

ABSTRACT

Title of Thesis: DECISION MAKING IN HEALTHCARE
 SYSTEMS: ROLES AND
 RESPONSIBILITIES

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In the modern healthcare system, many different decision-makers interact to care for patients and manage operations. To clarify the roles and responsibilities of different decision-makers, we reviewed previous work that described the decision-makers in healthcare organizations and the decisions that they make. We searched online databases for articles that described decision making in healthcare and manually searched journals and the bibliographies for other review articles. We identified six key roles: doctors, nurses, front-line managers, middle managers, senior level managers, and the board of directors. We classified clinical decisions into three categories: diagnosis, treatment and therapy, and medication prescription and administration. We classified non-clinical decisions into five categories: budget, resource allocation, technology acquisition, service additions and reductions, and strategic planning. We then summarized these roles and responsibilities. We also conducted information-gathering interviews with 27 executives at 7 hospitals to

collect details about these and related decisions. These activities yielded a comprehensive picture of which personnel in a hospital make which decisions. Since organizations are decision making systems, this comprehensive picture of decisions and their decision makers will be instrumental in not only analyzing the underlying conditions of the administrative processes in healthcare, but aid in developing tools that healthcare organizations can use to assess their own decision-making processes, and thereby design solutions.

DECISION MAKING IN HEALTHCARE SYSTEMS: ROLES AND
RESPONSIBILITIES

by

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List of Abbreviations

CAS – Complex Adaptive System

CEO - Chief Executive Officer

CFO - Chief Operating Officer

CMO - Chief Medical Officer

CNO - Chief Nursing Officer

HIT – Health Information Technology

SVP - Senior Vice President

VP - Vice President

Chapter 1: Introduction

1.1 Background

The healthcare system is a complex system that includes organizations, people, institutions, and actors who seek to promote, maintain, and restore physical health (World Health Organization, 2002). In the United States, healthcare delivery today is rapidly changing. Although advances in medical technology have led to a better understanding of diseases and their treatment, the efficiency, safety, and cost-effectiveness of the delivery of healthcare have not improved comparatively (Rouse, 2008). This lack of improvement has garnered attention, particularly in regard to decision making within the system. Decision making in healthcare is challenging due to its complexity, yet it is essential because of the high stakes: doctors must quickly choose the right course of action when the lives of their patients are in danger, and hospital leaders must deliver quality care with limited resources while generating sustainable revenues. Policy-makers must understand competing priorities, comply with existing legislation, and manage competition for scarce resources while designing policies that affect the entire healthcare system. It has been suggested that disciplines such as systems engineering, with experience in the systematic design, analysis, and improvement of complex systems (Grossmann et al., 2011), are essential for improving healthcare system performance.

While recent studies suggest the prudence of utilizing a systems engineering approach to solving the problems in healthcare, little is known about the results of such an application. The typology could be used to a) inform hospital healthcare

administration education and staff development, (b) influence the outcomes of decisions, (c) influence hospital job role development and clarification, and (d) add to theory development in the application systems analysis in healthcare.

1.2 Overview of the Healthcare System

The healthcare system in the United States has many stakeholders with sometimes, conflicting interests. Figure 1 provides a simple overview of the healthcare system. At the highest level, the healthcare system can be divided into two sections: providers and suppliers and payers. Providers and suppliers include hospitals (doctors, nurses, administrators, and allied health professionals), clinics, rehabilitation centers, nursing homes, research organizations, pharmaceutical companies, educators, and equipment manufacturers. These organizations provide healthcare services. The payers are the purchasers of healthcare; payers include employers, healthcare consumers, the federal government (through programs such as Medicaid and Medicare), and insurance companies. The relationships between these components are nonlinear; in fact, the healthcare system has been described a complex adaptive system (Rouse, 2014).

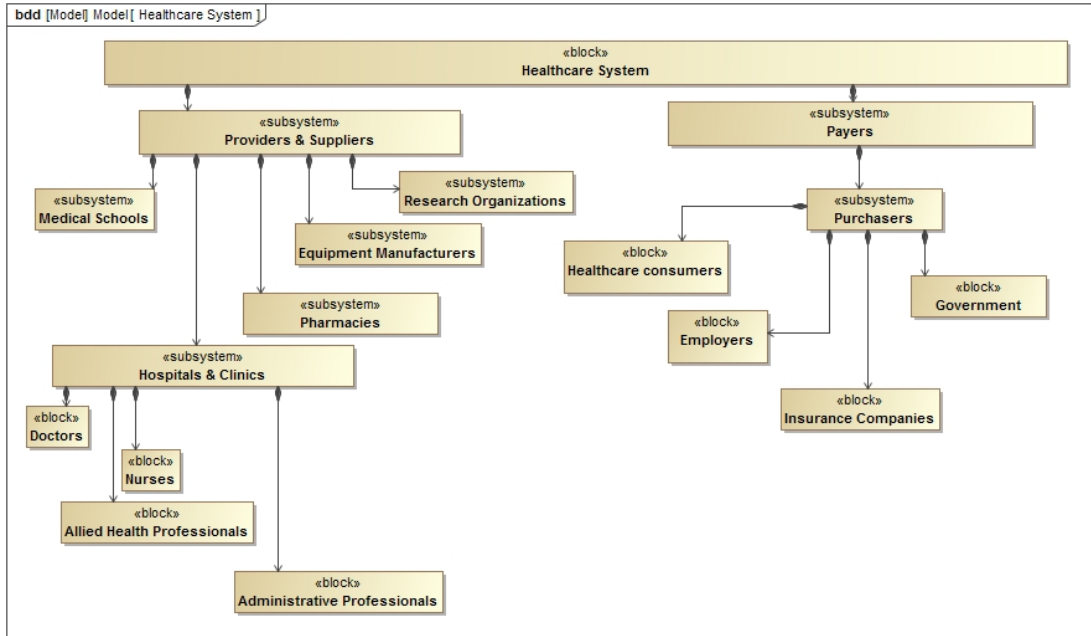


Figure 1 Overview of the Healthcare System in the United States

A complex adaptive system is an assembly of individual components with the ability to act in a manner that is not always anticipated. The components' actions are interconnected, so that one component's actions change the circumstance for other components (Plsek, 2012). For example, the health care system contains systems of systems. There are hospitals, nursing homes, and other providers previously mentioned, which interact nonlinearly and on different scales with patients, families of patients, and government, and often produce unintended consequences. These consequences include adverse drug reactions and re-hospitalizations (Lipsitz, 2012). Snowden and Boone (2007) and Plsek (2012) suggested accepting the unpredictable nature of complex adaptive systems and making allowances to respond to emerging patterns and opportunities.

Healthcare is underperforming in many aspects: coordination of care, cost, safety, efficiency, and value (Grossman, 2011). Despite the improvements in

technology that has allowed increased ability to share information, sharing medical information remains difficult. Lack of coordination can lead to duplicate and unnecessary test procedures, hospital readmission, and a waste of time and resources on the part of the health providers, fixing avoidable problems. A study by the American Journal of Obstetrics and Gynecology estimates the costs of unnecessary and harmful procedures to be nearly \$1 billion per year (Robinson et al., 2009). One national study estimated that patients only receive the correct treatment half the time (McGlynn et al., 2003) Additionally, more than “98,000 Americans die and more than one million patients are injured each year as a result of broken health care processes and system failures” (IOM, 2000; Starfield, 2000).

The National Academy of Engineering and Institute of Medicine have suggested a systems approach to the healthcare system and suggested the utilization of systems engineering tools to improve health care (Institute of Medicine, 2000). The studies assert that a systems view maintains a perspective where overall effectiveness and efficiency in reaching the goals depend on “identification, understanding and management of interrelated processes as a collective system” (Ravitz, 2013). This thesis approaches decision making in the healthcare system through a systems lens. It focuses particularly on hospitals within the healthcare system.

The purpose of this study was to create a comprehensive framework for decision making in healthcare systems. A systematic review of literature was used to create the initial framework. Information gathering interviews were conducted to obtain anecdotal evidence and discover whether any patterns emerged with regard to decision making roles.

1.3 Research Questions

The central research questions for this thesis were as follows: What types of decisions are made within the healthcare system? Who makes which decisions within the healthcare system? How does the literature compare to current practice? What types of decisions do senior level hospital managers make? What are the critical decision making roles in the healthcare system?

1.4 Overview of Thesis

The remainder of this thesis is organized as follows: Chapter 2 presents a review of previous work related to decision making in healthcare systems. Chapter 3 describes the research approach, including the literature review and the information-gathering interviews with senior level managers. Chapter 4 presents the results of the literature review and the key insights from the interviews. Chapter 5 discusses patterns within these results, the implications that the research has for healthcare organizations, and concludes with a summary of the various decision-makers and their associated decisions as well as suggestions for future work.

Chapter 2: Review of Relevant Literature

The purpose of this thesis was to create a comprehensive framework for decision making in healthcare systems. Since healthcare systems are organizations, this chapter examines the nature of organizational decision making. Research in decision-making in organizational settings has a long history and spans academic disciplines including economics, management, and cognitive psychology (Hayes, 2013). Review of decision-making in organizational settings provides the foundation to understand and analyze healthcare decision-making, a field which has less relevant system level research. The remainder of this chapter is organized as follows: Section 2.1 describes decision making in organizations and Section 2.2 describes decision-making in healthcare organizations, focusing on broader themes such as complexity and structure of the system.

2.1 Decision-making in Organizations

Organizations are decision making systems, and can be understood in terms of their decision processes (Simon, 1976, pp. ix & xxv). Since decision making is the core of organizations, it is important to understand the underlying conditions of the organizational processes in terms of decisions. In the subsections below, definitions and key concepts related to decision making and organizations are presented.

Individual and organizational decision-making as well as prominent decision making models are explored.

2.1.1 Definition

According to the Business Dictionary, decision making is “the thought process of selecting a logical choice from the available options.” It involves consideration for alternative options, the ability to predict outcome of each alternative, and a selection based on the best alternative for the situation (Business Dictionary). Herrmann (2015) defined decision making as the process of transforming inputs into outputs. The input is information, the output is new information.

Daft (1998) defined organizational decision making as the process of identifying and solving problems. In the identifying stage, information about the environment and organizational conditions are gathered to diagnose deficiencies. In the problem solving stage, alternatives are considered and analyzed, and the best option, for the context, is selected and implemented. Important organizational characteristics, structure and context, that will be used for later comparisons are summarized in the proceeding section.

2.1.2 Characteristics of organization

Organizations can be described in terms of structure and context. Structure describes the internal “differentiation and patterning of relationships” within an organization (Thompson, 1967). Although Daft (1998), in his descriptions of the structural dimension, considered formalization, specialization, standardization, hierarchy of authority, complexity, centralization and professionalism, this review will only focus on hierarchy, complexity, and centralization.

Hierarchy of authority describes who reports to whom. This is described as the span of control, number of employees reporting to the supervisor (Daft, 1998). Hierarchy is typically depicted by height in an organization’s chart: An organization

with more span of control would be taller, whereas an organization with less span of control will be shorter. Thompson (1967) argued that the term hierarchy is not just related to highness and lowness. He argued that hierarchy reflects clustering, displaying combinations of interdependent groups. This idea of clustering puts forth an aspect of coordination which goes beyond the scope of components.

Complexity refers to the number of subsystems within an organization and is measured in terms of hierarchical degree, number of departments across an organization, and number of geographical locations (Daft, 1998). For example, the healthcare system, consisting of a high degree of hierarchy, multitudes of departments, and vast number of geographical locations, is considered complex.

Thompson (1967) argued that the fundamental problem for complex organizations is dealing and coping with uncertainty. He stated that uncertainty stems from a lack of cause/effect understanding, contingencies, and interdependency of components.

Contingency is the idea that a future event cannot be predicted with certainty.

Thompson also suggested that technology and environments are major sources of uncertainty.

Centralization refers to the expanse of authority at each hierarchical level.

When decision making authority are limited to the top level of an organization, the organization is centralized. Conversely, when decision making authority is dispersed to lower levels, the organization is decentralized.

Daft (1998) described organization's contexts, which considers overlapping elements in structure and work processes. Some important contexts include size, number of people working for an organization, and technology. He described

technology as the actions and techniques used to transform inputs into outputs. The environmental context are elements outside the boundary of the organization. Goals and strategy define scope and purpose of the organization. Organization's culture are the underlying values and norms shared amongst employees. The following section expand the ideas laid above to include decision making.

