, the processes involved in IPSDM and how different professionals ensure their voice is heard during IPDSM interactions in NICU? In addition, the findings provided insight into different professional perspectives found in the survey (Chapters 7 and 8).

The key components of IPSDM, described by participants, are presented in Figure 15 (page 219). According to participants, IPSDM requires a leader to facilitate the process of IPSDM, clinical experts, the parents and someone to synthesize the information.

Ensuring voices are heard during IPSDM requires input from all members of the IP team through a process of collaboration, sharing, weighing, and building consensus. Persuasive knowledge exchange is essential to buffer potential positional and knowledge power that may exist within the IP team. This process of decision making leads to decreased decisional conflict, increased agreement among members of the IP team through consensus building, an effective IPSDM process and well-informed decisions that take into consideration all perspectives. These components also fit within central green portion of the Shared Decision Making and Healthcare Team Effectiveness Model [Adapted from: (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006)] which was developed for this study (Figure 3, page 21) and help to illustrate aspects of the IPSDM process highlighted in this model.

Figure 15. Integrated results – Key concepts of the IPSDM process



Integration of Results

Integration of the results of this study revealed six key themes that are important to our increased understanding of IPSDM. These themes are: 1) variability in professional perspectives about IPSDM, 2) the time dimension, 3) weighing the evidence, opinion and options, 4) knowledge power and the weighing process, 5) the synthesizer role within the IP team and 6) persuasive messaging for effective knowledge exchange. An overview of each theme is summarized below, highlighting new information and the potential implications for practice and research related to IPSDM.

Variability in Professional Perspectives about IPSDM

The results of the survey of the IP team in NICU (Chapter 6), revealed significant variation in professional perspectives about collaboration and satisfaction with the decision making process. Mean collaboration scores varied across professional groups and across decision types. The majority of significant differences were about triage decision making, with values sensitive decisions having the least differences across groups. Nurses and respiratory therapists were less likely than other professional groups to feel the decision making process was adequate. This was partly due to the fact they perceived planning, open communication and consideration of concerns from all members of the team to be lacking. Further probing through interviews and observations provided some insight into the basis of these professional perspectives.

Based on the interviews, it was clear that healthcare professionals' views differ about what constitutes IPSDM. Participants interpreted the term sharing three different ways: sharing information or professional expertise only, sharing in the deliberation about options or sharing in the decision itself. There was general agreement across all professional groups of the importance of having as much information as possible from as many perspectives as possible, in order to make a well-informed decision in the best interests of the baby. However, some of the nurses, other health professionals and one

physician in this study interpreted sharing to mean sharing in the deliberation about options (i.e. sifting through the information and deliberating together to identify the options for consideration) not just sharing information with each other.

Most commonly, the interpretation of sharing involved not only sharing information or sharing in the deliberation about options but also sharing in the decision itself. This view was expressed by some of the nurses, physicians and other health professionals but not respiratory therapists. A mismatch between individual expectations and actual involvement in the process of IPSDM may partially explain the results of the survey. In other words, members of the IP team who expected to be involved but feel excluded from certain aspects of the process may be less than satisfied. These findings highlight the need to develop clear guidelines for the process of IPSDM, articulating not only the steps in the process but the roles and extent of involvement of participants.

Professional perspectives also varied about how decisions are reached. When the question of consensus was probed in this study, it became clear that consensus meant slightly different things to different people. To some nurses, physicians and respiratory therapists, consensus actually meant achieving full agreement within the team (i.e. finding common ground through understanding and insight). To other participants, some nurses, physicians and other health professionals, consensus meant simple acceptance of another view rather than necessarily being in full agreement with a decision; in other words, agreeing to disagree. This interpretation suggests giving in to the rest of the group or to the ultimate decision maker and could be a manifestation of groupthink.

McMurtry (2007) takes the stand that consensus decision making is inappropriate and in fact unnecessary in the context of IP teams because of the potential for groupthink and decisions based on the lowest common denominator rather than decisions that are a composite of expert opinion, made in the best interests of the patient. Findings from this study give some credence to this opinion in that some participants perceived consensus to

include agreeing to disagree, or in other words simply backing down and accepting the opinion of others, even though they might not feel the decision was optimal. However, participants also emphasized the importance of all members of the IP team speaking out, challenging thought, putting forward different perspectives during the process of deliberations to identify the best options. Thus debate, a challenge and counter challenge process, is an essential strategy to avoid groupthink during IPSDM.

In summary, the different professional perspectives about collaboration in decision making, sharing and consensus found in this study have important implications for implementation of IPSDM in clinical practice. The findings suggest that members of the IP team may interpret the model of IPSDM quite differently and therefore have different expectations and understandings of the rules of the game and different interpretations about how IPSDM actually happens. This difference highlights the need for national organizations and relevant professional associations responsible for IPE and practice to work together to develop standardized definitions, policies, and guidelines for IPSDM, and provide recommendations to facilitate implementation of an IPSDM model in clinical practice.

The Time Dimension

The time dimension was an ever present theme throughout this study. Time was reported to be both a barrier and a facilitator in a recent realist review of the literature (Chapters 4 and 5). Time was identified as a barrier because lack of time interfered with getting to know participants and having sufficient time to deliberate over options (Baggs & Schmitt, 1997; Coleman, 1998; Kavanaugh et al., 2005; Lingard et al., 2004; McHaffie et al., 2001). In an intensive care setting, there may be little opportunity to develop relationships and get to know the people you are caring for. It is also very difficult to arrange discussions for urgent or complex situations, in such a way that all views and needs are respected (McHaffie & Fowlie, 1998b). Time was also reported to be a facilitator of IPSDM

in that it could trigger anticipatory planning (Carros, 1997) and encourage decision making discussions in advance.

Although time was not addressed in the collaboration survey directly, professional perspectives varied across different decision types (triage, chronic condition and values sensitive decisions) (Chapter 6). The majority of statistically significant differences in professional perspectives about decision making were related to triage decisions. Findings from this survey revealed that respiratory therapists were less likely than other HCP to feel decision making was adequate with respect to triage decisions. Differing professional views may be related to the time factor associated with each decision type. Triage decision making involves urgent situations that require rapid decision making. Triage decisions frequently involve respiratory therapists and a need for respiratory support for infants. Lack of time for information gathering, adequate communication and consideration of concerns from all members of the IP team may be an issue.

Time was also described as a barrier to IPSDM during the interviews (e.g. lack of time to gather information, lack of time for deliberations) (Chapter 7 and 8). Participants talked about the need to reinforce their message and push information out to other members of the team who did not have time to focus on the discussions. They talked about the importance of being present for team discussions in order to be heard but acknowledged this as a challenge because multiple competing priorities. They also talked about time from the perspective of optimizing transfer of information and having the ability to use your five minutes of airtime well to get your message across.

Time was also identified as an issue during observations. Although no triage decisions were observed, time pressures were ever present during rounds. Other babies in the NICU needed attention, the team needed to move on, interruptions were constant and the unit respiratory therapist was often required to leave rounds to attend to other issues, limiting their time to provide input into discussions. These examples highlight the need for

IP teams and practice organizations to acknowledge time is a barrier to IPSDM and to develop tailored strategies to address this issue (e.g. designate space and set aside time for uninterrupted discussions, advance planning for emergency situations).

Weighing the Evidence, Opinion and Options

The concept of weighing was identified by the participants in this study as an important component of IPSDM. Three aspects of weighing were described: weighing the options, weighing the evidence and weighing the credibility and opinions of others. The first two aspects, weighing the options and the evidence, have been partially described in other literature. The latter aspect, weighing the credibility and opinions of others, provides new insight into the process of IPSDM.

