Developing a conceptual model for safety analysis in health organizations

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N08-01

November 2008
Une version de ce numéro a été publiée sous le titre :
"Élaboration d'un modèle conceptuel d'analyse de la sécurité dans les organisations de santé" (N06-02), en juin 2006.

Dépôt légal
Bibliothèque et Archives nationales du Québec, 2008
Bibliothèque et Archives Canada, 2008

ISBN : 978-2-923544-13-7 (version imprimée)
ISBN : 978-2-923544-14-4 (PDF)
DEVELOPING A CONCEPTUAL MODEL FOR SAFETY ANALYSIS IN
HEALTH ORGANIZATIONS

Report Submitted to Health Canada

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June 10, 2002
INTRODUCTION

Issues of health-system safety have received increased public and scholarly attention in recent years. The theoretical models available to analyze these issues come from a wide range of disciplines that, despite their differences, offer material sufficiently consistent to undertake a multidimensional examination of the concept of safety.

This multidisciplinary approach must, however, be integrated into a conceptual framework that is sensitive to its many nuances and provides effective direction for decision-makers.

Our study was guided by the belief that strands of literature not previously examined in earlier research on safety and on errors and injuries occurring in health organizations and systems (works analyzed and synthesized by Miller et al[1]) might offer a complementary perspective to traditional notions of safety, while also revealing a means of structuring such notions to obtain a more systematic understanding of the concept.

This report is the first stage in a theoretical examination of safety. Its goal is to develop an analytic framework to guide interventions that seek to address the determinants of safety in health organizations. It should also be pointed out that the approach adopted in these pages relies heavily on analogy and metaphor.
PART ONE: SAFETY, A COMPLEX FIELD TO ANALYZE

1.1. SAFETY: A COMPLEX TERM

A review of dictionary and encyclopaedia entries shows that the terms security and safety can be defined in numerous ways (see Table I). The content and meaning of these words varies when applied to different fields, including security, management, medicine, environmental protection, psychology, social and political economy, education, industry, the military, law, finance, informatics, astronautics and aeronautics, and sports and leisure.

This extensive range of definitions indicates we are dealing with a multidimensional concept. Safety is sometimes presented as an action (e.g., efforts to eliminate the causes of nuisances to persons or property or to reduce the effects of such nuisances); at other times it is presented as a state (e.g., a situation in which the range of foreseeable risks is acceptable; the state of a person or thing that is free of danger; or a feeling of tranquillity, confidence, and safety from harm, difficulties, or uncertainty). Safety may refer either to the essential properties of things (e.g., safety lock) or to modalities of these things (e.g., safety measures). In the first instance, safety refers to the essential qualities or attributes of a thing, where safety can be described as being either good or poor; in the second, it is already a positive, praiseworthy attribute.

Safety focuses on persons, property, things, organizations, or processes. It consists of assessing risks, eliminating risks or hazards, reducing risks or hazards to acceptable levels, providing protection against risks or hazards, lessening the effects of risks or hazards, or ensuring effectiveness and success. Thus, there is both a negative aspect of safety (avoiding, protecting against) and a positive aspect (ensuring success), the former being the most frequently encountered.

Safety also encompasses several phases: a prevention phase (the term security is sometimes used in such instances) and a reaction phase, when such things as accidents or disasters occur (in which case the term safety is more commonly used).

Finally, safety can be viewed as either an objective or subjective entity. As a result, safety may be seen as the object of negotiations when, for example, it depends on individuals’ feelings or cognitive schemas.

1.2. CLASSIFICATION ACCORDING TO EPISTEMOLOGICAL, ONTOLOGICAL, TELEOLOGICAL, AND METHODOLOGICAL PERSPECTIVES

The plurality of meanings ascribed to the term safety suggests that a vast array of possible methodological approaches is available to create or recreate conditions of improved safety within health organizations and systems. To be useful in this context, a conceptual framework must clarify the various paradigms that underlie and legitimize these methodological approaches.
Table I: Definitions of the term safety