2.1.3 Individual and organizational decision-making

Individual and organizational decision making overlap because organizations are made up of individuals (Shapira, 1997). However, prior research differ in the way they treat individual and organizational decision making. Daft (1998) described individual decision making in two ways: rational approach, which guides the individuals' decision making processes, and bounded rationality, which describes how decisions are made with limited time and resources. Daft listed eight steps in the individual rational decision making process: (1) monitor the decision environment, (2) define the decision problem, (3) specify decision objectives, (4) diagnose the problem, (5) develop alternative solutions, (6) evaluate alternatives, (7) choose the best alternative, and (8) implement the chose alternative. Daft explained that the rational procedure works best in programmed decisions, where problems and alternatives are clearly defined and the decision maker has enough time to collect complete information. Bounded rationality on the other hand, describes the idea that managers work with limited time and resources.

Organizational decision making, as studied in lab experiments, differs from individual decision making in terms of ambiguity, longitudinal context, incentives, repetition, and conflict (Shapira, 1997). In organization decision making, information

and preferences are unclear and participants in decision making are part of an ongoing process. Additionally, incentives and ramifications are long lasting, decisions, such as a loan officer reviewing application for a loan, are repetitive, and conflicts dealing with power considerations and nature of authority relations, are pervasive. Shapira argued that those additional dimensions, ambiguity, longitudinal contexts, incentives, repetition, and conflict, do not occur in individual decision making.

Simon (1976) described the relationship between the individual and the group in decision making. He noted that the organization takes the individual's autonomy, replaced with "organization decision-making processes". The organization decides, for the individual, his function and duties, and people who have power or authority over him. The organization also limits his choices as needed for coordination with others in the organization. Simon also described approaches organizations use to influence individual decision makers within the organization: authority, organizational loyalties, push for efficiency, advice and information, and training.

2.1.4 Decision Models

There are many decision making models, some, with overlapping paradigms. Rationality, logic and reasoning, are prominent features in decision models. Huber (1981) summarized four decision making models: Rational, political/competitive, garbage can, and program. In a Rational Model, organizational decisions are based on organizational units using information in a rational way. In the Political/Competitive Model, organization decision are made by units, using strategies and tactics, to influence decisions that are favorable to themselves. The garbage can model

displayed the intersection of solutions, problems, and opportunities. This model was useful in interpreting choices in certain organization settings. The program model emphasized the effect of programs, such as standard operating procedures and group norms, had on organizational decisions.

Similarly to Huber, Choo (2001) discussed the idea of rationality in decision making. Choo stated that organizations adopt one of the following, depending on levels of uncertainty: Bounded rationality, Process mode, and Political mode. Goal and procedures are clear in bounded rationality: there is a standard set of operating procedures, which uses search and decision rules and routines of the organization. In the process mode, there are clear goals and strategies, though the methods and alternatives might be unclear. There are dynamic processes for search interruptions. In political mode, goals are disputed by multiple groups. Each group is clear about their preferred alternative. In this mode, groups bargain, vying for their own interests.

Sathyamoorthy (2014) also described decision making models in terms of rationality. His model, which described the rational model, bounded rationality model and intuition model, are similar to Daft's model provided earlier (Section 2.1.3). The addition, intuition model, is often used when decision makers do not have enough time to gather information, and so make decisions based on instinct or gut feeling. Sathyamoorthy noted that intuition decision making's effectiveness is dependent on the decision maker's experience.

Daft (2008) warned that most organizational decisions are not made in a logical, rational manner. Most decisions do not begin, as he and Sathyamoorthy (2014) described, with the analysis of the problem and then systematic analysis of

alternatives, followed by implementation of solution. Daft expressed that “decision processes are characterized by conflict, coalition building, trial and error, speed and mistakes.” He also explained that since individuals make decisions, but organizational decisions are not made by individuals, decision making will almost be done in collaboration. In agreement with the notion of collaboration, Rogers & Blenko (2006) described critical roles individuals play in the decision making process: Recommend, Agree, Input, Decide, Perform. People playing the recommend role are involved in proposing, gathering information and analyzing. Those who “agree” have Veto power and can vote yes or no. Those who provide “Input” are consulted on decisions and those who “Decide” is the formal decision maker, accountable for the decision. Those in the “Perform” role are the people responsible for executing the decisions. Table 1 displays the Critical decision making roles. In parentheses are the terms, changed for clarity, used in the information gathering interviews (see Section 3.2).

Table 1 Critical decision making roles as identified in "Who has the D?" by Rogers, Paul, and Marcia Blenko	
Role	Description
Recommend (Proposer)	People in this role are responsible for making a proposal, gathering input, and providing the right data and analysis to make a sensible decision in timely fashion.
Agree (Approver)	Individuals in this role have veto power – yes or no – over the recommendation.
Input	These people are consulted on the decision. Because the people who provide input are typically involved in implementation, recommenders have a strong interest in taking their advice seriously.
Decide (Ultimate Decision Maker)	The person is the formal decision maker. He or she is ultimately accountable for the decision, for better or worse, and has the authority to resolve any impasse in the decision-making process and to commit the organization to action.
(Perform) Executor	Once a decision is made, a person or group of people will be responsible for executing it. In some instances, the people responsible for implementing a decision are the same people who recommended it.

Some researchers caution against the use of decision models because they are prone to errors. Sutcliffe and McNamara (2001) studied the extent to which decision makers used prescribed decision practice, organizational decision making procedures, for important decisions. They discovered that decision makers were more likely to use prescribed practice for important decisions, for known decision targets, and when the decision maker was a part of a larger unit. However, reliance on prescribed practice fostered stability in decisions and negatively affected future judgment due to complacency.

Christensen & Knudsen (2010) described two types of errors decision systems can be vulnerable to: Type I errors of rejecting superior alternatives and Type II errors of accepting inferior alternatives. They explained that hierarchical structures, where proposals need to be approved at different levels, are less likely to be vulnerable to Type II errors of accepting inferior alternatives. However, flat organization structures, or polyarchies, where proposals are approved by decisions makers in parallel, tend to be less vulnerable to Type I errors of rejecting a superior alternative. The authors explained that choosing the best structure to effectively minimize Type I or Type II errors, is the core of designing decision making organizations.

Hammond et al. (1998) described psychological traps, such as anchoring and status quo. Anchoring is the idea that the mind gives disproportional weights to the first information it receives. Hammond et al. advised viewing problems from different perspectives and thinking through problems before consultation to overcome anchoring. The status quo trap is making decisions based on biases towards normative

or standard decisions. To avoid being too comfortable, Hammond et al. suggested identifying other options and using them as counterbalances. For all psychological traps that hinder decision making, one should develop tests into decision making systems, which can expose errors in thinking. The proceeding section describes relevant literature regarding decision-making in healthcare.

2.2 Decision-making in Healthcare

In the modern healthcare system, many different decision-makers interact to care for patients and manage operations. The term healthcare describes a range of activities which can include, but is not limited to, any of the following: administration of a drug/treatment, psychological assessment, physical examination of a patient, services provided by allied health disciplines (Guardianship and Administration Act, 2000). This review focuses largely on hospitals. Relevant research about decision making in healthcare are sparse. The majority of the research related to decision making in healthcare were specific to clinical decision making. Some discussed shared decisions between doctors and patients, and others discussed optimal tools for making clinical decisions such as diagnosis. Clinical decisions are discussed in Section 4.1.1 and will not be covered in this chapter. The remainder of this section discusses complexity and structure as it relates to healthcare, and compares healthcare to other industries.

Many health research initiatives consider the complexity and challenges of the current system. Kuziemsky (2016) reviewed challenges with traditional decision making in healthcare and provided a framework, Complex Adaptive Systems (CAS), to support healthcare management. CAS displays emergent behaviors and nonlinear

properties. Kuziemsky stated that although there is a push to transform healthcare organizations, attempts may cause unintended consequences. He provided an example describing the introduction of Health Information Technology (HIT), an attempt to reduce medical errors. Studies suggested that HIT caused more medical errors. Kuziemsky argued that in order to reform the healthcare system, thorough systems understanding of concepts and interrelations of healthcare must be known. Doebbeling (2011) summarized strategies for “transformational” change in healthcare and also suggested the use of complex adaptive systems to enable organization redesign. He argued that CAS will allow integration of health information, create continuous learning organizations, and allow the development of appropriate measures and incentives.

Some studies consider the implications of hospital structure on patient outcome. A study of organizational structure (Zinn and Mor, 1997) explained that structural variables (see Section 2.1.2) and medical staff levels served as predictors of patient outcome and quality of care. They found that higher volume and expenditures, along with formal coordination between medical staff, nursing, and administrators were associated with lower mortality. There is no consensus on the effects of structure on patient outcomes. Several studies suggested that more rigid controls, such as centralization and coordination, appear to be associated with better outcomes in hospital setting (Longest, 1974; Shortell et al., 1976; Flood and Scott 1978, 1987; Shortell and LoGerfo, 1981; Knaus et al., 1986). However, some research suggests that having a more horizontal structure, which allows for better communication, is

more effective (Teresi et al., 1993). Zinn and Mor (1997), advised that more studies should be done on measures of patient outcomes.

Gaba (2000) described health care, particularly hospitals, as high-hazard industries and conducted an extensive survey comparing hospitals to other high-hazard industries. He defined high-hazard industry as those with activities that can maim or kill. He explained that healthcare was complex due to the inherent complexity of humans. He also suggested that medical technologies and healthcare structure add to the complexity. With regard to centralization, Gaba argued that non healthcare industries, such as the Navy under strict authority from operations, are centralized. The healthcare system, with hundreds of thousands of doctors' offices, are decentralized. He argued that even consolidated hospitals were only centralized in business operations and not clinical affairs. He described differences with regard to regulation, training, and learning. Other industries were highly regulated with strict rules and penalties for not following those rules. Healthcare, with respect to patient care, has little and inconsistent regulation. Gaba described the intensive training, which include simulations, in industries such as aviation. Though extensively educated, Gaba argued that personnel scrutiny in hospitals were lenient. With regards to organizational learning, Gaba described high profile, independent and capable organizations, such as the National Transportation Safety Board – NTSB, role in investigating causes of accidents. He argued that healthcare on the other hand, had weak and mostly local systems for investigating and reporting adverse events.

2.3 Summary

This chapter reviewed areas of research in organizational decision-making and healthcare decision-making. Organizations are decision-making systems and should thus be analyzed with their underlying decision processes. We found that rationality form the basis of decision making, and many decisions models, depending on different contexts, utilize rationality in their paradigms. We identified prevalent themes, complexity and structure, in organizational decision making, and compared hospitals to other high-hazard industries, using those themes. The following chapter describes the methods used in this thesis.

Chapter 3: Methods

The purpose of this thesis was to create a comprehensive framework for decision making in healthcare systems. The research process comprised three steps. First, in order to classify the types of decisions and their corresponding decision makers, we identified relevant literature relating to decision-making roles and responsibilities in healthcare systems. Second, we used the initial healthcare decision-making framework to develop questions for our information gathering interviews. Third, to corroborate the identified literature and identify critical roles within the decisions, we conducted information gathering interviews with senior level managers in the hospital organizations.

3.1 Literature Review

We identified relevant prior research in a three-step process. First, we conducted keyword searches to identify potentially relevant studies published in English. Fifty-two keywords were used, referring to decision making and healthcare systems (such as “managers and decisions in hospitals” and “decision-making in healthcare”). We conducted a wide-ranging series of cross-searches using combinations of keywords in the Google Scholar database, which permitted the concurrent search of multiple databases such as JAMA and Elsevier. In addition, we conducted a supplemental search in the ProQuest database. We noted any study with a title or abstract that discussed decisions and healthcare organizations. We also identified relevant studies from the reference lists of those articles.

In the second stage, we read the identified references to identify the ones that examined the decision-making roles and responsibilities of the stakeholders in healthcare systems. We evaluated the quality of each study in terms of its research design and methods and whether the journal was peer-reviewed. We compiled a list of the decisions and corresponding decision-makers that the various articles described.

In the third stage, we created the categories by combining similar types of decisions. For example, treatment decisions were combined with therapy decisions, and all decisions relating to finances were grouped into the budget category.

The majority of the research papers used in this framework were based on survey and interview data. One research paper about first-line managers collected data based on empathy-based stories (Hyrkäs et al., 2005). Participants were asked to write an essay following instruction from the researcher. In addition to survey and interview data, the research papers about clinical roles used patient records and observational data. One of the papers related to doctors did a retrospective analysis using audiotapes from a different study (Braddock et al., 1997). Another paper about nurse decision-making used reflective journals written by the nurses in addition to interviews and observation data (Standing, 2007).