Weighing the options was noted to be an essential part of the process of IPSDM in a recent realist review of the literature about IPSDM in critical care (Chapter 4). Based on this literature, weighing options involves weighing the ideas about what each family needs (Carros, 1997), differentiating the pros and cons for each option (Kavanaugh et al., 2005; McHaffie et al., 2001) and then, in order to preserve parental autonomy, presenting the options, along with the pros and cons for each option, to the parents in an impartial way (Coleman, 1998; McHaffie et al., 2001).

Participants from all four professional groups in this study provided additional insight into the process of weighing the options. From their perspective, weighing the options involves a two phase process. The goal of the first phase is simply to gather as much information as possible in order for the IP team to come to a shared understanding of the patient situation and identify potential options for consideration. To this end, input from members of the IP team and the family must be received, synthesized and weighed. During the second phase, all those involved in making the decision, the IP team and parents, weigh the pros and cons of each option to reach consensus on the best choice for the situation.

The second aspect of weighing described by participants in this study involved weighing different forms of evidence. Interpretation of evidence has been identified as a barrier to IPSDM because of the values placed on different forms of evidence by members of the IP team (Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004; Viney, 1996). Research indicates that nurses and physicians use and value different types of knowledge. This contributes to a knowledge imbalance between nurses and physicians and, as a consequence, they adopt different positions in the process of clinical decision making (Coombs & Ersser, 2004; Coombs, 2003; Viney, 1996). Knowledge sources not accepted as valid by medicine are those areas that lack scientific credibility or that are perceived by physicians to be clinically superficial (e.g. choice of beds, bowel, skin, mouth and wound care) (Coombs & Ersser, 2004). Nurses see this knowledge as essential for patient management in ICU (Coombs & Ersser, 2004; Coombs, 2003). In addition, nurses see their in-depth knowledge of the patient and family as essential and report feeling undervalued when their input is ignored and their contribution in difficult situations is taken for granted (Coombs, 2003; Lingard et al., 2004; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; McHaffie & Fowlie, 1998b; Robinson et al., 2007).

Participants from all four professional groups in this study recognized research evidence as essential to decision making and nurses, physicians and respiratory therapists spoke about the importance of weighing the evidence as an essential step in IPSDM. However, in addition to highlighting the importance of research evidence, participants also acknowledged using other forms of evidence to frame a message and contextualize the information to the current situation. For example, participants emphasized the importance of presenting all the facts or the big picture (clinical evidence reflecting the status of the infant and family), describing what has worked before or what others have done (practice-based evidence), listening to other members of the team and integrating their input into their message (professional experience) and advocating for parents (knowledge based on family

preferences).

Although participants' perspectives outlined above are consistent with the literature on evidence-based practice in which different forms of knowledge are seen to be fundamental to professional practice and decision making (Titchen, 2000), weighing different forms of evidence is a challenge. Although, critical appraisal of research evidence is a part of pre-licensure education for health care professionals and an expectation of practice, the notion of weighing evidence that comes from other sources is an issue because of the values placed on different forms of evidence and the subjective judgment involved in determining importance to the decision. The results of this study highlight the need for additional research about how to effectively weigh evidence from different sources to assist in IPSDM.

A third, and new, interpretation of weighing emphasized by participants in this study involved weighing the credibility of an opinion. The definition of IP collaboration highlights the need for IP team members to understand each other's role (D'Amour & Oandansan, 2005; Xyrichis & Ream, 2008). However, McMurtry (2007), in reference to IP collaboration, states that "team members do not need to learn much, if anything, about each other's 'cognitive maps'" (p. 41) in order to collaborate in decision making. Findings from this study counter McMurtry's view by acknowledging the fact that weighing the opinion put forward by others during the process of IPSDM is an essential step in judging the credibility of the message. These findings suggest that members of an IP team need to know more about their colleagues than just their roles in order to judge credibility. At the very least, they need to be fully aware of the professional expertise, experience and skills of other team members in order to give weight to their opinion during the process of IPSDM.

Knowledge Power and the Weighing Process

Knowledge diversity among members of the IP team can influence IPSDM. By virtue of their different levels of expertise, training and experience, certain members of the team

have specialized knowledge that other members do not have. The more specialized the knowledge, the more potential power that individual has over others. According to participants in this study, knowledge disparity can influence IPSDM two ways. First, those with specialized knowledge and expertise may not consult with other members of the IP team because they don't feel they have anything to gain by doing so. This approach may limit the information available and the type and scope of the evidence that is considered and weighed during IPSDM.

Second, some professionals may be less willing to share or trade knowledge in an attempt to exert control and maintain their power position within the team. This also limits the information available and the type and scope of the evidence that is considered and weighed during IPSDM. In either regard IPSDM is compromised. These examples are consistent with the findings from the realist review of the literature (Chapter 4) in which ownership of information was found to undermine IP collaboration and decision making (Baggs & Schmitt, 1997; Carros, 1997; Lingard et al., 2004). Based on the findings from this study, professionals with knowledge power can obstruct IPSDM, and control the decisions that are made.

Although knowledge disparity can be a barrier to IPSDM, participants in this study also emphasized the benefits of having diverse expertise within the IP team. It provides a forum for consultation with others deemed to be experts in their field. It provides an opportunity to validate opinions and perspectives or in the words of one of the physicians "to make sure you are not missing something…it challenges you to go further with your own reasoning", It ensures all information is brought to the table for discussion, and in the end, it increase the support from all members of the IP team for the decision and subsequent care that will be required. Recognition and acceptance of the knowledge and skills of others (individual ownership), and sharing or trading of commodities (group ownership), is not only

necessary for team collaboration (Lingard et al., 2004), it is essential to facilitate the process of IPSDM to ensure well-informed decisions are made.

In contrast, knowledge overlap can also impede IPSDM by decreasing the extent of information exchange that occurs within the team. Participants in this study talked about situations where some members of the IP team do not always speak up because they perceive the other members of the team already know a certain piece of information. Thus, lack of information sharing can be an iatrogenic problem created because of blurred boundaries and common knowledge that exists among members of the IP team (Rushmer, 2005). Ultimately it may result in biased judgments, false consensus, or decisions based on less than adequate information.

Based on the literature and the findings from this study, sharing information facilitates the exchange of knowledge power, even though the hierarchical structure within the team remains. Further research is warranted to determine how best to address the issues at play, and to identify the most effective strategies to facilitate this process. This study has provided some useful insights to start the investigation.

The Synthesizer Role

Participants in this study perceived IPSDM was an essential form of decision making in NICU because of the complexity of patients' conditions and the multiple caregivers required for comprehensive care. A synthesizer role, someone who sifts through the details and synthesizes the information, was identified as key to the IPSDM process. This role was highlighted by all four professional groups. Most of the time, physicians synthesized the information. However, there were occasions where other members of the IP team were observed to function in this role too (e.g. the nurse during discussions for discharge planning, the respiratory therapist during discussions about optimizing high frequency ventilation or the social worker during discussions about complex social issues). Findings from this study suggest the need to ensure all members of the IP team receive

training to function as a synthesizer during IPSDM. This would involve having the ability to critically appraise different forms of evidence and having the skills to synthesize different sources of information into a cohesive whole to assist the team towards a shared understanding of the patient situation. However, more research is needed to understand the complexities of this role and which member of the team is the best person to function in the role in any given situation.

Persuasive Knowledge Exchange

Previous research has identified the ability to participate in discussions is necessary for SDM (Baggs & Schmitt, 1995; Baggs & Schmitt, 1997; Baggs et al., 2007; Carros, 1997; Coleman, 1998; Coombs, 2003; McHaffie & Fowlie, 1997; McHaffie & Fowlie, 1998a; Porter, 1991). In addition, research has also revealed that the ability to assert one's voice and make logical coherent arguments to other members of the team will determine whose voice is heard and listened to (Carros, 1997; Coombs & Ersser, 2004; Coombs, 2003; McHaffie et al., 2001; Porter, 1991). However, decision making continues to be strongly driven by the medical knowledge base and authority and the key holders of medical knowledge are therefore maintained in the powerful role of decision maker (Coombs, 2003). Valuing and sharing knowledge about the patient, in a process of trade, has been found to help facilitate not only the exchange of information, but an exchange of power as team members negotiate with one another (Carros, 1997; Coombs & Ersser, 2004; Coombs, 2003; Lingard et al., 2004).