<table>
<thead>
<tr>
<th>AREA(S)</th>
<th>ENGLISH</th>
<th>FRENCH</th>
<th>DEFINITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>security</td>
<td>sûreté n.f.</td>
<td>Said of something that offers guarantees of protection or that can definitely be counted on.</td>
</tr>
<tr>
<td>General</td>
<td>security</td>
<td>sûreté de fonctionnement n.f.</td>
<td>Likelihood of success of a mission.</td>
</tr>
<tr>
<td>General</td>
<td>security</td>
<td>sécurité n.f.</td>
<td>State of something that is safe from all harm.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note(s): The word security can have different meanings depending on the contexts in which it is used. In psychology, for example, it can mean “a feeling of tranquillity and confidence,” whereas in road safety it refers to “measures taken to protect persons.” In all cases, however, the idea of “safety from harm” remains. In French there is some hesitation regarding the use of the terms sécurité and sûreté. This difficulty arises from the common origin of these words, which is the Latin securitas, which means “absence of worry.” In modern French, sécurité has replaced sûreté in many contexts.</td>
</tr>
<tr>
<td>Security</td>
<td>safety</td>
<td>sécurité, de loc. adj.</td>
<td>Said of something designed to ensure security.</td>
</tr>
<tr>
<td>Security</td>
<td>safety</td>
<td>sécurité n.f.</td>
<td>Measures taken when an accident or other incident occurs.</td>
</tr>
<tr>
<td>Medicine</td>
<td>harmlessness safety innocuity innocuousness</td>
<td>innocuité n.f.</td>
<td>Said of something that is without danger.</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td>sécurité n.f.</td>
<td>Situation in which the foreseeable risks are deemed acceptable.</td>
</tr>
<tr>
<td>Military</td>
<td>security</td>
<td>sécurité n.f.</td>
<td>Organizations responsible for the application of security measures.</td>
</tr>
<tr>
<td>Sports leisure</td>
<td>safety lock</td>
<td>cran de sûreté n.m.</td>
<td>Device used to prevent the accidental discharge of a firearm.</td>
</tr>
<tr>
<td>Astronautics</td>
<td>safety</td>
<td>sauvegarde n.f.</td>
<td>Measures intended to eliminate the causes or limit the effects of nuisances to persons or property.</td>
</tr>
<tr>
<td>Aeronautics</td>
<td>security</td>
<td>sûreté n.f.</td>
<td>Combination of measures and human/ material means intended to protect civil aviation against illicit acts.</td>
</tr>
</tbody>
</table>

From Le Grand Dictionnaire Terminologique[2].

A paradigm is “a general conceptual framework that reflects a set of beliefs and values which are recognized by a community and accepted as being shared by all the individuals within the group. This set of beliefs, which can also be referred to as ‘ideological constructs,’ gives a group (or discipline) the ability to identify, structure, interpret and solve specific disciplinary problems” (Kuhn, as interpreted by Levy[3]). In other words, a paradigm enables a group to formulate questions it views as legitimate about itself and the world. A paradigm also makes it possible to identify and formulate techniques and instruments that a group should use; i.e., “reliable means” of researching and developing solutions to the problems that arise as a result of those questions [3].

In this report we use the process Levy [3] put forward to examine scientific paradigms. We do so in order to synthesize the complex concept of safety according to four major perspectives: the epistemological, ontological, teleological, and methodological.
1.2.1. Epistemological Perspective

An examination of the concept of safety from an epistemological perspective makes it possible to develop a typology of the various relationships an observer can have with the concept of safety.

From an objective position, safety is separate from the mind of an observer; any previous knowledge one may have of the concept cannot alter the way it is analysed in any way. In order to be valid, one’s attitude toward the concept must be neutral. It is thereby possible to discover the intrinsic truths or immutable laws that govern the concept through experimentation.

This objective view of safety is reflected in one of many definitions of the term: “an objective situation, brought about by material, economic, political conditions, which results in the absence of danger to persons or threats to property, and establishes confidence” (trans. from Trésor de la langue française[4]). This is the interpretation that guides all theories of safety that have a strong epidemiological or statistical orientation. One can also argue that there are many possible interpretations of safety, each of which is a result of the diverse experiences of observers.

The subjective position, meanwhile, is closely associated with an observer and emerges from the interaction between an observer, his/her “project,” and the concept of safety. This is a constructed, constantly evolving concept. The relationship that links an observer to an object being observed modifies both the observer (as his/her knowledge of the concept evolves) and the object observed (by the perception of the observer).

The definition of safety as “a state of mind characterized by confidence and tranquillity resulting from the well- or ill-founded feeling that one is protected from all harm” (trans. from Trésor de la langue française[4]) is an excellent illustration of this subjective understanding of safety, and is related to theories of safety that emphasize cultural and social factors in individual and collective interpretations of risk [1]. In this definition, safety is linked to confidence (in oneself and others) which can have dramatic impacts. It has already been shown, for example, that confidence is itself linked to mortality. An ecological analysis of social-capital indicators across the United States in relation to mortality rates per state revealed that variations in the level of confidence (measured using an indicator of interpersonal confidence) explained 58% of the variance in total mortality between states [5].