A total of 109 papers were used to develop this framework. This paper cites only selected papers that most directly support the discussion. A complete list is available from the authors. We tallied the number of papers that described each role (Table 2). The total of these tallies is greater than 109 because papers that discussed decisions for multiple roles were counted in multiple roles.

Table 2: Number of papers that describe each role	
Role	Number of Papers
Doctor	44
Nurse	14
Board of Directors	20
Senior Level Manager	15
Middle-Level Manager	4
First-Line Manager	8
Other	57

3.2 Information-Gathering Interviews

For the information-gathering interviews, we used a standard semi-structured interview format including open-ended questions to both frame the interview and allow probing for additional information (Miles & Huberman, 1994). We selected this method to supplement and validate the sources we found in literature, as well as provide insight into potential problems and nuances unavailable in literature. All participants were assured that their voluntary participation would remain anonymous. Interviews were conducted in person and lasted an average duration of 30 minutes. The interviews were recorded using a Smart Voice Recorder application from SmartMob. Table 3 provides a list of the questions.

Table 3 Information Gathering Interview Questions
<ol style="list-style-type: none"> 1. How many years have you worked in your position? 2. How many years have you worked in your profession? 3. What is the zip code of your place of employment?

4. What type of hospital do you work in?
5. Do you have a clinical or nonclinical role?
6. What types of decision do you make?
7. Do you make any of the following types of decisions? Budget, Resource Allocation, Staff Recruitment, Staff Training and Development, Scheduling, Technology Acquisition, and Strategic Planning
8. Rate the degree to which the Blenko's critical decision making role applies in each decision
9. Are there other roles in the organization that make similar types of decisions that you do?

We began by introducing the purpose of the study and explained that we were looking for information about their roles, not their personal opinions. The first six question asked the interviewees about the following: (1) the number of years they worked in their profession, (2) the number of years they worked in thier current position, (3) the zip code of their place of employment, (4) the type of hospitals they worked in, (5) if they had a clinical or nonclinical role, and (6) the types of decisions they made. After respondents provided their responses, we asked if they made decisions that we had previously identified from literature. Non-clinical decisions were budget, resource allocation, staff recruitment, staff training and development, scheduling, technology acquisition, and strategic planning. We provided the respondents with the critical decision-making roles adapted from Rogers, Paul, and Marcia Blenko, "Who has the D?" (see Table 1). We modified the original titles (see Section 2.3) for clarity, but kept the same general role definitions. The five roles were Proposer, Approver, Input, Ultimate decision maker, and Executor. We asked the interviewees to rate, to what degree, from never, rarely, sometimes, very often, almost always, each of those identified roles applied to each decision type. We requested

clarifications and examples for each decision type and explained to respondents that we were looking for nuances within each decision. Table 4 provides a brief summary of the way the information gathering interview were structured.

Table 4 Information Gathering Interview Structure		
Main Questions	Additional Questions	Clarifying Questions
What types of decisions do you make?	What does [decision type] entail?	"Can you expand a little on this? Can you tell me anything else? Can you give me some examples?"
What types of decisions do people in your role typically make?	Are there any other types of decisions that should be highlighted?	
Are there other roles in the organization that make similar decisions?	How are the decisions similar?	
Describe a day in a life of your role	What are the titles used?	
Are the categories we've provided appropriate for healthcare?	How are these roles different from other industries?	

3.3 Data Analysis

After obtaining permission, we recorded 26 out of the 27 audio interviews. One interviewee did not give permission to record, so we took extensive field notes instead. We then transcribed the interviews, and entered the multiple choice portion into Qualtrics for data analysis. Verbalization for main questions were literally transcribed. We did not transcribe observations such as sounds, pauses, or audible behavior. (The low value of those observations were not worth the additional time required to create them.) We used a directed content analysis approach where our initial coding were based on the framework created from prior research. During data analysis, we immersed ourselves in the data and allowed themes to emerge. We developed a coding manual to ensure consistency of coding.

Chapter 4: Results

This chapter presents the results of our systematic review of literature identifying the different decision-makers and categories of decisions. This chapter also presents the results from the information gathering interviews. The literature survey focused on doctors and nurses from the clinical side, and first-line managers, middle level managers, senior level managers, and the board of directors, from the non-clinical side. The information gathering interviews were with senior executives in hospitals across the University of Maryland Medical System. The goals of the information gathering interviews were to validate the literature survey, obtain more nuanced information about the decisions in hospitals, and evaluate critical decision making roles within the identified decisions.

This chapter is organized as follows: Section 4.1 describes the results of the systematic literature survey. It presents findings about clinical and non-clinical decisions. Section 4.2 describes the results of the information gathering interviews. It identifies the decisions senior leaders make in healthcare and the degree to which they make certain decisions in their role. The section also describes critical roles within decisions. Section 4.3 summaries key points of the chapter.

4.1 Literature Survey of Decision-making Roles and Responsibilities

Table 5 Roles and Decision Categories.								
Each entry is the number of papers that described the role was responsible for that category of decision.								
Role	Decision Category							
	Diagnosis	Treatment /Therapy	Medication Prescription /Administration	Budget	Resource Allocation	Technology Acquisition	Staff Recruitment /Development	Strategic planning
Doctors	22	28	15	-	2	2	-	-
Nurses	5	11	5	-	-	-	1	-
First-line Managers	-	-	-	3	6	-	6	3
Middle Level Managers	-	-	-	3	3	-	3	1

Senior Managers	-	-	-	8	7	3	6	6
Board of Director	-	-	-	10	-	2	5	13

Our review of 109 papers involving decision making in clinical and non-clinical settings found none that provided a complete framework that describes decision-making roles and responsibilities. The healthcare organization is a complex entity with various non-standard inputs and outputs, and various aspects remain ambiguous. The references (see Table 5) displayed a distinction between clinical and non-clinical decisions; managers were never involved in clinical decisions such as diagnosis, treatment therapy, and medication prescription and administration.

4.1.1 Clinical Decisions Makers

Decision making is the process of making a choice between options as to a course of action (Smith, 2008; Thomas et al., 1991). Clinical decision-making processes emphasize diagnosis (analyzing a patient’s condition) and predicting how treatment alternatives will affect the patient. Some clinical decisions are made in time-critical, life-or-death scenarios. Intensive care units (ICUs) are distinguished by the range of unprecedented events where there are no clear solutions for the “complex patient” who may have multiple and complex problems (Weinberger et al., 2013). Weinberger argued that normal clinical decision making, which combines a physician’s critical reasoning (formed from previous experience) and the utilization of patient data, information, and evidence-based literature, is insufficient when dealing with complex patients. In these time-critical situations, there is insufficient time for information gathering and deliberation.

4.1.1.1 Doctors

Doctors practice medicine and are concerned with promoting or restoring health and treating impairments (International Labor Organization, 2008). Diagnosis is an important feature of physician's skill and capability in medical practice. It is based on the doctor's ability to assess the cause of the patient's condition based on a number of factors such as the patient's medical history, physical examination, and medical tests such as the electrocardiogram and chest x-ray (Hancock, 2012). Although various models have been proposed to describe the diagnostic process in medical practice, most agree that it is a central cognitive skill based on both knowledge and judgment (AMA, 2011).

After making a diagnosis, a doctor decides which treatment should be followed to promote healing. Selecting a treatment includes prescribing the right treatment or medication, informing patients about risks and alternatives regarding proposed treatment, and providing adequate follow-up to the patient within a reasonable amount of time. Previous studies of the doctor's role in diagnosis and treatment decisions discussed shared decision making between the patient and doctor, informed consent, and the decision-making process. Charles (1997) discussed clear methods to define shared decision making including basic characteristics as well as measurement issues. Charles (1999) described the analytical stages in the treatment decision-making process and compared shared decision making (both the physician and patient are involved) to the paternalistic (doctor assumes the dominant role) and informed decision (information exchange is one way, from physician to patient). Whitney (2003) used importance and certainty to classify medical choices into six groups; the levels of importance of medical decisions are minor, routine, important,

and major while the levels of certainty of medical decisions are low, intermediate, and high. A doctor could decide the level of patient involvement based on these levels. For example, if a doctor feels that a choice is better but believes other doctors might disagree, then the patient must be involved in the decision and given a second opinion. Braddock (1997) listed the following, by decreasing frequency, as some of the types of clinical decisions made by physicians: new medication, medication renewal, routine diagnostic lab test, and office procedure.

4.1.1.2 Nurses

Nurses care for people who are injured, aging, ill, or otherwise impaired. Their responsibilities include planning and managing care of patients, supervising health care workers, and working with doctors and others in the practical application of preventive and curative measures in clinical and community settings (International Labor Organization, 2008). Previous studies have described different models of the clinical decision-making process. These models include the information-processing model (nurses used scientific approach and decision trees), intuitive-humanist model (cue recognition, hypothesis, interpretation and evaluation), and O'Neill's clinical decision making model (computerized decision making system) (Banning, 2008). Similarly, Ramezani-Badr et al. (2009) found that intuition, recognizing similar situations, and hypothesis testing were the most common reasoning strategies used by nurses. Previous studies have also organized decision types and categories for nurses. Bucknall (2000) classified their decisions into intervention, communication, and evaluation categories. For example, an intervention involved nurse initiating a new therapy, communication involved deciding to check treatment orders with coworkers, and evaluation involved obtaining test samples to collect patient information.

Buchbinder and Thompson (2010) organized decision types into the following: Intervention & effectiveness, Targeting, Prevention, Timing, Referral, Communication, Service organization, delivery, and management, Assessment, Diagnosis, Information Seeking, and Experimental, understanding, or hermeneutic. Moreover, the number and types of decisions that nurses face depend on the work environment, the nurses' perceptions of their clinical role, their operational autonomy, and whether or not they see themselves as active influences in the decision-making process. Bucknall (2003) studied how the nursing landscape (environmental influences) affected their decision making in critical care settings. He found three main environmental influences: patient situation, resource availability, and interpersonal relationships. Bucknall acknowledged, however, that little is known about how these environmental influences affect patient outcomes.

4.1.2 Non-clinical Decision-makers

Non-clinical decisions are administrative in nature. They do not include any type of medical treatment or testing. For example, non-clinical decisions are made by medical billers and coders, hospital executives, and administrative assistants.

Although some non-clinical decision-makers do interact with patients, they do not provide medical care. In this paper, we focus on the roles of managers and those in positions of authority in the healthcare system. The first-line manager (also known as a supervisor, administrator, coordinator, or line manager) is accountable for individuals directly involved with providing medical care. Middle managers oversee the work of the first-line managers, and they have titles such as general manager, regional manager, and divisional manager. Senior-level managers are responsible for

organization-wide decisions. These individuals typically have titles such as president, executive vice president, managing director, chief operating officer, chief executive officer, or chairman of the board. A hospital's board of directors, or board of trustees, oversees the affairs of hospitals and sets vision and strategic direction.

Healthcare managers are tasked with ensuring the facility runs efficiently. They are concerned with leading the overall operation of the organization and ensuring that it moves in a positive direction. They are motivated to "maximize the benefit of the resources at their disposal for all present and future patients" (Rundall, 2004). They are usually involved in policy, accounting, and facilities management. The healthcare manager is concerned with the overall operation of the facility or network and leaves the day to day management of staff to the administrator (Buchbinder, 2010). In this review, we distinguish between senior level and middle managers.

4.1.2.1 Board of Directors

A U.S. hospital is overseen by a board of directors (some hospitals may have multiple boards) (Jha & Epstein, 2010). The board guides long-range strategic decisions, evaluates organizational and management performance, manages the board, and directs fundraising (Kovner, 2001). Interviews from the Kovner study indicated that the board is involved in finance and planning, setting policy and giving direction on mission, selecting the CEO, vision & oversight, and advising, planning, and assisting for the future. Arnwine (2002) described the board's role as policy establishment, strategic planning, and oversight. Previous studies have focused on one specific aspect of the role of the board. Millar et al. (2013) described the role that the board played in quality and patient safety. In order to assert this fundamental

governance role, the board must define priorities and objectives, craft strategies, shape their culture, and define systems of organizational control. Culica and Prezio (2009) focused on the role that the board played in relation to financial performance. They argued that because “overseeing the operation of the organization and the board” is an important part of hospital governance, the board has some responsibility for assuring the financial health of the hospital.