Nurses are perceived and perceive themselves to have an insignificant power base within the decision making process (Coombs & Ersser, 2004; Coombs, 2003) and some nurses report finding it difficult to speak-up during decision making (Thomas et al., 2003; Reader et al., 2009). Research has demonstrated that senior nurses use informal overt strategies like arguing in support of their proposed line of action at the risk of attempted rejection by doctors, to ensure greater nursing input in decision making (Porter, 1991). Use

of such strategies has been found to reduce but not eliminate the power differential between doctors and nurses (Porter, 1991). However, I would suggest that arguing in support of a proposed line of action is not only insufficient; it can also be very detrimental to collaboration within the IP team. Based on this research, I hypothesize that a more tactical approach, through use of persuasive knowledge exchange, is required in order to get a message across.

Shared decision making implies participants are equals in decision making. The issue with IPSDM is that, by definition, members of an IP team are not all equal. Someone is ultimately responsible for the decision and, as pointed out by participants, this is more often than not the physician. For IPSDM to work, the IP team needs to move to an egalitarian process but how is this possible with the power differentials that exist in the current health care system?

Ray Williams (2010), contends that the answer lies in using influence and persuasion, without the use of power or control to sway members of your team. If power disparities exist, for example, positional power and knowledge power that are a reality in an IP team, the importance of persuasion as a strategy to buffer or balance the disparity increases. Based on the findings of this study, simply sharing information about the patient is not enough to guarantee input into the process of IPSDM. Persuasive knowledge exchange could provide leverage for members of the IP team when power disparity has the potential to limit the SDM process. So what is persuasion and how does it work?

Persuasion can occur through two routes, the central route and the peripheral route (Mason, 2001). Participants in this study emphasized the importance of both the message and the messenger to the process of IPSDM and use of central and peripheral routes to enhance the persuasive impact of a message. For example, creating messages that are succinct and easy to comprehend, being seen as a credible messenger and using environments that are pleasant and conducive to the exchange of information are ways of

targeting the peripheral route to persuasion. These strategies facilitate initial engagement of members of the IP team in shared decision making discussions and illustrate use of peripheral routes to persuasion.

However, strategies that target central routes for persuasion were also described. For example, supporting opinions with evidence, integrating ideas put forward by other members of the IP team into the message and presenting arguments that support or refute options and solutions. This approach requires thoughtful processing of information, and as such, requires sufficient time for knowledge exchange, analysis of information, and reflective thinking so the members of the IP team can come to a shared understanding of the issues. Successful participation in the process of IPSDM requires participants to have the knowledge and skills to create and deliver persuasive messages during the process of IPSDM in order to counter power disparity within the team.

Participants in this study described many strategies found to be effective to ensure their voices were heard during the process of decision making: knowing your audience, creating a credible message, being an effective messenger, getting your message across and consideration of expected outcomes. These themes are not only consistent with the literature on persuasion, they are also consistent with knowledge translation literature, which is focused on the transfer of evidence from researchers or purveyors of research to users of research information for policy decision making (Lavis et al., 2003). Although the context is different, the objectives are similar. Knowledge translation is not about SDM, but the concept of knowledge exchange is common to both.

How do those without power get their views across to those with power and to other members of the IP team? Research indicates that respect is an essential component for IP practice and SDM (Baggs et al., 2007; Lingard et al., 2004). This conclusion would suggest that if members of the IP team are mutually respectful, they would not need to be persuasive; they would simply listen to each other. Having respect for another team

member may ensure a courteous discourse and provide opportunity for each member of the IP team to speak and be listened to. However, it does not ensure that the messages conveyed are understood, valued and seen as credible by other members of the team. Based on the findings of this study, credibility of the messenger is an important factor in determining whether the message is valued and input is received during IPSDM.

Knowledge dissemination, from a knowledge holder to a non-knowledge holder, through persuasive communication, is an important first step in getting your message across during IPSDM. However, knowledge dissemination is not enough. For effective IPSDM, knowledge must not only be shared among members of the IP team, but also effective knowledge exchange must occur through debate and counter debate in order that the opinions put forward are explored, evaluated and weighed and groupthink can be avoided and consensus built.

The Interaction between Positional Power and Persuasion

The following vignettes have been created by the author to illustrate the interaction between positional power and persuasion within the IP team and the hypothesized effect on IPSDM Figure 16 (page 236).

High Power / Low Persuasion (blue box) – Ineffective IPSDM

I hypothesize that in a situation where a professional with high positional power (e.g. the physician) is not very persuasive, IPSDM will not only be ineffective it will be non-existent. In this situation of paternalistic decision making, there is potential for coercion, limited buy-in from the rest of the IP team, and risk to the safety of the infant and quality of the care being provided.

For example, a physician, working within a paternalistic practice model in NICU, writes the order to discontinue pain medication for an infant post abdominal surgery without discussing the plan with other members of the IP team first. Although the nurse feels that the infant's status warrants slow weaning off the medication rather than

discontinuation of the pain therapy altogether, she does not question the physician's order. A number of factors are of issue in this scenario. The nurse, in not using persuasive communication to put forward her opinion and question the physician's order, allowed a paternalistic decision to be made that is not in the best interests of the infant. The physician, by simply writing the order and not collaborating with other members of the IP team in making this decision, missed vital information relevant to the decision. Here the direction of communication is one-way, from the physician to the team through the physician's order. In not engaging in IPSDM, both physician and nurse, working in their professional silos, have jeopardized the quality of patient care.

Low Power / Low Persuasion (yellow box) – Ineffective IPSDM

I hypothesize that in a situation where a professional with low positional power (e.g. the nurse, social worker or respiratory therapist) is not very persuasive, IPSDM will be ineffective. In this situation, input from that person will be limited, consensus difficult to achieve and buy-in from the rest of the IP team marginal.

For example, a nurse completes her morning assessment of the infant and her findings suggest the infant has feeding intolerance. She reports her suspicions to the resident. The nurse then goes on her break and is not present during patient care rounds. During rounds the resident presents an overview of the case to the team, but does not mention the feeding intolerance issue raised by the nurse. The issue remains unresolved and the team moves on to discuss the next infant. On her return from break, the nurse, who feels she has done her part by passing on the message to the resident, does not follow through on her own to create a credible and persuasive message or communicate this message to the person who can effect change (e.g. the attending neonatologist). Not only is the problem left unresolved, there is limited buy-in from other members of the team who have a different perspective on how this case should be managed. In this scenario,

one-way communication from the nurse to resident was not sufficient to resolve a problem that needed to be explored in more depth by members of the IP team.

High Power / High Persuasion (green box)

I hypothesize that in a situation where a professional with high positional power (e.g. the physician) is also very persuasive, IPSDM will not only be effective but buy-in from other members of the IP team will be increased. In fact, in this situation, the persuasive power of this team member can facilitate achievement of consensus within the team. However, one caveat remains. When one individual holds not only positional power over other members of the IP team, but also knowledge and persuasive power, the risk of coercion of team members to abandon their own positions is high. This situation highlights the critical need for all members of the team to have persuasive communication skills, to encourage debate and ensure all aspects of the issue are explored.