1.2.2. Ontological Perspective

In an effort to answer the question “what is safety?” the concept may also be examined from an ontological perspective. From this vantage point, one may conceive either of a unitary concept of safety that is governed by natural and immutable laws or of the co-existence of numerous perceptions of safety resulting from the diversity of worlds as experienced by different observers.

An ontological discussion makes it possible to situate the concept of safety in relation to other objects of analysis and, especially, in relation to the concept of accident that prevails in much of the literature on safety. In this literature and in most dictionary and encyclopaedia definitions of safety, the term largely signifies an absence of accidents, risks, or errors. This suggests that although the concepts of safety and accident are not equivalent, they nonetheless possess a complementary relationship.
James Reason [6] argues that any progress in assessing safety is conditional on a reconsideration of the very nature of the concept. Reconsideration is necessary in order to go beyond the common view that safety is equivalent to the absence of danger or risk. Although some authors have drawn attention to the limitations of defining safety in negative terms, to our knowledge no published studies clearly explicate the relationship between safety and accident.

Any ontological discussion concerning safety must allow for the verification of three hypotheses regarding the relationship between the concepts of safety and accident. The first of these hypotheses is that accident and safety intervene at different levels, but that the two concepts are interrelated (see Figure 1). To use a geometric analogy, these two concepts exist on different but intersecting planes in space. The simultaneous impact of an intervention on accidents and on safety will depend on the nature of the intervention. Some interventions will improve safety without impacting accidents (moving from situation 1 to situation 2 in figure 1), others will have an impact on accidents but not on safety (moving from situation 2 to situation 3), others finally will have an impact both on accidents and safety (moving from situation 1 to situation 3). The extent of the impact that will have interventions focused on one phenomenon on the other phenomenon will depend on the proximity between the concepts of accident and safety (illustrated by the angle of intersection between the two planes). The fact that both concepts share some common points does not mean that interventions to address one of them will necessarily influence the other.

Figure 1: Things done to reduce accidents can have some impacts on the level of safety.
Figure 2 illustrates the second hypothesis: interventions targeting accidents have no impact on safety since these two concepts are not linked. Such a situation might occur in circumstances where safety is largely subjective and policies fail to restore the confidence of groups affected by accidents.

Figure 2: Things done to reduce accidents have no impact on the level of safety.

Figure 3, meanwhile, presents a hypothesis in which interventions targeting accidents are successful and always result in improved safety.

Figure 3: Things done to reduce accidents have an impact on the level of safety.
As Figures 1 to 3 reveal, the ontological dimension of safety is a worthwhile subject of analysis. The implications in methodological terms and, specifically, in terms of responsibility and safety policy are enormous. The manner in which safety is conceived influences the choice of research tools, evaluation indicators, and intervention methods. From the standpoint of responsibility, an ontological discussion of safety can provide a means of identifying the agents responsible for safety and help to determine exactly what they are responsible for. This is necessary in order to avoid situations in which people are expected to produce results but are not given control over the elements most likely to generate the desired outcomes. Finally, an ontological understanding of safety enhances the possibility of making informed policy choices that will improve safety in health organizations.

1.2.3. Teleological Perspective

Defining intentions, goals, purposes, and solutions, as well as describing the logic that guides various agents, is made possible by a teleological perspective on the concept of safety. Such an approach might enable each of the key constituencies in the health system (e.g., public authorities, institutions, professionals, and patients) to answer the question “why do we want safety?”

If safety is viewed as a subjective entity, the logic of an observer plays a role not only in defining the content and meaning of the concept, but also in identifying possible solutions to problems. Stone[7], for example, defines safety as the satisfaction of “basic human needs,” and goes on to emphasize the importance of the projects that underlie the definition of these basic needs in order to explain the conflicts that can arise at the political level. The conflicting meanings ascribed to the expression basic human needs include material vs. symbolic needs, absolute vs. relative needs, direct vs. instrumental needs, present vs. future needs, and physical vs. community needs.

1.2.4. Methodological Perspective

The methodological perspective makes it possible to develop a typology of the methods deemed valid in the examination, representation, reconstruction, and creation of problems and solutions. One approach might consist of using rational and deterministic methods to identify the causal links between certain factors and the concept of safety, and then intervening to influence these causal links in order to restore safety. A second approach might be to use more holistic methods that take into account both an observer’s agenda and the prevailing political, cultural, or organizational contexts.
PART TWO: A SAFETY SYSTEM OR A CRISIS-MANAGEMENT SYSTEM

The concepts of health and safety are often subject to reductionist interpretations. For a long time health was defined, in negative terms, as the absence of disease. This conception led to the highly developed health-care systems we know today. Initial efforts to incorporate determinants other than the health system into health policy met with resistance, and such efforts remain a challenge.