Previous studies have emphasized the importance of distinguishing between governance and management. Biggs (2011) acknowledged that the board and management have a role in strategic planning. However, management creates the organization’s strategic plan, and the board approves, monitors, and makes suggestions for change. Simply put, management proposes, and the board approves. Arnwine (2002) highlighted that the board must oversee and govern, not manage, an idea that is inconsistent amongst other papers. Longest (2012) emphasized the role the board plays in strategic formulation, a key part of the broader process, strategic management, which also incorporates implementation and control. Longest grouped the board with senior level managers and acknowledged that the governance and management roles are sometimes not clearly differentiated, defined, or mutually respected, which leads to difficulties assessing strategic importance of information. There are many characteristics unique to hospitals that often cause board members to be more involved in management (Anning et al., 2011). Board members and their families are often also consumers, which can lead to them delving into matters that should be left to management. This detracts focus and time from their responsibilities.

4.1.2.2 Senior Level Managers

Senior level managers, sometimes described as the “C suite,” include the Chief Executive Officer (CEO), Chief Operations Officer, Chief Medical Officer, Chief Financial Officer, and Chief Nursing Officer. They are involved in budget, resource allocation, technology acquisition, and strategic planning. They play a part in approving budgets and information technology (IT) resources, improvement and quality efforts, and resource allocation decisions (Bradley, 2003). Senior managers, particularly the CEO, are the stimulus for strategic change and are responsible for the strategic direction and financial management of the organization (Embertson, 2006). Friedman (2000) and Lai et al. (2014) highlighted the importance of technology acquisition decisions, which can have significant effects on the organization. Weiner et al. (1997) identified the effect top management had in promoting clinical quality improvement effort. They suggested that by creating a corporate culture for quality and leading by example, senior managers could encourage clinical staff to participate in quality improvement efforts. Results of their survey showed that CEO involvement had a significant and positive impact in quality improvement efforts. Guo (2003) identified three roles that senior-level healthcare managers play in decision making: entrepreneurial strategists, disturbance handler, and resource allocator. An entrepreneurial strategist initiates strategies for change, a disturbance handler resolves conflict, and a resource allocator assigns job responsibilities. Li-Min et al. (2007) studied critical management activities (via mailed questionnaire) performed by nursing managers at different managerial levels. They found that senior-level managers were more concerned with strategic planning issues and valued goal setting and planning more than the lower managerial levels. Longest (2012) also

acknowledged that strategic decisions, in public hospitals in particular, are the province of senior-level managers.

4.1.2.3 Middle Managers

A middle manager bridges the gap between the doctors and senior management and professional staff (Embertson, 2006). Previous studies focused on their responsibilities but did not describe the decisions that they make. For example, Embertson (2006) discussed the roles that middle managers play in juggling the budget, organization goals, and objectives. They should also make employees feel valued by developing relationships, support, and encouragement. Embertson's description suggests that middle managers carry out the decisions that others have already made. Birken et al. (2012) presented a theory of how middle managers influence healthcare innovation implementation. They found that middle managers diffuse, disseminate, and synthesize information regarding innovation, mediate between strategy and day-to-day activities, and sell innovation implementation. Studies regarding middle managers are sparse. Defining middle managers is not straightforward. They often have diverse professional backgrounds, have diverse functions, and tend to occupy a variety of positions (Birken et al., 2012). Li-Min (2007) found that middle level nurse managers were more concerned with management control issues.

4.1.2.4 First-line Manager

A first-line manager, sometimes described as an administrator or supervisor, is responsible for handling staffing issues in a specific department and day-to-day operations in a healthcare organization. The role of the first-line manager is allocate to those for whom he is responsible the materials and information needed to

accomplish their jobs (Weaver, 1978). Although the size of the hospital affects their role, the first-line manager is generally involved in the managing the staff within a particular department of healthcare. First-line managers ensure that patients and clients receive correct services in an optimal fashion. A first-line manager must also have an understanding of medical records and make sure that patients' medical records are properly maintained. Begun (2011) discussed the role first-line managers have in inter-professional care teams. He suggested that first-line managers can shape the structure, strategies, and culture of the organization to optimize collaborative inter-professional care.

The first-line nurse manager is accountable for standards of patient care, staff supervision and development, financial planning and control, and management of environment (Acorn and Crawford, 1996). Acorn and Crawford found that nurse managers frequently had responsibility for more than one nursing unit, supervised up to up to 175 staff, and managed budgets of several million dollars. They also play a role in cultural integration and retention, and direct staff attitudes (Kang, 2012; Mathena, 2002). Hyrkäs (2005) acknowledged that, although first-line nursing managers in Finland were tasked with more administrative activities, they were still expected to participate directly with an increased demand patient care. Li-Min (2007) found that first-line nurse managers were concerned with operational management issues: recruiting and training nurses, conducting performance evaluations, promotions and demotions, designing and organizing workloads, settings standards, guidelines, and organization culture, and interacting with internal and external entities. Miri et al. (2014) conducted an exploratory study, through content analysis

on results of recent studies, to describe first-line manager roles. They first acknowledged that first-line managers were expected to manage wards while simultaneously carrying out their patient care duties (Loo & Thorpe, 2003; Johansson et al., 2007; Skytt et al., 2008). With regards to decision-making roles, Miri found that first-line managers did the following: (1) developed policies for the whole organization and planned for implementation of health standards; (2) participated and collaborated in conferences to enhance knowledge as well as nursing research and applied research; (3) organized shift schedules and assigned tasks; (4) planned for the delivery and development of equipment and tools; and (5) cooperated with and accompanied senior officials and inspection group visits.

4.2 Information-Gathering Interviews

We interviewed 27 senior managers in seven different hospitals within the University of Maryland Medical System. There were 14 males and 13 females. The hospital size ranged from 112 to 772 licensed beds. The number of senior leaders in each hospital ranged from five to 22 executives. Table 6 shows the titles of the study participants. Interviewees had worked in their current positions from six months to 11 years and had worked within the healthcare profession from eight to 43 years. The senior level managers interviewed included various corporate officers, senior vice presidents, and vice presidents. While reporting their titles, if they had corporate officer titles, we did not include their secondary titles. Non corporate officer titles were grouped together as Senior Executives. The characteristics of this convenience sample, therefore, limit the generalizability of the study findings to other hospitals in Maryland or elsewhere.

Title		Number of participants
Chief Executive Officer (CEO)		5
Chief Financial Officer (CFO)		1
Chief Nursing Officer (CNO)		6
Chief Medical Officer (CMO)		5
Chief Operating Officer (COO)		3
Senior Executives	Senior Vice President, Operations	2
	Senior Vice President, Executive Director	1
	Senior Vice President, Strategy Community and Business Development	1
	Vice President, Patient Access, Flow and Emergency Services	1
	Vice President, Population Health and Clinical Integration	1
	Vice President, Patient Experience	1

4.2.1 Senior leaders and their decisions

The information gathered from these interviews confirmed our initial framework. Senior level managers generally make decisions related to budget, resource allocation, staff recruitment, staff training and development, scheduling, technology acquisition, and strategic planning.

Table 7: Proportion of Participants and their Selected Decisions								
	Budget	Resource Allocation	Staff Recruitment	Staff Training & Development	Scheduling	Technology Acquisition	Strategic Planning	Other
CEO	●●●●●	●●●●●	●●●○○	●●●●●	○○○○○	●●●●●	●●●●●	●●●○○
CFO	●	●	●	●	○	●	●	○
CNO	●●●●● ●	●●●●●●	●●●●●●	●●●●● ○	●●○○○○	●●●●●●	●●●●●●	●●○○○○
CMO	●●●●●	●●●●●	●●●●●	●●●●●	●●○○○	●●●●●	●●●●●	●●●○○
COO	●●●	●●●	●●●	●●●	●○○	●●●	●●●	●○○
Senior Executives	●●●●● ●●	●●●●●● ●	●●●●●● ●	●●●●● ●●	●●●●●○ ○	●●●●●● ●	●●●●●● ●	●●○○○○ ○
Note: Each circle represents an each individual interviewed. The number of filled circles represent the number of individuals who make that decision. Unfilled circles represent individuals who do not make that decisions								

When initially asked, “What types of decision do you make in your role?”, four out of five CEOs mentioned strategic planning. Three out of five CEOs mentioned budget and resource allocation. CEOs also mentioned that they made decisions related to patient experience, marketing and communication, interfacing with the community, and philanthropy. Below is a sample response from a CEO about the types of decisions that CEOs make:

CEO7: It really falls into a couple of different areas. I make decisions about the strategic direction of the organization. I make decisions about the financial direction of the organization. I make decisions about staff. I make decisions about our community benefit philanthropy, and I make decisions

about programs and services we are going to offer. That is at a high level. I make a lot of other decisions every day.

Interviewer: In regards to decisions about staff, what exactly does that entail?

CEO7: We will look at broad categories of whether we are going to add or delete positions, salary, benefits, things that will engage staff.

When provided with a list of decisions types and asked yes or no if they made these decisions, five out of five CEOs responded yes to Budget, Resource Allocation, Staff Recruitment, Staff Training and Development, Technology Acquisition, and Strategic Planning. None of the CEOs made scheduling decisions, and three out of five responded yes to making other types of decisions not listed.

While giving his response to the question “What types of decisions do you make?” the one Chief Financial Officer we interviewed emphasized the importance of strategic planning and budget and asserted that those two aspects are the “roadmap” for decision making in his role. He mentioned keywords relating to strategic planning 13 times and keywords relating to budget six times. Below is a segment of his response:

CFO6: So you have a strategic plan. It is a multi-year plan, and that drives then, a companion document, and that is your financial plan, and I'm talking a multi-year strategic plan and a multi-year financial plan. So you think through mission, your market and then your resources, what's required versus what you have. And those two documents, really, they are your roadmap to what you believe is success for your patients, success for your organization. And I would say, as fundamental as that sounds, it needs to be done, it is a discipline process, it requires people to think strategically broadly, not what is in front of them at this moment and that roadmap really is what should be driving your day to day decisions.

When provided with the listed of decision type, the CFO responded yes to all the decision types except scheduling. He responded no to making other decisions outside of the provided list.

Four out of six Chief Nursing Officers mentioned staff recruitment decisions when initially asked what types of decisions they make. Staffing for the CNO role involved “hiring and firing”. Three out of six CNOs mentioned budgetary decisions, and two out of six mentioned resource allocation decisions. CNOs also mentioned policy and procedure decisions, and quality and regulatory standards decisions.

Below is a sample response from a CNO about the types of decisions that CNOs make:

CNO5: I have to make budgetary decisions. Um, financial decisions when it is related to initiatives that might be coming down from University of Maryland, and setting priorities on whether it's an initiative that we can take on at the current time. I make decisions about, hiring, depending on what level that they are in. Um, I am the sponsor for epic conversion right now, for electronic medical records. And so there is a lot of decision making that has to take place at the senior level that I make. And just anything at the administrative level that needs someone to make a final decision related to, if it is within any of those departments that report up to me.

When provided the list of decisions and asked to answer yes or no to making those decision types, six out of six CNOs responded yes to budget, resource allocation, staff recruitment, staff training and development, technology acquisition, and strategic planning. Two out of six CNOs responded yes to making scheduling decisions. None of the CNOs responded yes to making “other” decisions.

In their response to the question “What decisions do you make?” three out of five Chief Medical Officers mentioned strategic planning and budget decisions. Four out of five mentioned staff decisions and 1 mentioned technology acquisition. Three out of five CMOs mentioned decisions related to patient experience, safety, or flow.

Below is a sample response from a CMO about the types of decisions that CMOs make:

CMO1: I make quality and policy decisions on how we manage on-call for physicians. I make staffing decisions and performance improvement department. I make decisions in setting goals for quality, meeting state and local expectations, physician staffing or "credentialing". Staffing includes who we are going to allow on staff and discipline those not aligned with values. I also make decisions on what kind of research we do here. I also make decisions on patient concerns and complaints. I make recommendations with regards to claim, claim is defensible or not. I also make decisions on how we will respond or change processes when we have errors. I also make decisions about whether we will continue funding various initiatives. I make budget decisions and also decisions about whether we align with system initiatives or the way we will align with those system initiatives. I also help direct reports work through decisions they are trying to make.

When provided the list of decisions types, five out of five CMOs responded yes to budget, resource allocation, staff recruitment, staff training and development, technology acquisition, and strategic planning. Two out of six CMOs responded yes to making scheduling decisions.

Two out of three Chief Operating Officers mentioned staffing, budget, and strategic planning decisions in their response to the questions “What types of decisions do you make?” They also mentioned decisions related to organization structure and development. Below is a sample response from a COO about the types of decisions that COOs make:

COO4: I make many financial decisions, so investment of capital and operating resources. I make decisions about organizational structure and organizational development. I make decisions about personnel so filling positions not filling positions. I make decisions about major capital purchases and strategies to develop various program around the organization, um, those are probably the biggest ones.