For example, a physician, working very collaboratively with the other members of the IP team, identifies a number of options to address increased respiratory distress experienced by an infant. The physician's opinion is that the increased respiratory distress is due to post-operative pain and the best option for the situation is to increase pain therapy and sedation. However, the team discusses the situation and, through persuasive communication and debate, they weigh the pros and cons for a number of different options. They finally reach consensus that the physician's plan is the best approach. Although the physician's positional power permitted independent decision making, the persuasive discussion that ensued allowed input from all members of the team (e.g. medicine, nursing, respiratory therapy and pharmacy) and consideration of a number of alternate options. This process of deliberation not only buffers the positional power of the physician, but also reduces the risk of coercion and ensures that other professionals do not inadvertently exert their own knowledge power without due consideration (e.g. the respiratory therapist who might advise changing ventilation parameters or the pharmacist

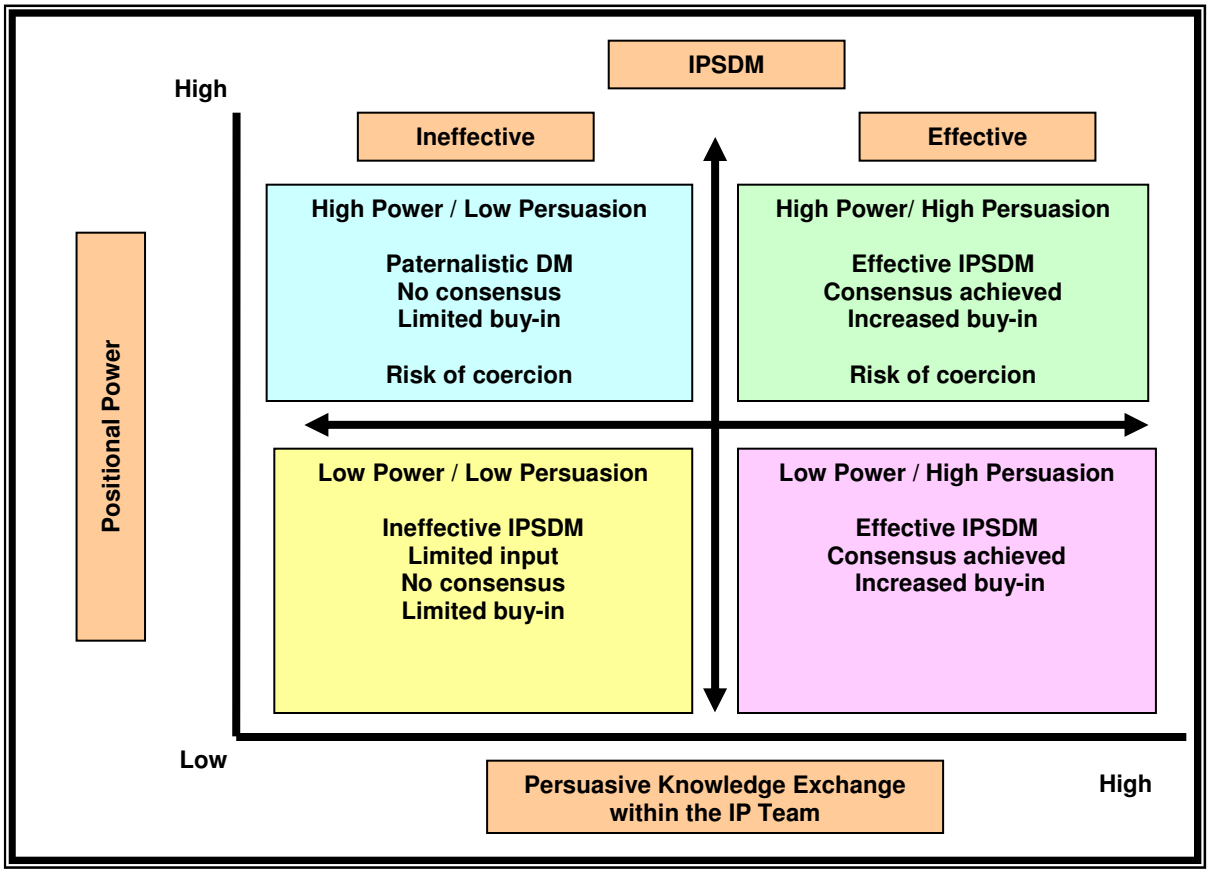
who might advise changing sedation). This approach also increases buy-in from all members of the team to carry out the plan, and ensures all aspects of the issues are considered.

Low Power / High Persuasion (pink box)

I hypothesize that in a situation where a professional has low positional power (e.g. the nurse, social worker or respiratory therapist), IPSDM will be effective if creative and persuasive messaging is used to convey information to other members of the IP team. In fact, in this situation, the persuasive power of this team member can counteract the positional power within the team. The use of persuasion can also work to achieve consensus within the team and increase buy-in from other members of the IP team.

For example, a nurse is working with the parents of an infant who has been diagnosed with a life-threatening condition. The physician meets with the family to discuss this situation and a decision is reached to discontinue treatment. However, in working with the family, the nurse learns that the parents are not ready to let the infant go. The nurse calls a team meeting (including the parents) to discuss the situation. The team and the parents weigh the pros and cons of a number of options (e.g. immediate withdrawal, palliative care in the unit, palliative care at home) and a plan is made for eventual palliative care at home. This plan not only satisfied the parents and the team members, but it gave the parents needed time with their infant and the opportunity to prepare for the impending loss of their new baby. The nurse (arguably with limited positional power within the group) was able to use her knowledge and persuasive communication skills to advocate for the family, allowing her to counter the positional power of other members of the team.

Figure 16. Power versus persuasion grid



Increasingly, health care professionals, patients and their families are faced with complex decisions that have uncertain outcomes. There may be a number of options to consider for each decision, with pros and cons that are valued differently by each individual. IPSDM recognizes the importance of having members of the IP team working together with patients and their families, to select the best treatment options. Each member of the IP team (and patient and family) brings a different perspective and expertise to the decision making process. In the case of effective care decisions, health care providers are responsible to synthesize the evidence to identify the best options for treatment. In the case of preference sensitive decisions, health care providers are responsible to synthesize the evidence and to help patients (or their families) to choose a course of action that best fits

their values. The process of IPSDM provides the opportunity for an IP team to deliberate about and identify the potential options for any given situation in order to provide high quality, evidence-based, patient-centred care.

Although IPSDM has been advocated as the optimal form of treatment decision making, little was known about the process of IPSDM among an IP team in NICU where patient acuity is high. This study explored the process of IPSDM in NICU and results suggest members of an IP team may have very different perspectives about what IPSDM is all about, how it occurs and their role in the process. Emphasis on strategies to improve the knowledge exchange within the team may be an effective way to counter some of the barriers and facilitate participation in the decision making process. Based on the findings of this study, persuasive communication and knowledge exchange through debate, may balance both positional and knowledge power disparities that exist in intensive care settings. Participant feedback provided insight into different professional perspectives found among members of the IP team, increased our understanding of the processes involved in IPSDM, and suggested some potential new directions for interprofessional education (IPE) and research about this topic.

Potential Implications for Education and Clinical Practice

Education - Competencies for IPSDM

Interprofessional education (IPE) is an important first step to improving IP practice (Oandasan et al., 2004) and by extension IPSDM. IPE occurs when “two or more professions learn with, from and about each other to improve collaboration and the quality of care” (CAIPE, 2002). IPE programs that are aimed at strengthening healthcare professionals’ skills and confidence in participating in IPSDM as equals would facilitate this process. The findings of this research suggest the goals of IPE should focus on a number of factors. First, IPE should increase understanding about the roles and contribution of different healthcare professionals in the IPSDM process. Second, IPE should enhance the

abilities of different healthcare professionals to be leaders and facilitators of the IPSDM process. Third, IPE should increase the knowledge and skills of healthcare professionals to synthesize information from different sources. A final goal of IPE should be to increase the abilities of practitioners to communicate effectively with one another to ensure their voices are heard.