In a similar fashion, safety is often reduced to crisis or risk management within health (and other) organizations and systems. One advantage of this negative definition is that it makes it possible to represent safety through quantifiable and measurable phenomena. Following this logic, the principal determinant of safety is the existence of appropriate systems of accident and crisis management (e.g., Why and how do accidents happen? How can future accidents be avoided and/or prepared for? How can the effects of accidents be reduced?) Assuming that what is done to reduce the occurrence of accidents has an impact on safety, such systems can certainly play a decisive role in ensuring the safety of individuals, organizations, and systems in general. If safety and accidents are distinct concepts, it is within a broader framework of safety management that such systems of accident and crisis management can be more effective. Otherwise, decision-makers who fail to address crucial determinants that exist outside crisis or accident management risk having the tools they develop to improve safety be ineffective. Large sums of money can be invested in accident-management systems while other determinants (which may be more important and could be addressed at a lesser cost) remain outside policy-makers’ conceptual frameworks.

In this part of our report we attempt to represent what a crisis- and accident-management system might look like. Figure 4 shows such a system as having three safety levels (primary, secondary, and tertiary) that are defined according to a health organization’s ability to circumscribe the effects of accidents it sustains or causes.

At the primary level, an organization’s protective shield must protect it from both external and internal risks by preventing such risks from generating accidents or crises within the organization. Where prevention is not possible, the goal should be to reduce the harmful effects of accidents and crises, provided this does not require mobilizing significant resources. Another goal of crisis and accident management at the primary level is to repair any relatively minor damage caused within an organization. Thus, the primary level comprises a prevention component (i.e., a set of long-term strategies to address the causes of unsafety rather than the symptoms) and a management component for accidents that do not profoundly disrupt an organization and can be quickly circumscribed.
At the secondary level the principal objectives are to manage accidents that produce significant disruptions within a health organization; to repair damage within an organization; and to prevent the spread of accidents and crises outside an organization’s boundaries or, if that is impossible, to take measures necessary to protect the external environment. This last objective is, in fact, the mission of a US coalition called Health Without Harm, the goal of which is to transform health systems around the world in order to make them ecologically sustainable and free of hazards to public health and the environment, without compromising patient safety or the quality of patient care. In Canada, an equivalent group has been formed under the name Canadian Coalition for Green Health Care.

At the tertiary level, the main objective is to manage the effects of crises and accidents in the external environment in order to reduce their impact on the population and on the environment and restore confidence of the public in the organization.
Figure 5 represents the manner in which the different theories of safety discussed in the report by Miller et al.[1] take concrete form within an accident- and crisis-management system. Approaches that focus on risk include a significant prevention component and can provide elements to improve primary-level and, to an extent, secondary-level safety. Systemic or organizational approaches, meanwhile, offer important elements to improve secondary- and tertiary-level safety.

Figure 5: Accident management system and safety theories
PART THREE: SAFETY, HEALTH ORGANIZATIONS, AND THE ORGANIZATIONAL DETERMINANTS OF ACCIDENTS, QUALITY, AND CHANGE

Our goal in this part of our report is to develop a broader conceptualization of safety. We also review the specific characteristics of health organizations, as well the organizational determinants of accidents, quality, and change. These three lines of inquiry enable us to propose a preliminary framework for the conceptualization of safety in health organizations, which we undertake in part four.

3.1. SAFETY

As we have shown, it is possible to define safety in a number of different ways. Our literature review revealed the importance of defining safety in a balanced manner; taking into account its objective and subjective dimensions; examining its positive and negative aspects; and considering the agendas and intentions of those who use the concept. In the next two subsections we discuss safety as a value and safety as an organizational need.

3.1.1. Safety as a Value

According to Stone [7], four broad concepts dominate general policy discourse:

- Equity (treating likes alike)
- Efficiency (producing the maximum output with a given quantity of input)
- Freedom (doing what one likes provided it does not harm others)
- Safety (satisfying basic human needs)

Stone refers to these concepts as goals, but emphasizes they are frequently used as principles to justify policies as well as government action or inaction. They can also serve as criteria for evaluating policies.

These concepts can also be termed values, an approach that suggests a range of complex considerations rather than a static entity. According to this view, safety is ranked alongside equity, freedom, and efficiency as a fundamental value of modern society. Based on the definition of the term value proposed by the National Forum on Health [8], safety is one of society’s deep-seated convictions. These convictions do not necessarily correspond to attitudes and behaviours; instead, they tend to motivate attitudes and behaviours.