When provided the list of decisions types, three out of three COOs said yes to budget, resource allocation, staff recruitment, staff training and development, technology

acquisition, and strategic planning decisions. One out of three responded yes to making scheduling decisions.

When asked about the types of decisions that they made, three out of seven non-chief senior executive responses mentioned strategic planning and staffing decisions. The non-chief senior executives' decisions were more specific to their titles/domain. For example, the titles related to patient experience made resource allocation decisions specifically about patient flow, patient access or quality metrics. The Senior Vice President in Operations mentioned staffing and being in charge of the operations of each department responding directly to the executive. Below is a sample response from a senior executive in patient access, flow and emergency service about the types of decisions their role makes:

SVP6: Clinical operations decisions. Specific to access for patients into the medical center, and flow of patients through the medical center. So we have patients that we may prioritize, and direct decision making and planning around, in real time, who need incremental decision making around access of play, so they may need an elevation of care based on a critical complexity or they may be need to be adjusted and reprioritized based on other clinical emergent indications. This could be for patients that are coming into the medical center from other places. It could be an adjustment of patients who don't need to come into the medical center for different reasons. It could be offered alternative forms of care or it could be patients already under our care who will be in real time, adjusted and readjusted based on criticality of their disease process or that of others around them.

When provided the list of decision types, seven out of seven senior executives responded yes to budget, resource allocation, staff recruitment, staff training and development, technology acquisition, and strategic planning. Five out of seven senior executives responded yes to making scheduling decisions.

4.2.2 Critical roles within decisions

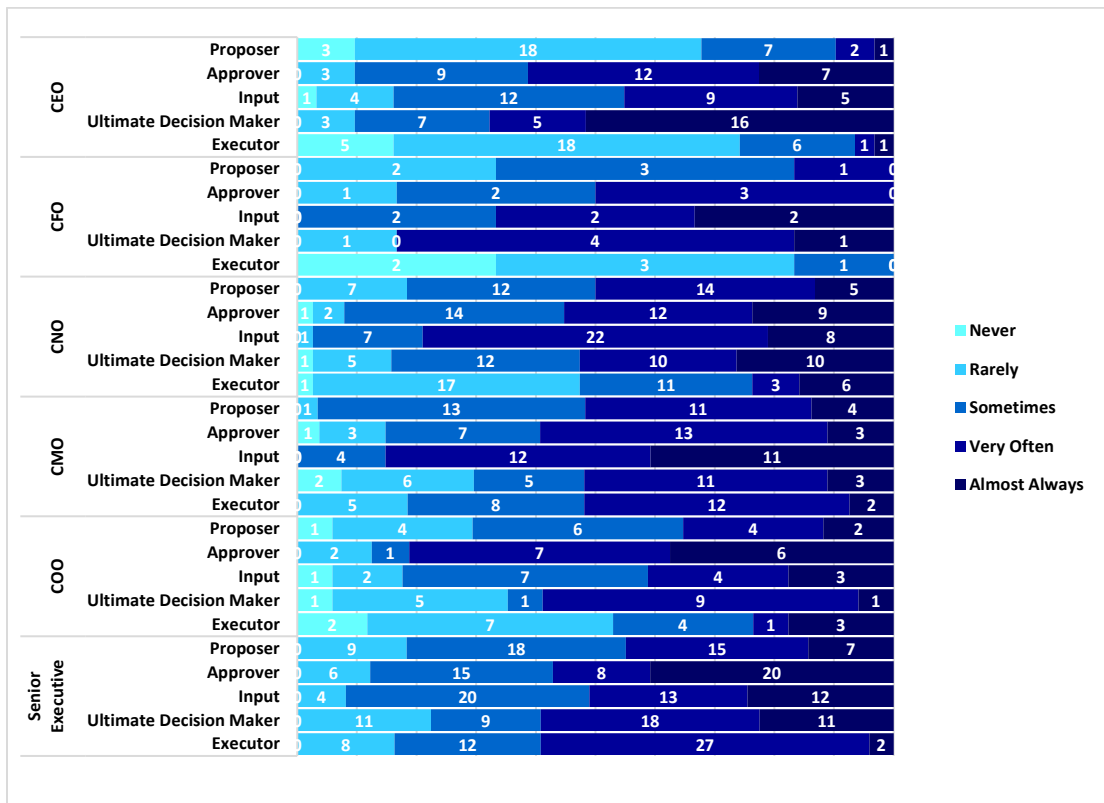


Figure 2 Critical decision-making roles: combination of all decisions types

Table 8 Critical Decision-making Role Rankings: Combination of all Decisions Types					
Chief Executive Officer					
	Never	Rarely	Sometimes	Very Often	Almost Always
Proposer	3	18	5	1	1
Approver	0	3	7	12	6
Input	1	4	10	9	4
Ultimate Decision Maker	0	3	5	5	15
Executor	5	16	5	1	1
Chief Financial Officer					
	Never	Rarely	Sometimes	Very Often	Almost Always
Proposer	0	2	3	1	0
Approver	0	1	2	3	0
Input	0	0	2	2	2
Ultimate Decision Maker	0	1	0	4	1
Executor	2	3	1	0	0
Chief Nursing Officer					

	Never	Rarely	Sometimes	Very Often	Almost Always
Proposer	0	7	12	14	5
Approver	1	2	14	12	9
Input	0	1	7	22	8
Ultimate Decision Maker	1	5	12	10	10
Executor	1	17	11	3	6
Chief Medical Officer					
	Never	Rarely	Sometimes	Very Often	Almost Always
Proposer	0	1	9	11	4
Approver	1	3	7	11	3
Input	0	0	4	11	10
Ultimate Decision Maker	2	6	5	10	2
Executor	0	5	7	11	2
Chief Operating Officer					
	Never	Rarely	Sometimes	Very Often	Almost Always
Proposer	0	4	6	4	2
Approver	0	2	1	7	5
Input	1	2	6	4	3
Ultimate Decision Maker	1	5	1	8	1
Executor	2	7	4	1	2
Senior Executives					
	Never	Rarely	Sometimes	Very Often	Almost Always
Proposer	2	8	20	10	7
Approver	0	3	14	14	16
Input	0	1	18	19	9
Ultimate Decision Maker	2	5	22	11	7
Executor	2	13	19	8	5

Due to time constraints, two of the 27 interviewees were unable to complete rankings of the critical decision making roles within each decisions. Generally, Chief Executive Officers were rarely proposers and executors. They were almost always the ultimate decision-maker (see Table 8). The Chief Financial Officer was rarely Executor, sometimes the Proposer, and very often the ultimate decision maker. The CNOs were rarely the executors, and very often inputs. The Chief Medical Officer was very often the approver, Executor, Input and Proposer. The Chief Operating

Officer was rarely executor, very often the approver, and almost always the ultimate decision maker. The non-corporate senior executives were sometimes Ultimate Decision Makers and Proposers.

Generally, CEOs have the ultimate decision-maker role in overall decision making. CFOs, CMOs, and CNOs have the input role, and COOs and Senior executives have approver roles in overall decision making. Below are the critical decision roles within individual decisions.

4.2.2.1 Budget Decisions

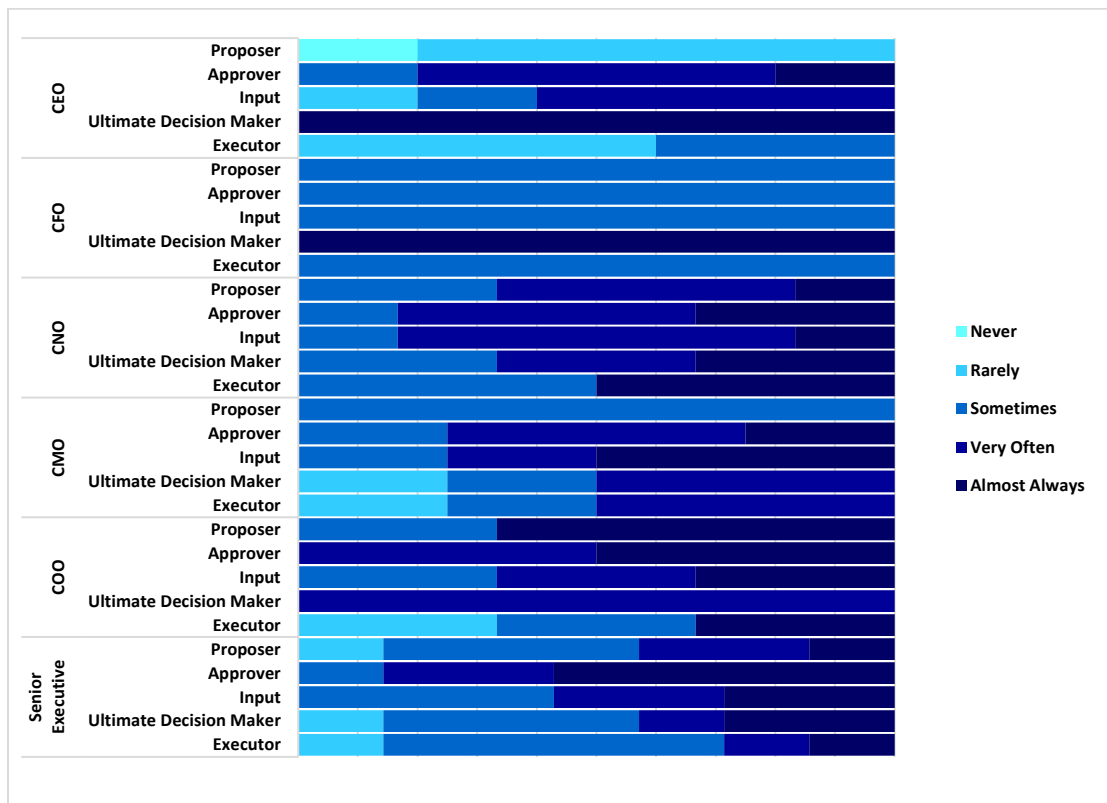


Figure 3 Critical decision-making roles: Budget

Generally, CEOs and CFOs have the ultimate decision-maker role in budget decisions. CNOs and senior executives have approver roles in these decisions, CMOs the input role, and COOs the proposer role.

4.2.2.2 Resource Allocation Decisions

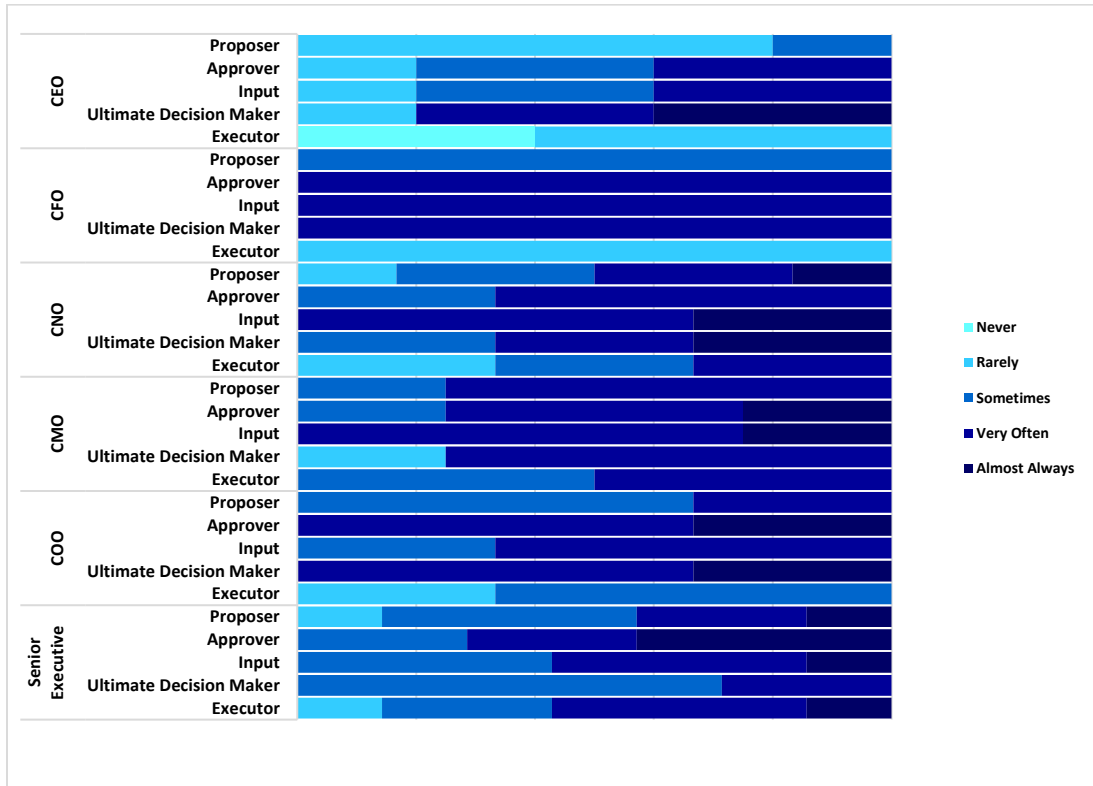


Figure 4 Critical decision-making roles: Resource Allocation

Generally, CEOs have the ultimate decision-maker role in resource allocation decisions. CFOs did not display a distinct decision making role; they were equally as likely have the approver, input and ultimate decision-maker role in resource allocation decisions. CMOs and CNOs have the input role in these decisions, and senior executives the approver role. COOs were equally likely to have the approver and ultimate decision-maker role in resource allocation decisions.