A National Interprofessional Competency Framework developed by the Canadian Interprofessional Health Collaborative (Canadian Interprofessional Health Collaborative, 2010) has identified six competency domains for IP collaboration. This framework has also been used to guide curriculum development for pre and post-licensure IPE for health care professionals in Ontario (Edgelow, Van Dijk, Medves, & Saxe-Braithwaite, 2009). The competency domains within this framework are IP communication, patient / client / family / community-centered care, role clarification, team functioning, collaborative leadership and IP conflict resolution. Although this framework is focused on the broader concept of team collaboration, the findings from this study support and give credence to this framework, and suggest some specific additional domains to develop amongst team members.

The domain of IP communication is particularly relevant to the findings of this research. The competency statement related to the IP communication domain states:

> Learners/practitioners from different professions communicate with each other in a collaborative, responsive and responsible manner….Communication in an IP environment is demonstrated through listening and other non-verbal means, and verbally though negotiating, consulting, interacting, discussing and debating. Respectful IP communication incorporates full disclosure and transparency in all interactions with others including patients/clients/families. All team members enact IP communication that is consistently authentic and demonstrates trust with learners/practitioners, patients/clients and their families. (Canadian Interprofessional Health Collaborative, 2010, p. 16)

The findings of this study are consistent with this statement and support the need for IPE and practice that is built on development of effective communication skills. Results also suggest the need for competency development in four additional areas: clinical expertise, research, IPSDM, and conflict management, to enable health care professionals to contribute fully and effectively as members of the team during the IPSDM process.

Clinical Competencies

First and foremost, in order to be seen as credible members of the IP team, all clinicians must be clinical experts in their own right, be knowledgeable about their own professional practice, and be confident to share this knowledge during the process of IPSDM. Findings from this study also suggest that clinicians must be knowledgeable about the professional expertise that other members of the IP team bring to the IPSDM process in order to know who should be involved, and what they can contribute to the deliberations. Finally, members of the IP team need to be knowledgeable about the language used by other members of the team as they participate in the search for the common language that will be the measure of shared understanding of the patient situation. Novice health care professionals (e.g. graduate nurses or resident physicians) or more experienced members of the IP team who have not participated in IPSDM may need practice to become full participants in the process and to be seen as credible messengers during deliberations.

Research Competencies

Findings from this study also suggest that all members of the IP team should be well-informed about the best available evidence to support their practice. This means being knowledgeable about different research methodologies, valuing different forms of evidence, and being able to critically appraise the evidence, critique opinions, and weigh options presented by members of the IP team. Functioning in the role of synthesizer during IPSDM requires knowledge about research and the expertise to synthesize information from a variety of sources.

Mind mapping may be a useful tool to help facilitate information synthesis during IPSDM. Mind maps, are valuable tools for knowledge construction and sharing that have been used to help learners organize and synthesize information (Eppler, 2006). Reeves and colleagues (2007) also describe mind mapping as an effective strategy to introduce interprofessional learners to "new concepts (such as collaborative patient-centered practice, interprofessional competencies) or explore important areas related interprofessional collaboration" (p. 17). Therefore, further study of use of mind mapping to facilitate information synthesis during IPSDM is warranted.

IPSDM Competencies

The third key component of knowledge essential to IPSDM is making sure participants truly understand the process of IPSDM. Findings from this study suggest that nurses, physicians, respiratory therapists and other health professionals define and interpret collaboration and the process of shared decision making differently. Differences in power, roles and responsibilities within a unit can lead practitioners to have different perceptions about whether events are collaborative or not (Baggs & Schmitt, 1997). This means understanding what sharing means (sharing information, sharing in the deliberation about options and/or sharing in the actual decision), understanding what consensus means (agreement or agree to disagree) and how consensus is reached, and understanding how important it is to verify your voice is heard during the process of IPSDM. In addition, IPE needs to assist clinicians to develop leadership skills to facilitate the IPSDM process.

Knowledge imbalance exists between participants in the SDM process based on differing perspectives, previous experience, individual ownership of information and language, lack of continuity of information, and the family perspective (Engestrom, 2000; Hall, 2005). Physicians are trained to take charge, assume a role of leadership, and assume responsibility for decisions (Hall, 2005). Therefore, for physicians, learning to share leadership in an IP team setting may be a challenge (Hall, 2005) just as learning to take on

a leadership role as a member of an IP team and to have the skills to synthesize information may be a challenge for other professions.

IP Communication Competencies

The fourth component of IPE involves development of effective communication skills for persuasive knowledge exchange (using both peripheral and central routes). This means having the skills to be an effective messenger and create credible messages tailored to different audiences. It also means having the ability to create transactional spaces and design effective strategies to get the message across. Since the quality of the message, messenger and delivery of the message are critical to the persuasive process, knowledge exchange must be designed around these factors. IPE programs would need to provide learners with the opportunity to develop and practice these skills (first in simulation and then in practice settings) within the context of an IP team. Practice opportunities would build confidence to be assertive, to present a logical coherent case to defend an opinion, to manage conflicting viewpoints and to build consensus. Use of post event debriefings to review IP communication processes in emergency and non-emergency situations could also facilitate development of these critical skills.

IPE programs have already been developed that focus on improving collaborative practice in maternal newborn care such as MORE^{OB} (Managing Obstetrical Risk Efficiently) (MOREOB Working Group, 2010), NRP (Neonatal Resuscitation Program) (Kattwinkel, 2006), and the ACORN (Acute Care of the At Risk Newborn) (The ACORN Editorial Board, 2010) programs. These programs are focused on improving teamwork in emergency situations. A simulation component for persuasive knowledge exchange could be built into these programs to give IP teams the opportunity to practice and refine these skills too. Workshops that are focused on the topic of communication alone may not be as effective in changing practice as sessions that embed communication linked with clinical practice as

part of the learning process [e.g. SBAR – situation, background, assessment and recommendations (Groah, 2006; Guise & Lowe, 2006)].

Conflict Management Competencies

The fifth component of IPE involves development of conflict management skills. Findings from this study suggest that nurses, physicians, respiratory therapists and other health professionals have different professional perspectives about the patient situation. In addition, they interpret collaboration and the process of shared decision making differently. Therefore, the potential for conflict is high. Conflict is defined as "a serious incompatibility between two or more opinions, principles, or interests" (Oxford Dictionaries, 2010). Conflict management involves use of strategies to resolve or a least contain disputes (Aschenbrener & Siders, 1999). Development of conflict management skills is essential to enable health care professionals to recognize conflicts that stem from IP differences and develop the confidence to deal with these conflicts when they arise. Expertise in persuasive communication which requires sensitivity to the audience, the message, the messenger and the transfer method is important. However, learning about and developing skills to use conflict management strategies that are conducive to and would facilitate IPSDM (e.g. collaborating, compromising) (Sportsman & Hamilton, 2007) may be important. In addition, self-awareness about relationships and interactions with others, being a good listener, having an ability to empathize, communicate supportively, and knowing when to counsel or coach have also been reported to be effective conflict management strategies (Seren & Ustun, 2008) that could potentially facilitate IPSDM.

Organizational Support for IPSDM

Successful implementation of IPSDM would require organizational support for this process of decision making from senior management in the organization and at the local level within the NICU. This would involve support to develop rules of engagement for IPSDM, support for ongoing training for IPSDM, support for post event debriefings in the

clinical setting, and support to find ways to work around the time barriers to IPSDM. Setting time aside for team collaboration in decision making, streamlining communication, and advanced planning for emergencies and changing patient acuity are all strategies that may be useful to counter some of the time barriers highlighted in this study. In addition, use of best practice guidelines and creation of policies and procedures for selected clinical situations may facilitate and streamline decision making for common issues. Establishing programs for ongoing evaluation of IPSDM to identify gaps and inefficiencies would also be important. Finally, establishing regulatory and legislative support to foster and promote IP collaboration, such as is advocated by the Canadian Health Services Research Foundation (Barrett, Curran, Glynn, & Godwin, 2007), and setting professional standards of practice are also important to facilitate integration of IPSDM into practice.