3.1.2. Safety as an Organizational Need

Organizations, like individuals, must meet a variety of needs of varying importance. Sicotte, Champagne, Contandriopoulos et al. [9] have proposed a conceptual framework that integrates the various models of performance analysis in order to identify the needs that are crucial to an organization’s survival and overall performance. According to this framework, organizations must balance four principal functions in order to survive. Underlying these essential functions is safety in all its meanings.
Adaptation:
This function is linked to an organization’s ability to find in its environment the resources it needs to survive and adjust to constant external change. In the short term, a health organization must secure the resources it needs to pursue and extend its activities (e.g., resource acquisition capacity; focus on population needs; ability to develop a client base; ability to mobilize the community). In the longer term, survival depends on a health organization’s ability to change and adapt to technological, demographic, political, and social change.

Goal achievement:
This function refers to an organization’s ability to achieve its fundamental goals. For a public health organization, the principal goal is to improve the health status of individuals and populations (efficacy) within a framework of economy of means (efficiency), in a manner that satisfies various constituencies (interest-group satisfaction).

Production:
This function is linked to an organization’s ability to perform its essential tasks; i.e., the technical core of the organization. Traditionally, it is at this level that one finds most of the indicators generally used to measure the performance of health organizations (e.g., volume of services produced, coordination, productivity, and technical efficiency) as well as quality of care.

Adherence to values:
This function is linked to an organization’s ability to create a consensus around basic values that will guide its actions and help to maintain an appropriate organizational climate.

Based on this four-part conceptual framework it is possible to establish a pyramid of organizational needs analogous to Maslow’s [10] famous pyramid, which represents five basic human needs in order of importance. According to Maslow, the first basic need dominates human behaviour until it has been met. At that point, the second need begins to assert itself, and so on. At the base of Maslow’s pyramid are physiological needs (i.e., basic survival needs, including food and drink). The second level comprises safety needs; the third, the need for love and belonging; the fourth, the need for status and esteem; and the fifth, the need for personal achievement.

The fundamental functions identified in the Parsonian model of organizational survival put forward by Sicotte et al[9] can be reconceived in hierarchical terms to construct a pyramid of organizational needs (see Figure 6). The first level would comprise the acquisition of human, material, and financial resources that correspond to humans’ physiological needs; if these needs are not met, no activity is possible. The second level would comprise safety needs, which only become imperative when an organization has a minimum of resources with which to function; once such needs have been met, other needs can emerge. The third level would comprise a variety of concerns associated with quality, efficacy, and efficiency. The fourth level would relate to the acquisition of symbolic resources. Finally, at the fifth level, one would find the need for change and innovation.
In this model, safety emerges as a fundamental organizational need. Without safety, it is impossible to address quality, efficacy, efficiency, community recognition, innovation, and other higher needs.

### 3.2. **Specific Characteristics of Health Organizations**

A safety analysis framework for health organizations must be built on an in-depth understanding of the distinctive characteristics of such bodies. Health organizations are knowledge-based entities characterized by eight discernible characteristics:

- The predominance of an operating core constituted by professional practice. The principal mechanism that coordinates professional activities is the standardization of skills and expertise.
- Marked differentiation between sub-units of production, accompanied by a low level of integration. Health organizations are highly fragmented environments.
- Substantial variations in levels of professional involvement or commitment. An organization must accept various forms of commitment and structure itself so as to integrate professionals in a manner that respects their modes of engagement. This enables an organization to foster the emergence of values that it and associated professionals can all share.
- The impossibility of coercively controlling the work of professionals. The nature of this type of production requires that control be left to the professionals themselves. An organization must resist the temptation to impose technocratic controls, an illusory goal that breeds dissatisfaction and conflict, diminishes professional standards, provides a negative incentive...
for professional development and innovation, and exerts an undue influence over the relationship between professionals and their clients.

- A fundamental tension between the codification of knowledge and professional autonomy. The former is necessary in order to direct an organization, while the latter is an inherent part of health professionals’ work.

- The need for otherwise autonomous professionals to interact. Such interaction is a necessary part of human-resource development, learning, and the exercise of professional judgement. Standards and rules that enable professionals to deal with problems characterized by great uncertainty (including problems of unsafety) emerge from such interaction and contribute to the formation of practice communities over time. Accordingly, socialization constitutes the principal tools of organizational learning.

- Significant coordination problems and needs. Skills standardization is a weak coordination mechanism; as Glouberman & Mintzberg (p72)[11] state: “This rather automatic means of coordination – that if everyone does as expected (according to accepted knowledge and practices), the system will work smoothly – too often fails because problems arise that cannot be predicted.” When complex situations arise, professionals must rely on mutual adjustment (direct interaction between agents), a mechanism that, paradoxically, is the most appropriate in both the simplest and most complex situations. Furthermore, a professional organization must rely on the standardization of values; i.e., coordination by means of a robust, common system of beliefs, values, cultures, and representations.