4.2.2.3 Staff Recruitment Decisions

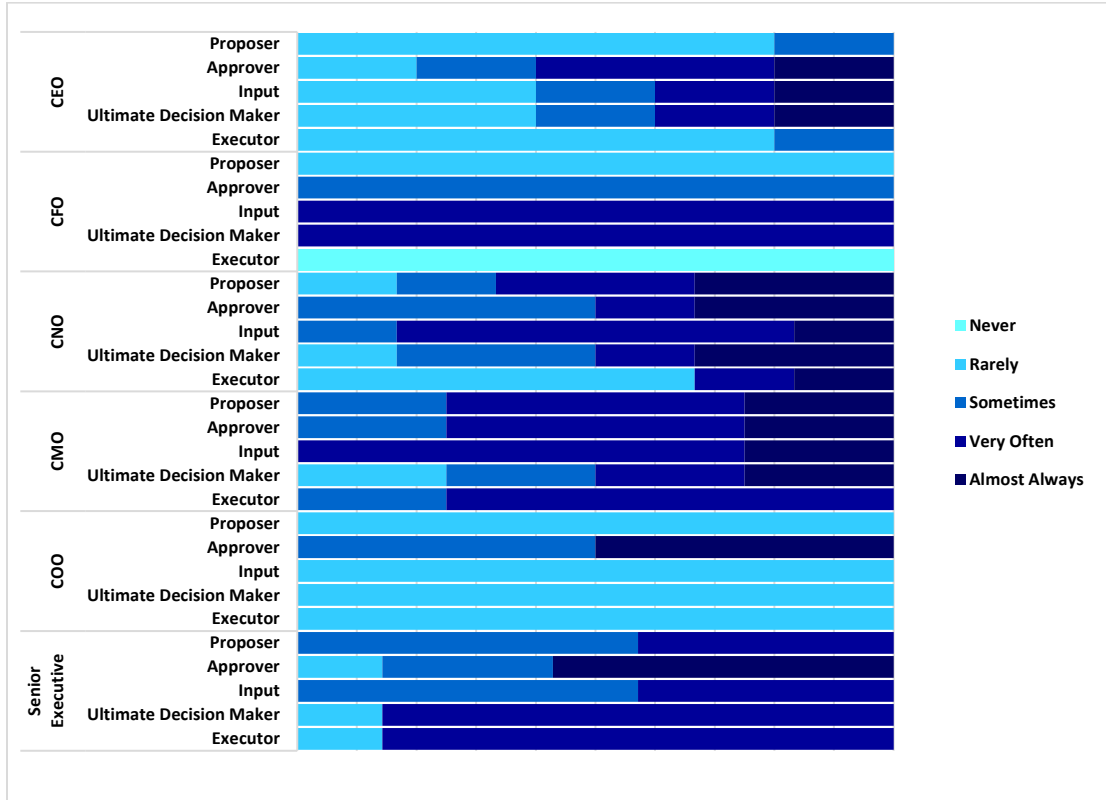


Figure 5 Critical decision-making roles: Staff Recruitment

Generally, CEOs, COOs, and senior executives have the approver decision-maker role in staff recruitment decisions. CMOs, CFOs and CNOs have the Input decision-maker role in these decisions, and CFOs also have the ultimate decision-maker roles.

4.2.2.4 Staff Training and Development Decisions

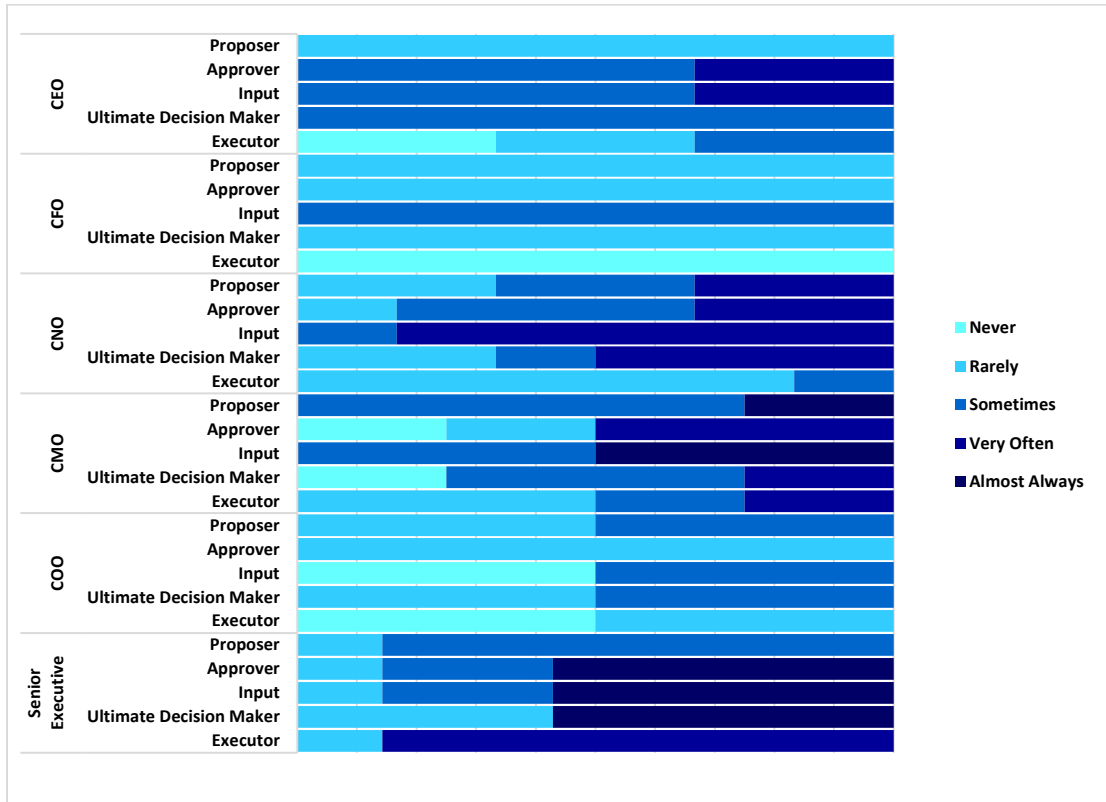


Figure 6 Critical decision-making roles: Staff Training and Development

Generally, CEOs and senior executives have the approver decision-maker role in staff training and development decisions; CEOs also have the input decision-maker role. CFOs, CNOs, and CMOs have the input decision maker-role in these decisions, and COOs have proposer and ultimate decision-maker roles.

4.2.2.5 Scheduling Decisions

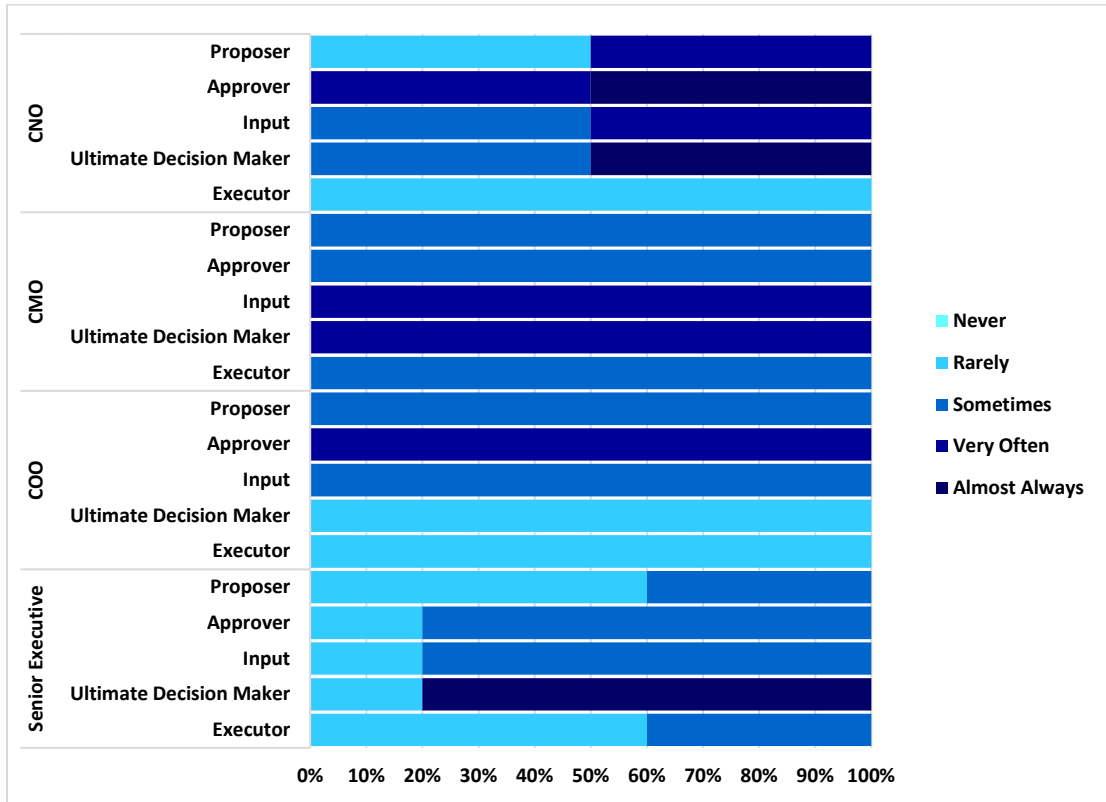


Figure 7 Critical decision-making roles: Scheduling

Generally, CNOs, COOs, and Senior executives have the approver decision-maker role in scheduling decisions. CMOs have the input decision-maker role in these decisions, and CEOs and CFOs don't make these decisions at all and so have no role in them.

4.2.2.6 Technology Acquisition Decisions

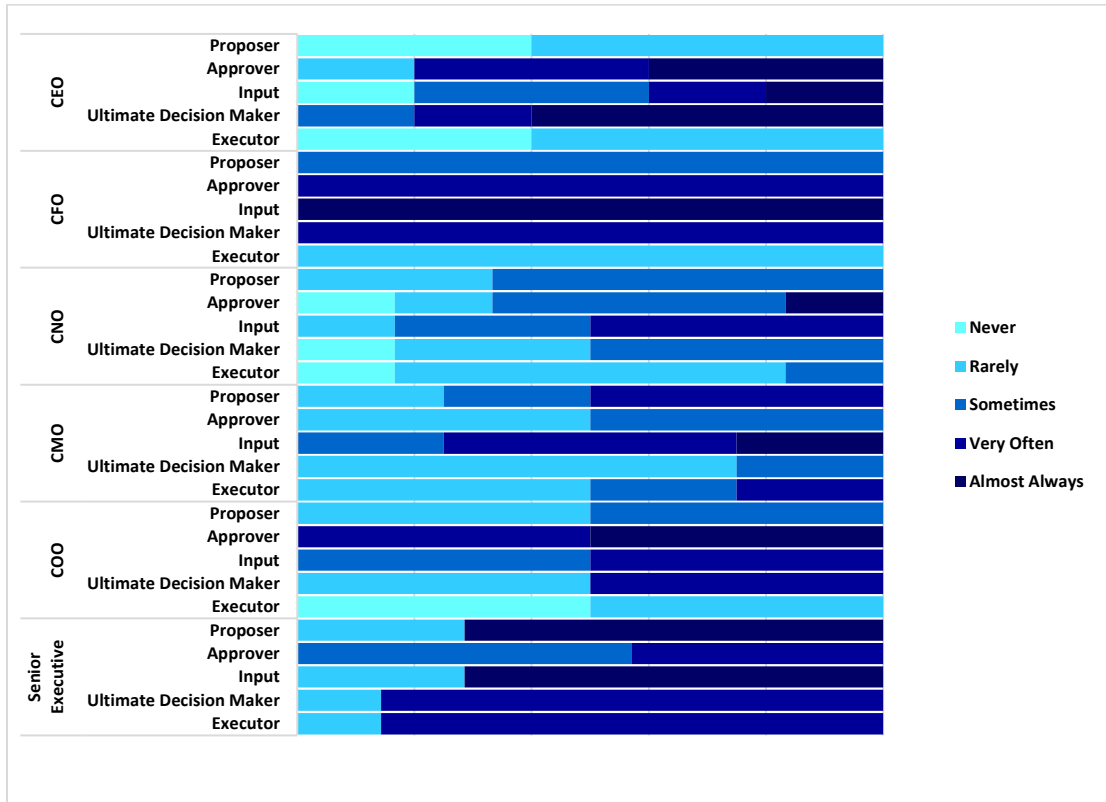


Figure 8 Critical decision-making roles: Technology Acquisition

Generally, CEOs have the ultimate decision-maker role in technology acquisition decisions. CFOs, CMOs, CNOs, and Senior executives have the input decision-maker role in these decisions, and COOs have the approver decision-maker role.