As patient care becomes more complex, collaboration among health care professionals becomes more important to ensure an effective IPSDM process. IPSDM involves a willingness to work together and jointly problem-solve to provide patient-centered, family-informed care. Based on the findings of this study, this approach would entail having appropriate knowledge, having the skills to communicate effectively and having the confidence to present logical, coherent arguments and engage in persuasive knowledge exchange to counter power disparity that may exist within the team. All health care professions involved in IP teams would need to provide opportunities for their students to practice the necessary skills. Although the findings from this study suggest some potential new directions for IPE and practice, since this was only an exploratory study examining participants' perceptions about the processes of IPSDM, further research is required before any recommendations can be made.

Implications for Future Research

Findings from this study have raised a number of important questions. Four areas for future research are highlighted. First and foremost, it is essential that definitions and terms related to IPSDM be developed and be consistently used in order to facilitate research on the topic, and comparison of results. Research is also needed to more fully explore the nature of IPSDM for different IP teams, in a variety of intensive care settings and as applied to diverse decision types, to see if the results from this study are consistent across groups and clinical settings. In addition, research is needed to explore this model of IPSDM when applied to virtual teams or situations when health care professionals cannot meet face-to-face.

Second, research into the specific components of the IPSDM process is necessary. This research might involve investigating how to distinguish between true consensus, false consensus and groupthink in IPSDM (Jones & Roelofsma, 2000), or identifying the factors that induce bias in decision making within IP teams in NICU, or determining the key indicators of IPSDM and decision quality. Increased understanding in these areas would provide mechanisms to develop strategies to evaluate IPSDM in different IP teams.

Third, future research into IPE is also needed to identify the most effective strategies to enhance the knowledge and skills of all members of the IP team so they can participate fully in the process of IPSDM. For example, what are the specific competencies of the leadership and synthesizer roles? How do highly functioning IP teams manage power disparity during IPSDM? What are the specific learning needs of different professional groups? In addition, research about the barriers to IPSDM would help to identify strategies that effectively target profession-specific issues related to this process of decision making.

Although parent participation in SDM was not the specific focus of this study, participants did emphasize the importance of parent involvement. Further study is needed to increase understanding about the implications of parents' involvement in the process of

IPSDM in NICU, and how best to support parents' participation in the process. This might involve exploring parents' perceptions about IPSDM in NICU and then identifying parent's support needs. Research into the barriers and facilitators of parent involvement would provide information to help professionals develop effective strategies to meet parents' support needs.

Limitations

There are four potential limitations to this study: limitations related to use of one unit as the study setting, limitations related to the people who were sampled, limitations related to the cases observed and the time periods during which observations took place and limitations related to participant experiences with different decision types used as part of the survey.

Participation in the study was limited to healthcare professionals working in this NICU at the time of data collection. Therefore, generalization to other settings is not possible at this time. Further research about IPSDM in other units, geographic locations and with other IP teams is needed.

Findings may be limited based on selectivity in the people who were sampled either for observations or interviews, or on selectivity in document sampling. All subjects in the study were volunteers who consented to participate. There is no guarantee that the participants' views obtained during this study are reflective of all health care professionals and that the groups are homogenous, other than they were composed of physicians, nurses, respiratory therapists and other health professionals. However, comparison of perspectives across professional groups and exploring whether observations of shared decision making interactions were congruent with participant perspectives helped to reinforce the findings. Replication of this study with other IP teams is warranted.

Findings may be limited based on the situations that are sampled for observation or the time periods during which observations took place. Although every attempt was made to

select a variety of cases and carry out observations over a two week period to capture different IP team members and discussion of different decision types, the cases observed were only those discussed during morning rounds. IP team decision making interactions which occurred outside of this venue were not observed.

Finally, findings may be limited based on the perceptions of each of the participants about the decision types used in the CASCD survey. The terms triage, chronic condition and values sensitive were used to describe different decision types in the survey. Although a brief description was provided for each decision type, participants may have had different scenarios in mind as they responded to the survey questions. Replication of this study in different intensive care settings using vignettes about different decision types, to provide participants with consistent cases on which to base their answers, would be useful.

Strengths

This study used an innovative, mixed methods approach with multiple triangulations to explore IPSDM in an NICU. A number of factors demonstrate the trustworthiness of the findings. The processes used for data collection were simple, transparent and reproducible, and resulted in excellent representation across all professional groups. Participation of key informants from four professional groups, rich data collected during the interviews, participant validation, peer and expert review, and saturation of concepts gives these findings substantial weight.

Although this study explored the concept of IPSDM from the perspective of the IP team, the results are an important contribution to nursing knowledge. Nurses play a key role in providing patient care in NICU and as such they are essential members of the IP team. Nurses develop valuable insight into the patient and family coping that no other member of the team has. Evidence from the literature and from this study indicates that nurses are not always confident to contribute to the discussions in a way that ensures their perspective is understood by other members of the team. Findings from this study suggest that education

to enhance persuasive communication skills would assist nurses to become equal players in the process of IPSDM.

Conclusions

A realist review of the literature about IPSDM in intensive care revealed little is known about the process of IPSDM in intensive care when different perspectives and power differentials are at play. A survey about collaboration and satisfaction about decision making revealed significant differences in perspective among members of an IP team in NICU with some members of the team reporting components of the IPSDM process were less than optimal. The factors underlying this discontent were in part associated with a perception that their concerns were not always adequately considered. Further probing through interviews and observations indicated varying perspectives across professional groups about what IPSDM is all about, and how the process of SDM occurs within an IP team. Participants described strategies to increase persuasive messaging as a way of ensuring their voices were heard during IPSDM. More research is needed to determine the implications for IPE and practice.

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APPENDICES

Appendix 1. Study design matrix

Conceptual Framework	Objectives	Research Questions	Methods	Sample	Analysis	Results
Phase 1 **(Realist Review of the Literature)**	To synthesize both qualitative and quantitative research evidence about IPSDM in intensive care	With regards to the context, mechanisms and outcomes of IPSDM in intensive care: What is the nature of IPSDM? What is the nature of IPSDM for different participants? (Who is or should be involved?) For what types of decisions does it occur? What are the mechanisms by which it works? (How) What are the determinants of IPSDM? (Barriers and facilitators of IPSDM) What is the impact of IPSDM?	Realist Review of the Literature	A study will be eligible for inclusion if: It includes an original collection of data; It reports empirical results of qualitative or quantitative research methodologies; Participants include health professionals; Results answer the research questions; and It is available in English. Studies exclusively about health professional / patient dyadic SDM will be excluded.	Data extraction using standardized data forms Analysis of data using questions based on a realist approach (Pawson et al., 2005)	Summary of Pre-requisites, characteristics, types of decisions, barriers and facilitators, and impact of IPSDM

Conceptual Framework	Objectives	Research Questions	Methods	Sample	Analysis	Results
Phase 2 (Survey) Shared Decision Making and Healthcare Team Effectiveness Model [Adapted from: (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006) Activity Theory (Engestrom, 2000)	To give context for the study by describing team and individual perceptions about collaboration and satisfaction with the decision making process in NICU	Collaboration and Satisfaction about Care Decisions (CSACD) (Baggs, 1994) The instrument consists of 9 items: 7 items on level of collaboration between health care providers in making the decision (6 specific + 1 global) 2 items on satisfaction with the decision and decision-making process.	Survey	Members of IP team in NICU	Descriptive statistics (frequencies, means, median, percentages) Comparison across types of decisions (triage, chronic condition management, values-sensitive decisions) Overall team score and comparison across professional groups	Characteristics of the study sample group with respect to demographic factors (professional group, years of experience) Perceptions about collaboration and satisfaction about health care decisions