- Rigid and cumbersome governance structures. In health organizations, the problems of coordination mentioned earlier – the fragmentation of authority and the significant role played by outside influences – make decision-making a cumbersome and perilous enterprise. Furthermore, these organizations tend to shy away from innovation and change and they adapt poorly to the kinds of unforeseen events that are part and parcel of the dynamic environment in which they operate.

3.3. ORGANIZATIONAL DETERMINANTS OF QUALITY-RELATED AND CHANGE-RELATED ACCIDENTS IN HEALTH ORGANIZATIONS

A conceptual framework for analyzing the organizational determinants of safety (as defined in section 3.1) in health organizations (whose distinctive characteristics are examined in section 3.2) should draw on knowledge from many different management fields.

3.3.1. The Organizational Determinants of Accidents

The literature on the determinants of accidents and disasters in high-risk organizational activities is directly relevant to developing such a conceptual framework given that accidents are part of the safety issue. Because Miller et al. [1] have already extensively surveyed the relevant literature, we have here limited ourselves to outlining the key points.

There are two competing theories regarding the factors that determine or protect against accidents: the Normal Accident Theory (NAT) and the High Reliability Accident Theory
(HROT). According to the NAT, accidents are inevitable in complex systems where the processes of production are highly interconnected and interdependent (“highly coupled”). Moreover, technocratic control and process redundancy can amplify these problems, while training can do little to prevent them. For our purposes, the two most interesting prescriptions of the NAT are the following:

- Organizations have an interest in reducing the interdependence of their processes of production. If there is a low level of interdependence, decision-making should be decentralized so that operators can adapt to uncertainty and unforeseen events.
- When processes are complex and highly interdependent, an organization must adopt decision-making processes that are both decentralized (to deal with unexpected events) and centralized (to coordinate an all-encompassing, interdependent rapid response that is thereby also centralized).

According to the HROT, however, some organizations succeed in preventing accidents by making safety a priority and developing a “culture of safety.” Such organizations duplicate the processes of production, are hierarchical, and have a centralized system of authority. However, in times of crisis, they are able to adopt decentralized processes so that the most competent individuals can address the problems. Such organizations have quality- and performance-appreciation programs and provide ongoing training opportunities.

Weick [12], who played a significant role in the development of the HROT, also studied the importance of awareness or “sense-making” in the processes of disintegration that transform unexpected events into catastrophes. According to Weick, six factors can contribute to an organization’s ability to resist disintegration (“organizational resilience”):

- the ability to improvise;
- the capacity of operators to quickly imagine and assume different roles;
- the promotion of a culture that values wisdom (i.e., an attitude of reasonable doubt, situated somewhere between excessive confidence and paralysing uncertainty);
- continuous interaction that respects all agents;
- intensive, informal communication;
- a strong culture.

3.3.2. The Determinants of Organizational Quality

Safety is directly linked to quality; in fact, safety is a prerequisite for and an essential condition of quality. As a result, the literature on the organizational determinants of quality is relevant to our discussion in this report.

There is a considerable amount of normative literature on the organizational determinants of quality (see Table II). Key factors addressed in the literature include:

- economic incentives (e.g., remuneration arrangements for professionals, funding mechanisms and public or private status for health organizations);
- 16 -

- personnel training (e.g., level of qualification of physicians and other health professionals) and learning processes;
- experience (e.g., the number of cases of the same type treated by a health organization);
- leaving control to professionals (e.g., through structures of authority and mechanisms of control and through the organization of medical personnel and their practices);
- management practices (e.g., coordination, communication);
- organizational culture (e.g., appreciation activities and ongoing quality-improvement programs); and
- commitment (involvement) of medical personnel to a health organization.

Some of these factors have already been empirically verified and a consensus exists with respect to their impact on quality. Factors such as the organization of medical personnel, management practices, and networking have been linked (positively or negatively) to quality [13]. The equipment and technology at an organization’s disposal, as well as management practices, nursing staff intensity [14], an institution’s public or private status, participation in a network, and service intensity [15] have been linked to mortality. Meanwhile, physicians’ professional qualifications, equipment and technology, nursing staff intensity, professional influence, and the size of organizations [14] have been linked to morbidity.