4.2.2.7 Strategic Planning Decisions

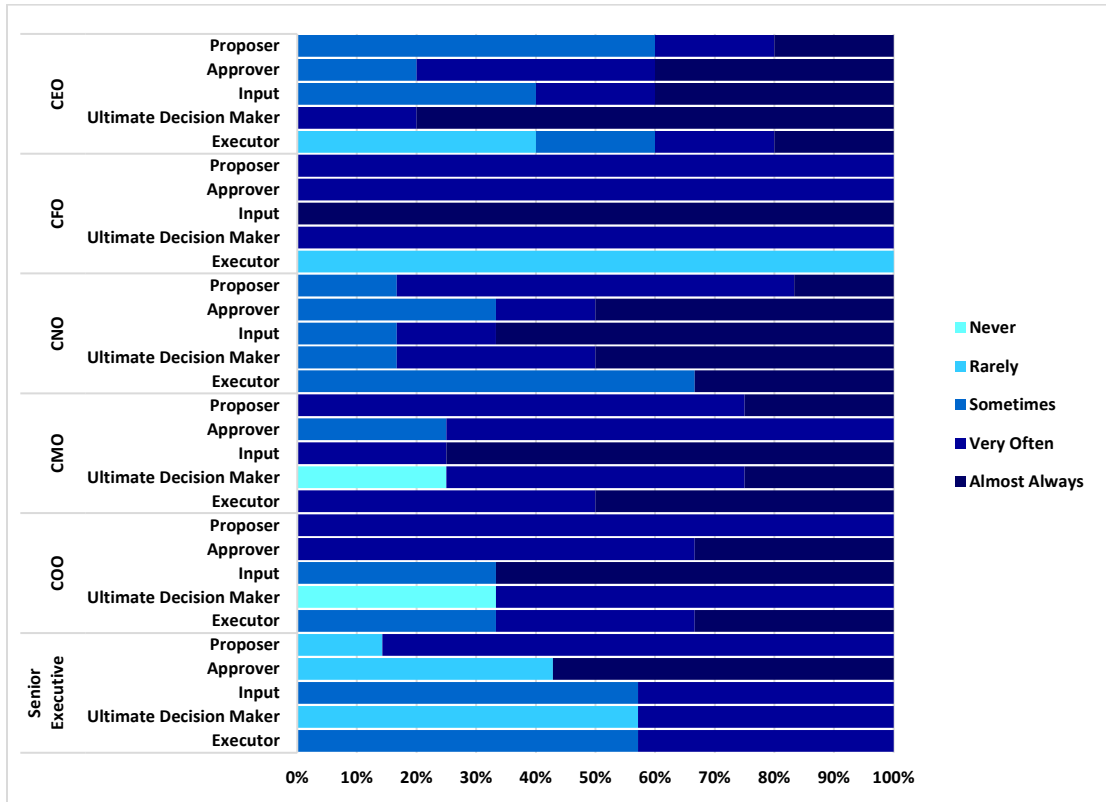


Figure 9 Critical decision-making roles: Strategic Planning

Generally, CEOs have the ultimate decision-maker role in strategic planning decision-making. CFOs, CMOs, CNOs, COOs, and senior executives have the input decision-maker role in these decisions; COOs also have the approver decision-maker role in strategic planning.

4.3 Summary

Table 9 Information Gathering Interview Results Summary

1. How many years have you worked in your position?
 - a. Ranged from four months to 11 years
2. How many years have you worked in your profession?
 - a. Eight years to 43 years
3. What is the zip code of your place of employment?
 - a. Location was dispersed across Maryland
4. What type of hospital do you work in?
 - a. Acute Care Hospital, academic, community, non for profit, rehabilitation, catholic
5. Do you have a clinical or nonclinical role?
 - a. All nonclinical – CEO, CFO, CNO, CMO, COO, SVPs, and VPs
 - b. One mentioned that he holds his Emergency Medical Practitioner license, but doesn't practice,
 - c. One did both non clinical and clinical
 - i. Decision Types: Treatment/Therapy, medication prescription, radiation administration
 - ii. Important note: patient was the ultimate decision maker and so he picked never for UDM in all decisions; de did not diagnose
6. What types of decision do you make?
 - a. The most widespread decisions per role are as follows:
 - i. CEOs: strategic planning and budget
 - ii. CFO: strategic planning and budget
 - iii. CNOs: staff recruitment (and dismissal)
 - iv. CMOs: staffing
 - v. COOs: staffing, budget, and strategic planning
 - vi. Senior executives: domain specific strategic planning and staffing decisions
7. Do you make any of the following types of decisions? Budget, Resource Allocation, Staff Recruitment, Staff Training and Development, Scheduling, Technology Acquisition, and Strategic Planning
 - a. All senior level managers generally make budget, resource allocation, staff recruitment, staff training and development, scheduling, technology acquisition, and strategic planning
 - i. CEOs don't make direct scheduling decisions; their decisions are about the policy behind scheduling
 - ii. Overall, scheduling was selected least; the lower level leaders deal with scheduling

8. Rate the degree to which the Blenko's critical decision making role applies in each decision
 - a. Generally, CEOs have the ultimate decision-maker role in overall decision making. CFOs, CMOs, and CNOs have the input roles, and COOs and senior executives have approver roles in overall decision making.
 - b. Budget: Generally, CEOs and CFOs have the ultimate decision-maker role in budget decisions. CNOs and senior executives have approver roles in these decisions, CMOs the input role, and COOs the proposer role
 - c. Resource Allocation: CEOs, CFOs, and COOs have the ultimate decision-maker role in resource allocation decisions. CMOs, CNOs, and CFOs have input roles in these decisions, CMOs the input role, and COOs the proposer role.
 - d. Staff Recruitment: CEOs, COOs, and senior executives have the approver decision-maker role in staff recruitment decisions. CMOs, CFOs and CNOs have the Input decision-maker role in these decisions, and CFOs also have the ultimate decision- maker roles.
 - e. Staff Training and Development: CEOs and senior executives have the approver decision-maker role in staff training and development decisions; CEOs also have the input decision-maker role. CFOs, CNOs, and CMOs have the input decision maker-role in these decisions, and COOs have proposer and ultimate decision-maker roles.
 - f. Scheduling: CNOs, COOs, and senior executives have the approver decision-maker role in scheduling decisions. CMOs have the input decision-maker role in these decisions, and CEOs and CFOs don't make these decisions at all and so have no role in them.
 - g. Technology acquisition: CEOs have the ultimate decision-maker role in technology acquisition decisions. CFOs, CMOs, CNOs, and senior executives have the input decision-maker role in these decisions, and COOs have the approver decision-maker role.
9. Are there other roles in the organization that make similar types of decisions that you do?
 - a. Generally, all senior level executives make similar types of decisions; The degree to which they will participate in a decision depends on their role
 - b. Senior Level managers' direct reports are usually the executors of their decisions
10. General Observations
 - a. Senior level managers, in healthcare, are referred to as senior executives, c-suite, or senior leaders; the term manager is applied to employees lower in the hospital hierarchy. Particularly the term "manager" correspond to "first-line managers" from our framework
 - b. The definitions of the positions are accurate with regards to the hospital system, however different titles are used.
 - c. Senior level managers spend the majority of their time in meetings

This chapter presented the results of the literature survey (Section 4.1) and the information-gathering interviews (Section 4.2). Our review of the literature found the following: Doctors and nurses jointly made decisions related to diagnosis, treatment and therapy, and medication prescription and administration. Managers made decisions related to strategic planning, budget, resource allocation, staffing, and technology acquisition. The information gathering interviews supported the literature findings and provided distinctions. CEOs were generally more concerned with strategic decisions. CNOs and CMOs were more concerned with staffing and clinical specific decisions. COOs were concerned with the overall operations and structure of the hospitals which included decisions about strategy, budget, and resource allocation. CFOs made strategy and budget decisions, and the senior executives emphasized a variety of decisions, centered on their individual domain. We also that generally, CEOs have the ultimate decision-maker role in overall decision making. CFOs, CMOs, and CNOs have the input role, and COOs and senior executives have approver roles in overall decision making. Chapter 5 will discuss important patterns that occurred in these results.

Chapter 5: Discussion, Implications and Recommendations

This chapter will provide a summary of the research findings; a description of the relationship with these research findings to literature not previously discussed; patterns and implications of the findings; recommendations for strengthening decision-making in hospitals; recommendations for future research; and conclusions. This study accomplished its stated purpose. The types of decisions and corresponding decision makers within a hospital setting were described and empirically validated. Critical decision-making roles among senior executives were also identified.

5.1 Summary of Systematic Review Findings

Findings indicate that doctors and nurses jointly made decisions related to diagnosis, treatment and therapy, and medication prescription and administration. The board, concerned solely with governance, guided long-range strategic decisions, selected the CEO and provided oversight. Senior level managers developed strategic plans, approved budgets, and allocated resources. Middle managers executed and ensured the implementation of policies. First-line managers supervised the staff and manage the budget.

5.2 Summary of Information Gathering Interview Findings

Findings indicate that CEOs were generally more concerned with strategic decisions. CNOs and CMOs were more concerned with staffing and clinical specific decisions. COOs were concerned with the overall operations and structure of the hospitals which included decisions about strategy, budget, and resource allocation. CFOs made strategy and budget decisions, and the senior executives emphasized a

variety of decisions, centered on their individual domain. We also discovered the following relating to critical roles within decisions: Generally, the CEO and CNO was almost always the approver, the CMO was very often the approver, executor, input and proposer. The COO was rarely Executor and very often the Approver. The non-corporate senior executives were sometimes Ultimate Decision Makers and Proposers. The descriptions provided by the respondents revealed several interconnected patterns previously described in the theoretical literature. The proceeding section expands on these patterns.

5.3 Relationship of Research Findings to Other Literature

Our results generally supported both the literature on organizational decision making as well as the literature on clinical roles and responsibility. The hospitals in the system spanned ranged in terms of hierarchy. The smaller hospitals had less spans of control in their organization charts. Larger hospitals had a tall hierarchical organization structure. Generally, the hospitals were decentralized, with decisions spanning across many levels. Although the senior leaders we spoke to all agreed that they made decisions presented in our framework, some interviewees stated that they delegated a number of their decisions to their direct reports. When responding to questions about their critical roles in decision making, some interviewees qualified their answers to system level, organization level, and domain specific. They generally had more authority for decisions in their domain than the organization level, more authority for their organization than system level. Within each domain, respondents mentioned that the next level of authority, the directors, executed a lot of decisions.

And the lowest administrative level, first line managers, also had decision making authority.

The information gathering interviews confirmed Gaba's (2000) argument that consolidated hospitals were only centralized in business operations and not clinical affairs. Although we did not interview clinical roles, CMOs, CNOs and certain SVPs, made administrative decisions about clinical affairs and their rich contextual responses provided insights into clinical roles. When describing their decisions as it related to clinical affairs, none of the interviewees qualified their responses to relate system level influences, as they did when discussing their non-clinical decisions.