Conceptual Framework	Objectives	Research Questions	Methods	Sample	Analysis	Results
Phase 3 **(Interviews)** Shared Decision Making and Healthcare Team Effectiveness Model [Adapted from: (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006) Activity Theory (Engestrom, 2000)	To obtain more in depth information from selected participants about the nature of IPSDM and the process used for SDM in NICU To describe the barriers and facilitators of shared decision making in NICU	What does shared decision-making mean to you? What clinical decisions are shared among member of the interprofessional team? What clinical decisions are ***NOT*** shared among members of the interprofessional team? What do you think fosters shared decision-making within the NICU? What are barriers to shared decision-making within the NICU? What are the most important factors that should be considered when making a patient care decision (for example – evidence, values, resources, patient / parent preferences, or other factors)? How are decisions arrived at? What is your (professional) 'voice' in the process of shared decision-making? How do you ensure your 'voice' is heard in the shared decision making process?	Semi-structured Interviews (30-45 minutes duration)	Purposive sampling to maximize capture of the NICU IP team perspectives Maximum variation sampling will be used to ensure a broad representation of provider's expertise Estimated that 12 to 20 participants will be required to achieve saturation	Qualitative data analysis using a constant comparative method Interview questions used to create the initial coding categories New themes or variables will be added to further refine the existing theory	Answers to the research questions: Nature of IPSDM to different members of the team Barriers and facilitators of IPSDM in NICU How different professionals ensure their 'voice' is heard during IPSDM

Conceptual Framework	Objectives	Research Questions	Methods	Sample	Analysis	Results
Phase 4 **(Observations)** Shared Decision Making and Healthcare Team Effectiveness Model [Adapted from: (Lemieux-Charles & McGuire, 2006; Légaré et al., 2006) Activity Theory (Engestrom, 2000)	To observe the process of IPSDM during patient care rounds?	Who is involved in DM during patient care rounds? How are decisions made? What is the source of any decisional conflict?	Observations and debriefing with IP team	4 complex cases followed over time	Descriptive summary: Synopsis of the patient problems and current status of the infant Participants present during rounds Discussion points Decisions made Disagreements Perspectives about the decision making process obtained through follow-up with selected members of the IP team.	Comparison of observed behaviors with participant perceptions gathered in phase 2 and 3

Appendix 2. Collaboration and Satisfaction about Care Decisions (CSACD) (Baggs, 1994) – Psychometric Properties

Instrument (Author)	Components (Items and response format)	Target Population / Method of Administration	Reliability	Validity
Collaboration and Satisfaction about Care Decisions (CSACD) (Baggs, 1994) The more ICU MD/RN collaborate, the more satisfied they will be with decision making and the better their patients' outcome A "State of the Art Instrument" (Heinemann & Zeiss, 2002) Theoretical framework: Model of Collaboration (Thomas, 1976)	**Collaboration Subscale (6 items)** - joint planning - open communication - shared decision-making responsibilities - cooperation - consideration for different professionals' concerns - coordination **Collaboration Global Measure (1 item)** - sharing responsibility for problems solving and decision making to formulate and implement plans of care for patients **Satisfaction Subscale (2 items)** - satisfaction with the decision-making process - satisfactions with the actual decisions made	**Target:** Physician/nurse in ICUs Core members of clinical teams **Setting:** United States **Method of Administration:** Self-administered The instrument should be completed within 48 hours of the care decisions being made. 7 point set of answer choices with verbal anchors 1 = low collaboration/satisfaction 7 = high collaboration/satisfaction Scores are totaled and mean scores calculated for each subscale in order to determine the relationship between collaboration with decision-making and satisfaction with it. The Collaboration Subscale has a potential range from 6 to 42; the potential range of the Satisfaction Subscale is from 2 to 14. The higher the score, the higher is the perceived collaboration and satisfaction. Different health professionals' scores can be compared and contrasted, or they can be averaged to obtain a team score.	**Reliability:** **Internal Consistency** Collaboration Subscale (6 items) - All items had strong factor loadings on one factor (loaded between .82 and .93). - This held for factor analysis run on nurses, residents, and the total sample. - This factor explained 75% of the variance in collaboration. - Cronbach's alpha was 0.95. - Inter-correlations among the six items ranged from .52 to .83. Satisfaction Subscale (2 items) - correlated .64 - had different correlations with the global measure of collaboration, r = .78 and .50 respectively. **Test-Retest** - No data are available **Inter-Rater** - Not applicable as instrument is self-administered.	**Content or Face Validity** 12 nursing and medical experts on collaboration and interdisciplinary teams reviewed the items: - The majority of items were judged as very relevant to the concept of collaboration. - No items were found not relevant 11 nursing and medical ICU providers agreed that: - items measured collaboration - they had the information to respond to the items - items were understandable - Responses would vary in different patient decision-making situations. Use of a conceptual model and a thorough review of the literature contributed to content validity. **Concurrent Validity -** concurrent validity is supported - Baggs' global measure of collaboration correlated .87 with the total score of the six critical attribute items making up the Collaboration Subscale. - The global measure of collaboration correlated significantly and positively with the Weiss and Davis' Collaborative Practice Scale in one of Baggs' previous studies. **Construct Validity -** construct validity was supported - Original Collaboration Subscale correlated with the Satisfaction Subscale (r = .66). - Collaboration Subscale correlated differently with each item in the Satisfaction Subscale - Satisfaction with the decision-making process item was higher than the correlation between this subscale and satisfaction with the decision itself, r = ,69 and .50 respectively.

Appendix 3. Collaboration and Satisfaction about Health Care Decisions (CSACD) [Adapted from (Baggs, 1994)]

Participant ID: _____ Date: _____

Collaboration and Satisfaction about Health Care Decisions (CSACD)

These questions are related to the way in which members of the interprofessional team in NICU work together in making decisions about patient care.

There are three types of decisions:

1. ***Triage decisions*** for health problems requiring alternate levels of professional care or expertise (for example – Level III NICU, cardiology, or surgical services).

2. ***Chronic disease management decisions***, for critically ill infants with complex care needs (for example, decisions related to ventilation, inotropes, feeding, infection / immune system issues).

3. ***Values-sensitive decisions***, for decisions with two or more options and that require families and the interprofessional health care team to consider their values associated with the benefits and harms related to each option (for example, resuscitation, initiation of treatment, surgical interventions, withdrawal of care or palliation),

On the following pages, please circle the number that best represents your judgment for each type of decision.

Appendix 3 (continued): Collaboration and Satisfaction about Health Care Decisions (CSACD) [Adapted from (Baggs, 1994)]

Participant ID: _____ Date: _____

		Triage Decisions e.g. Alternative level of care or consultation with experts	**Chronic Condition Decisions e.g. Ventilation, medication, feeding**	**Values-sensitive Decisions e.g. Initiation or withdrawal of treatment, surgery, palliation**
1.	Members of the interprofessional team in NICU *plan together* to make decisions about patient care.	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree
2.	*Open communication* between members of the interprofessional team in NICU takes place for patient care decision making.	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree
3.	*Decision-making responsibilities* for patient care planning are shared between members of the interprofessional team in NICU.	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree
4.	Members of the interprofessional team in NICU *cooperate* together to share in the decision-making process.	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree
5.	*Concerns* from all members of the interprofessional team in NICU are considered when making decisions about patient care.	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree

		Triage Decisions e.g. Alternative level of care or consultation with experts	Chronic Condition Decisions e.g. Ventilation, medication, feeding	Values-sensitive Decisions e.g. Initiation or withdrawal of treatment, surgery, palliation
6.	Patient care decision making is *coordinated* between all members of the interprofessional team in NICU.	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree	1 2 3 4 5 6 7 Strongly Disagree … Strongly Agree
7.	How much *collaboration* between all members of the interprofessional team in NICU occurs for patient care decision making?	1 2 3 4 5 6 7 No Collaboration … Complete Collaboration	1 2 3 4 5 6 7 No Collaboration … Complete Collaboration	1 2 3 4 5 6 7 No Collaboration … Complete Collaboration
8.	How *satisfied* are you with interprofessional shared decision making in NICU (i.e. with the *decision making process that is used*, not necessarily with the decision itself?)	1 2 3 4 5 6 7 Not Satisfied … Very Satisfied	1 2 3 4 5 6 7 Not Satisfied … Very Satisfied	1 2 3 4 5 6 7 Not Satisfied … Very Satisfied
9.	How *satisfied* are you with *decisions* that are made?	1 2 3 4 5 6 7 Not Satisfied … Very Satisfied	1 2 3 4 5 6 7 Not Satisfied … Very Satisfied	1 2 3 4 5 6 7 Not Satisfied … Very Satisfied

Appendix 4. Interview guide

Interview Guide	
1.	What does the term 'shared decision-making' mean to you? Can you define it for me?
2.	Do you think shared decision-making is a feasible, effective and efficient way of making decisions in NICU?
3.	How do you know when shared decision-making occurs? What would I need to look for to tell me it had happened?
4.	Are all decisions shared among members of the interprofessional team in NICU or only certain decisions? a. Can you give me examples of decisions that are shared among members of the interprofessional team? b. Can you give me examples of decisions that are ***NOT*** shared among members of the interprofessional team?
5.	What do you think fosters shared decision-making in NICU?
6.	What are barriers to shared decision-making in NICU?
7.	What are the most important factors that the interprofessional team should consider when making a decision (i.e. evidence, values, resources, parent preference, or other factors)?
8.	How do parents factor into the process of interprofessional shared decision-making?
9.	Should parents be involved in the interprofessional shared decision-making process? If so, when should they be brought into the discussions?
10.	What is a 'quality decision' or the 'best decision'?
11.	How does an interprofessional team make a 'quality decision'?
12.	How do we know when a 'quality decision' has been reached?
13.	Each member of an interprofessional team sees the patient / family situation through their own professional lens (i.e. medicine, nursing, respiratory therapy, social work, pharmacy etc.). Therefore, a. How do we determine the lens to judge the patient / family situation by? b. How do we determine which options are best for each patient / family situation?
14.	Is there overlap in your area of expertise with other members of the team? Does the amount of overlap determine how much your expertise is taped?
15.	What is your (professional) 'voice' in the process of decision-making? What do you bring to the discussion?
16.	How do you ensure your 'voice' is heard in the decision making process?

Appendix 5. CIHR Guidelines for Health Research Involving Aboriginal People

Articles	Applicable to this Study	Approach
1. A researcher should understand and respect Aboriginal world views, including responsibilities to the people and culture that flow from being granted access to traditional or sacred knowledge. These should be incorporated into research agreements, to the extent possible.	✓	Respect individual professional world views. Create a research agreement with the organization & NICU.
2. A community's jurisdiction over the conduct of research should be understood and respected.	✓	Organizational and NICU perspectives considered in the design of the study.
3. Communities should be given the option of a participatory-research approach.	**N/A**	Participatory research methodology is not being used.
4. A researcher, who proposes to carry out research that touches on traditional or sacred knowledge of an Aboriginal community, or on community members as Aboriginal people, should consult the community leaders to obtain their consent before approaching community members individually. Once community consent has been obtained, the researcher will still need the free, prior and informed consent of the individual participants.	✓	Organization and unit leaders consulted in the early stages of the research proposal development process. Agreement in principle / permission obtained to move forward with the study design and to be present in the unit and observe general decision making interactions. Individual free, prior and informed consent will be obtained prior to interviews or survey participation.
5. Concerns of individual participants and their community regarding anonymity, privacy and confidentiality should be respected, and should be addressed in a research agreement.	✓	Anonymity, privacy and confidentiality will be respected. All interview, observational, and survey data will be anonymized.
6. The research agreement should, with the guidance of community knowledge holders, address the use of the community's cultural knowledge and sacred knowledge.	**N/A**	

Articles	Applicable to this Study	Approach
7. Aboriginal people and their communities retain their inherent rights to any cultural knowledge, sacred knowledge, and cultural practices and traditions, which are shared with the researcher. The researcher should also support mechanisms for the protection of such knowledge, practices and traditions.	✓	Each profession has a cultural basis developed through education, training, socialization, regulation, roles, and delineation of work responsibilities. Health care professional cultural knowledge, beliefs, values, roles, responsibilities will be respected and protected in this study.
8. Community and individual concerns over, and claims to, intellectual property should be explicitly acknowledged and addressed in the negotiation with the community prior to starting the research project. Expectations regarding intellectual property rights of all parties involved in the research should be stated in the research agreement.	✓	The organization and individual participants will have access to their own data and the study results.
9. Research should be of benefit to the community as well as to the researcher.	✓	Value of this research to the organization and health care professionals within the unit confirmed early in the development of the proposal.
10. A researcher should support education and training of Aboriginal people in the community, including training in research methods and ethics.	✓	Education for health care professionals about the study goals, research methods, analysis, results, ethical issues, consent, and confidentiality is planned.
11. A researcher has an obligation to learn about, and apply, Aboriginal cultural protocols relevant to the Aboriginal community involved in the research.	✓	Inherent knowledge of the organization and unit already exists as the researcher has been a member of the nursing staff on the Neonatal Transport Team.
A researcher should, to the extent reasonably possible, translate all publications, reports and other relevant documents into the language of the community.	✓	Letters of consent and posters will be translated into French (the alternate language of operation in the unit).
A researcher should ensure that there is ongoing, accessible and understandable communication with the community.	✓	Researcher will be available to the staff during the study and multiple strategies planned (information sessions, staff meetings, lunch & learn meetings, rounds, in-services, posters, email notices) to raise awareness about the project and keep participants informed.

Articles	Applicable to this Study	Approach
12. A researcher should recognize and respect the rights and proprietary interests of individuals and the community in data and biological samples generated to taken in the course of the research.	✓	Rights of individuals to data will be respected. A research agreement will be established with the unit managers (nursing, medicine and other health professionals)
Transfer of data and biological samples from one of the original parties to a research agreement, to a third party, requires consent of the other original party.	**N/A**	Although secondary data analysis is not applicable to this current study design, if planned in the future appropriate consent processes would be followed.
Secondary use of data to biological samples requires specific consent form the individual donor and, where appropriate, the community. However, if research data or biological samples cannot be traced back to the individual donor, then consent for secondary use need not be obtained from the individual. Similarly, if research data or biological samples cannot be traced back to the community, then its consent for secondary use is not required.	**N/A**	Biological samples will not be obtained.
Where the data or biological samples are known to have originated with Aboriginal people, the researcher should consult with the appropriate Aboriginal organizations before initiating secondary use.	**N/A**	
Secondary use requires REB review.	**N/A**	
13. Biological samples should be considered “on loan” to the researcher unless otherwise specified in the research agreement.	**N/A**	No biological samples will be taken.
14. An Aboriginal community should have an opportunity to participate in the interpretation of data and the review of conclusions drawn from the research to ensure accuracy and cultural sensitivity of interpretation.	✓	Member checking is planned for interview and observational data. Research findings will be reviewed with key stakeholders.
15. An Aboriginal community should, at its discretion, be able to decide how its contributions to the research project should be acknowledged. Community members are entitled to due credit and to participate in the dissemination of results. Publications should recognize the contribution of the community and its members as appropriate, and in conformity with confidentiality agreements.	✓	Consultations will be held with the NICU community to determine how to acknowledge contributions to the study in any publications and reports and ensuring / respecting anonymity of individual participants.

Appendix 6. Copyright Permission – IP-SDM Model (Légaré et al., 2010a)

Appendix 6 (continued). Copyright Permission – IP-SDM Model (Légaré et al., 2010a)

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