As for other factors (also represented in Table II), the literature offers as much evidence they are linked to quality as it does evidence they are not. This equivocation renders it difficult to make any definite pronouncements on the matter. However, the recommendations found in the normative literature still seem pertinent.
Table II: Links between organizational factors and quality

<table>
<thead>
<tr>
<th>Quality</th>
<th>Mortality</th>
<th>Morbidity</th>
<th>Other adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Related</td>
<td>No change or unrelated</td>
<td>Mixed evidence</td>
</tr>
<tr>
<td>Financial incentives</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physicians’ level of qualification</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of cases of the same type</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization of medical personnel</td>
<td>Flood + (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization of personnel (other than physicians)</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualifications of personnel (other than physicians)</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment and technology</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accreditation (e.g., safety, hygiene)</td>
<td>Flood (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management practices (e.g., coordination, communication)</td>
<td>Flood + (1994)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structures of authority and mechanisms of control</td>
<td>Flood (1994)</td>
<td></td>
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<td>Flood (1994)</td>
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<tr>
<td>Types of patient cases</td>
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<tr>
<td>University status</td>
<td>Flood (1994)</td>
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</table>

References:
- Flood (1994)
- Shortell (1997)
- Shortell (1996)
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<thead>
<tr>
<th>Quality</th>
<th>Mortality</th>
<th>Morbidity</th>
<th>Other adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Linked</td>
<td>Linked</td>
<td>Linked</td>
</tr>
<tr>
<td>No change or unrelated</td>
<td>Mixed evidence</td>
<td>No change or unrelated</td>
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<tr>
<td>Mixed evidence</td>
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<td>Linked</td>
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<td>Mixed evidence</td>
<td>Little or no evidence</td>
<td>Little or no evidence</td>
</tr>
</tbody>
</table>

- **Involvement in a network**
  - Flood + - (1994)
  - Mixed evidence
  - Al-Haider (1991)

- **Organizational culture**
  - Flood (1994)

- **Quality improvement**
  - Flood (1994)

- **Organizational environment**
  - Flood (1994)

- **Nursing staff intensity**
  - Shortell (1997)

- **Professional influence**
  - Shortell (1997)

- **Size**
  - Shortell (1997)
  - Al-Haider (1991)

- **Urban/rural status**
  - Shortell (1997)

- **Medical personnel intensity**
  - Shortell (1997)

- **Skills mix**
  - Shortell (1997)

- **Service intensity**
  - Al-Haider (1991)

- **Specialization**
  - Al-Haider (1991)
3.3.3. **Organizational Determinants of Change and Adaptation**

Organizations must learn to adapt to accidents and safety problems. As a result, the literature dealing with the determinants of change and adaptation is relevant to our purposes.

Change management is perhaps the most important theme in both the popular and scientific strands of management literature. The organizational change-production process can be divided into several stages. The number of stages and the terminology may vary from one author to the next, but three broad stages are commonly identified:

- the decision to produce change, which can comprise various stages including initiation, diagnosis, and dissemination;
- the search for and adoption of solutions;
- the implementation of decisions, which implies short-term actualization and long-term institutionalization and, in some cases, the rejection of a decision, with or without an alternative approach being proposed.

Because failure can occur at any time during the first two stages, it may be useful to distinguish between decision and implementation failures.

Decision failures occur when a diagnosis does not lead to the adoption of the proposed changes or new practices. An organization knows what must be done, but decides not to do it (i.e., the decision-making process never reaches the point where a decision to act is made). Implementation failures occur when a decision to effect change is made, but the changes remain unimplemented or poorly implemented. Based on a series of studies conducted during the past 15 years with a broad sample of organizations, Nutt [16] concluded that half of all decisions end in failure, in the sense that they are never implemented.

How do health organizations rate in terms of their ability to implement changes? Instinctively, one might suppose they would have even more difficulty than other organizations, but the literature is rather ambiguous on this score. As public bodies, health organizations’ decision-making processes are laborious and tortuous [17], as well as more chaotic and conflicted [18]. The fact that they are also professional organizations further reinforces these characteristics. While one might suppose that these aspects would be associated with a greater number of decision failures, this does not appear to be the case when adaptive, appropriate decision-making processes are used [16, 17]. Similarly, although the literature of the 1970s appears to suggest that failures in change implementation are more prevalent in public institutions[19-21], the more recent literature indicates there is much less difference in this regard [22-24].

The fact remains, however, that, in contrast with private-sector organizations, health organizations more often manifest decision-making characteristics that are incompatible with change. These determinants are central to the structural approach to change, a major area of research over the past 30 years. According to the structural perspective, organizations that are able successfully to implement change are distinguished by their structures and their capacity to adapt those structures to the requirements of change. Specifically, successful change implementation appears to be influenced by a set of characteristics having to do with:
- 20 -

- organizational attributes such as size, decentralization, formalization, and level of expertise ([25-33];
- organizational context, including environmental uncertainty, level of competition, organizational prosperity, and degree of urbanization ([29, 30, 34];
- (3) management attributes such as “locus of control,” attention paid to innovation, and an organization’s cosmopolitan or local orientation [30, 31, 34, 35].