Many senior level managers expressed collaboration in their decision making. Although the literature discussed the difficulty of studying collaboration in a complex environment such as hospitals (Prescott & Bowen, 1985), our method of allowing the interviewees to rank their roles in each decision, was able to not only reflect collaboration but allowed respondents to discuss in more detail, collaborative decisions. For example, CNO1 provided the following response only after prompted about the degree to which she was the ultimate decision maker in technology acquisition decisions:

CNO1: So with technology acquisition and strategic planning decisions, its the sort of a thing where I'm a decision maker within the context of a team. So it can be an executive team. So for example, I would never make a decision about technology acquisition by myself, I would always involve information technology, other departments, other executive staff who would be involved, and not just the executive staff but other leaders in my own organization, who can, in a granularly way, know how the oxygen probes are going to be used for example.

Although we cannot provide a quantitative measure of collaboration, we can express that all the interviewees discussed collaboration in some form. We see from

the example above that decision making was collaborative horizontally, involving collaboration among senior leaders in the same level, and vertically, with decisions were made down the hierarchical lines.

Some of Simon's (1976) notion of approaches organizations use to influence individual decision makers, authority, training, advice and information, and push for efficiency, were demonstrated in the interviews. When discussing staff recruitment, some interviewees mentioned the need to capture their authority to dismiss employees in the framework. Training took the shape of informal mentoring sessions. In the critical roles in decision making, the input role was the most selected choice which exemplifies senior manager's use of advice and information. The push for efficiency was evident in the interviewee's responses. Below is an example of a response describing the push for efficiency:

CNO1: I would say I spend much more of my time focusing on decision making about quality initiatives, patient safety initiatives, and how we can selectively grow our business but tamp down other areas of our business that we don't want to see grow, that we would rather see cared for in a community setting. It is a really different focus these days.

CNO1 and other respondents indicated a shift in healthcare decision making that focused on quality of care and less on volume.

Booth and Hewinson (2002) studied role overlap among physiotherapists and occupational therapists, key components in rehabilitating stroke victims. They found that the majority of the participants recognized the existence of role overlap but felt it was inevitable in collaborative health care and beneficial to patients. They also found that participants coped with overlap by using delineations strategies where none existed. In our study, participants expressed that their roles and decisions were

clearly delineated and so overlap was not was not an issue in decision making. When we asked if there were similar decisions made by other positions, they agreed that there was, however, the decisions were specific to individual's department or span of control.

5.4 Limitations of the Framework

When asked to describe their critical decision making roles within the different types of decisions, we did not ask about decisions about the system, hospital, or department level. Future work should consider the different levels in order to clarify the scope of the respondents' critical decision making roles. Differentiating the levels will also provide better insight into critical decision-making role overlap. When asked about the provided framework, some respondents asserted that the high level questions provided, although technically accurate and comprehensive, did not provide a full picture of hospital decisions. It should be noted that interviewees with a more clinical focused position, were the ones who felt this way. Other interviewees were generally content with the framework. When asked "Are there other decision that should be highlighted?"

CNO6: What most of the people do is clinical practice. I am responsible to ensure that the staff are compliant with expected standards of practice as established by state board of nursing. There is an element around that, that funnels into ensuring that we hire appropriate individuals who are able to get through orientation successfully, practice safely, there is a bigger piece that hasn't been gotten to around these questions.

Additionally, many interviewees expressed overlaps with some of the decisions. They felt that budget and resource allocations ought to be one category and expressed this sentiment when asked to define what each of these decisions for their

role. Some interviewees grouped hiring, firing, staff training and staff recruitment into one big decision Staffing group. Most of the senior level executives expressed that scheduling was done at a lower level. They also expressed that the term “manager” was used for lower level administrators and they their level used the term “leader” or “executive”. Based on these observations, a new decision making framework geared towards senior level executives can be created. Decisions in the framework would include budget and resource allocation as a singular group, staffing, technology acquisition, and strategic planning.

5.5 Limitations of Study

The limitations of the thesis include the quantity and scope of the literature. Although we did a comprehensive search, in many important domains, we found few studies. This was particularly true with regards to middle managers and first-line managers. Other limitations involved heterogeneity in reporting – different articles used different keywords and descriptive terminology, which made assessing the various decision types and decision roles difficult. This study does not differentiate between various types of hospitals and different kinds of hospitals might have unique roles and responsibilities. Additionally, the healthcare system is going through vast changes and reform. Currently literature may not be up to date with the constantly evolving healthcare system.

Information gathering interviews were based on a small sample of acute care hospitals, all within one hospital system. As such, this case study design does not permit generalizability in the way that other study designs might. It is unknown whether similar findings would be present in another setting. The state of Maryland is

currently operating under a pilot study where hospitals are under a global budget. Unlike typical hospitals, under the global budget, hospitals in Maryland are not paid according to the volume of people they serve. They are instead paid according to what their business was in the calendar year 2013. This unique situation limits the applicability or generalizability of results to other settings. Additionally, the nature of the type of qualitative research conducted, self-reported data from interviews, can contain several sources of bias. Recall errors may affect variables such as performing some typical behaviors (Chan, 2009). Some respondents acknowledged that because these were decisions they made every day, it was hard to recall specifics. Respondents understanding or interpretation of the question may also vary. We tried to mitigate this possibility by requesting they explain their understanding of each decision type.

5.6 Conclusion

To solve the problems that plague the healthcare system, a full and comprehensive understanding of the system must be the first step towards analysis. This thesis provides that first step and demonstrates, through the process of writing the thesis, how systems analysis can be done. We began by identifying previously diagnosed issues in the healthcare system. Our exploratory search revealed that organizations can be understood and analyzed based on underlying decisional processes. With this in mind, we performed a more thorough search related to decision making and healthcare. In our search, we discovered that a comprehensive framework for decision making in healthcare did not exist. We created one based on our literature findings. Based on the framework from literature, we sought out

empirical evidence from information gathering interviews. We validated our research and made additional discoveries about critical roles in decision making.

5.7 Future Works

Future research could take many directions with regard to developing a comprehensive decision-making framework for healthcare. Future research could conduct interviews with all the key decision makers: nurses, doctors, and all manager levels, and have a greater sample size. This will enable insight into effects of authority structures on decision making. Future studies could use a mixed-method research strategy, with both qualitative and quantitative components. It would be interesting to compare the effect of overlap in critical decision making roles on financial measures such as net gain (or loss). This will assist in the development of the framework and aid the creation of tools to allow healthcare systems to perform self-analysis.

To conduct this self-analysis, the hospital must have a clear understanding of their goals and objectives beforehand. If an organization wanted to understand decision-making amongst senior leaders, the organization should begin by identifying individuals in the organization who are familiar with the context of the organization to conduct the analysis. We suggest operations officers since their role is typically tasked with overseeing the organization's ongoing operations, processes, and efficiency. The operations officers should proceed to interview the senior leaders in the organization. The interviews should be divided into three parts; system-level, organization level, and department level. The operations officer should provide the senior leaders with definitions of the different decisions types and then ask the leaders

to rate, to what degree, from never, rarely, sometimes, very often, almost always, the critical decision-making roles apply in each decision type (see Table 1). The operations officer should analyze the results and compare the various positions and their critical decision-making roles, and determines areas of overlap. The findings should be disseminated among all the senior leaders and as a team, the hospital leaders should discuss how the results align with their previously defined goals and objectives. Strategies for improvement can be discussed and implemented.

This study focused on the structural aspect of decision making in healthcare; future study could study flow of information. This initial model serves as a foundation towards dissecting the complexities of the healthcare system. We hope preliminary evidence from this study will encourage others to take similar steps analyzing and decomposing aspects of the healthcare system. In this study, we focused on hospitals. Future studies can assess other aspects of healthcare, such as the paying system, and conduct similar types of analysis. This approach could also assist educators prepare health administrators students who are capable of assessing their organizations as decision making systems.

Appendix A: Information Gathering Interview Plan

Introduction/Opening

1. Greeting & Explanation
 - a. Establish rapport
 - i. My name is Adeola Awowale, I'm a systems engineering masters student at the University of Maryland, College Park. I'm graduating May and my thesis involves decision making in healthcare systems...
2. Purpose/goal of the study
 - a. The purpose of this study is to create a comprehensive framework for decision making in healthcare systems by examining various types of clinical and non-clinical decisions and their corresponding decision-makers. This review focuses mainly on the roles of doctors and nurses in the clinical side, and the roles of the board, managers, administrators, and other senior executives in the non-clinical side.
 - b. What we want are your expert knowledge about the role, not necessarily about you as a person
3. Timeline
 - a. The interview should take about 30 minutes.
4. Permission to Record
 - a. Request permission and explain you will ask the question again once the recorder is turned on)

Transition (I'll begin by asking some general demographic questions, your responses to all questions will be kept confidential)

Body

1. Demographic Questions
 - a. How many years have you worked in your current position?
 - b. How many years have you worked in your profession?
 - c. In which state do you currently work in?
 - d. What is your ZIP code (of your place of employment)?
 - e. What type of hospital to you currently work?
2. Clinical versus nonclinical decisions
 - a. Clinical decisions are those directly related to immediate patient care and treatment. Examples include conducting physical exams, diagnosing and treating illnesses, and monitoring and managing medication. Non clinical decisions are administrative. They do not include any type of medical treatment or testing. Examples of non-clinical decisions include roles include medical billers and coders, hospital executives, and administrative assistants. Although some non-clinical

workers do interact with patients, they do not actually provide medical care.

- i. Would you classify your primary role in the organization as clinical or non-clinical?
- ii. Do you have multiple roles in the organization? *If yes, we will conduct this interview from the perspective of one role at a time. (*elaborate with an example if necessary)

3. If Clinical...

- a. What is your primary role in the organization?
- b. What types of decisions do you make?
- c. Does your role involve making decisions in the following areas?
 - i. Diagnosis
 - ii. Treatment
 - iii. Therapy
 - iv. Medication Prescription
 - v. Medication Administration
 - vi. Other _____
- d. Follow up – Who else makes _____ decisions?
 - i. How are they different? Scale? Time frame?
- e. Are there decisions that you make that do not fall into these categories?
- f. I would like to better understand what role you play in the decision making process.
 - i. Proposer - People in this role are responsible for making a proposal, gathering input, and providing the right data and analysis to make a sensible decision in timely fashion.
 - ii. Approver - Individuals in this role have veto power – yes or no – over the recommendation.
 - iii. Input - These people are consulted on the decision. Because the people who provide input are typically involved in implementation, recommenders have a strong interest in taking their advice seriously.
 - iv. Ultimate decision maker - The person is the formal decision maker. He or she is ultimately accountable for the decision, for better or worse, and has the authority to resolve any impasse in the decision-making process and to commit the organization to action.
 - v. Executor - Once a decision is made, a person or group of people will be responsible for executing it. In some

- instances, the people responsible for implementing a decision are the same people who recommended it.
- g. Rate the degree, Never, Rarely, Sometimes, Very Often, and Almost Always, to which the following correspond to your role in *whatever role they answered previously* in the decision making process.
 - i. Proposer
 - ii. Approver
 - iii. Input
 - iv. Ultimate decision maker
 - v. Executor
 - h. What does each decision mean for your role?

If Non-Clinical

- a. What is your primary role in the organization?
- b. What types of decisions do you make?
- a. Does your role involve making decisions in the following areas?
 - i. Budget
 - ii. Resource Allocation
 - iii. Staff Recruitment
 - iv. Staff Training and Development
 - v. Scheduling
 - vi. Technology Acquisition
 - vii. Strategic Planning
 - i. Other _____

What does each decision mean for your role?

1. Follow up – Who else makes _____ decisions?
 - i. How are they different? Scale? Time frame?
 - b. I would like to better understand what role you play in the decision making process.
 - i. Proposer - People in this role are responsible for making a proposal, gathering input, and providing the right data and analysis to make a sensible decision in timely fashion.
 - ii. Approver - Individuals in this role have veto power – yes or no – over the recommendation.
 - iii. Input - These people are consulted on the decision. Because the people who provide input are typically involved in implementation, recommenders have a strong interest in taking their advice seriously.
 - iv. Ultimate decision maker - The person is the formal decision maker. He or she is ultimately accountable for the decision, for better or worse, and has the authority

to resolve any impasse in the decision-making process and to commit the organization to action.

- v. Executor - Once a decision is made, a person or group of people will be responsible for executing it. In some instances, the people responsible for implementing a decision are the same people who recommended it.
- c. Rate the degree, Never, Rarely, Sometimes, Very Often, and Almost Always, to which the following correspond to your role in *whatever role they answered previously* in the decision making process.
 - i. Proposer
 - ii. Approver
 - iii. Input
 - iv. Ultimate decision maker
 - v. Executor
2. (Present category definitions) Do you believe those are appropriate categories? Any changes? Etc.
3. Are there positions in the organization that make similar decisions? If yes, how are they similar? How are they different?
4. Provide an example of a day in your life

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