This structural view of change originates in the work of Burns and Stalker[26] who popularized the idea that “organic” organizations (i.e., those characterized by little formalization, decentralized structure, and flexible, participatory decision-making) can more easily adapt to and appropriate innovation and change. This idea has proven to be quite robust and has been taken up and applied in a number of ways; for example, in Peters and Waterman’s now-classic study *In search of excellence* [36]. Many other researchers have, in more general terms, underscored the importance of the structural determinants of change ([37-42]

In accord with contingency theory [43], the structural approach also locates an organization’s capacity for change in the adaptability of its design. On the whole, design must reflect an adjustment to (or fit with) various constraints that impinge on an organization. Design adaptability entails a mixture of decisions relating to specialization, formalization, the size of units and sub-systems, the principal of functional and market grouping, centralization, liaison mechanisms between units, and planning and control intensity [44, 45]. Such decisions address a range of environmental and technological factors [44, 46]. The major challenge with this perspective is to identify an appropriate and effective structure, one that retains sufficient flexibility to respond to the changes taking place in an environment.

The transformation of an organization’s design indicates that change has been structurally incorporated. Based on this model, an organization that responds positively to change will find the means to transform in order to eliminate external pressures weighing upon it. In this sense, change becomes “routinized” [47]; which is to say, it will have significant repercussions on an organization’s operations and ability to perform its tasks and functions.

According to the structural perspective, the role of the manager is to reorganize. Managers reorganize to respond to new constraints or opportunities that arise when certain situational factors undergo major modifications. Consequently, managers must pay close attention to such transformations.

The structural approach is not alone in recommending that a certain set of factors be taken into account when attempting to bring about organizational change. Additional factors have been highlighted in connection with other approaches such as the hierarchical and rational model, the organizational development perspective, the psychological model, the political model, the strategic management model, certain external environmental perspectives, guru approaches, the learning model, and complexity theories. A synthesis of these factors is presented in Figure 7.
Successful change implementation hinges on an organization’s learning and collective leadership processes. The climate for change implementation, the structure of an organization and the technical and institutional environment all influence learning and collective leadership processes and have a direct impact on the success of change implementation processes. Constituent group engagement (i.e., synergistic interaction), for example, is thought to create a climate conducive to learning.

By “climate,” researchers refer to the material, human, and cognitive resources regarded as necessary conditions of change [41, 48]. The climate for change implementation is related to a set of conditions, policies, and organizational practices that can be mobilized to implement change [49]. Clearly, incentive systems influence resource availability and must also be viewed as an important factor in the change dynamic [50]. Change-management strategies, an attitude that values change and risk [41], responsiveness [51], and learning facilitation also influence resource availability and collective learning. The sensitization of decision-makers with respect to the use of scientific knowledge should also be part of change-management strategies and should influence learning.
In our view, three fundamental structural characteristics seem to act in an interrelated manner to influence learning and, more directly, change implementation efforts. These are:

- an organization’s “organicity” [26];
- its complexity and degree of integration [52];
- and, in particular, its normative integration [53, 54].

Finally, the involvement of various agents, a necessary condition that shapes the learning climate [49], is itself affected by the confidence that exists within an organization [55-58]. The degree of compatibility between the change being effected and an organization’s prevailing values [49] also influences such involvement.

Figure 7’s representation of the factors that should be considered when attempting to bring about change in an organization is, of course, hypothetical. It reflects our relatively cursory synthesis of the abundant literature on change (see Champagne, 2002[59], for an exhaustive survey of this issue). Nevertheless, this model is useful as part of an examination of the major challenges linked to the issue of safety, a phenomenon intrinsically associated with an organization’s capacity to learn and adapt.
PART FOUR: ORGANIZATIONAL TOOLS FOR OPTIMIZING SAFETY IN HEALTH ORGANIZATIONS

Based on our synthesis of current knowledge of the organizational determinants of accidents, quality, and change, as well as our conceptualization of safety and the specific characteristics of health organizations, we believe it is important to consider six major organizational factors or tools for optimizing safety in health organizations: (1) structures that foster adaptation (i.e., structures that are organic, integrated, and complex); (2) safety promotion; (3) a climate of confidence; (4) professional engagement; (5) appropriate safety-management strategies; and (6) collective leadership in the area of organizational learning.

4.1. STRUCTURES THAT FOSTER ADAPTATION

As illustrated in Table III, most authors and almost every research field we reviewed emphasized structural flexibility. Burns and Stalker [26] shed light on the importance of structural organicity (decentralization, little formalization, a high level of participation, and flexibility) in the promotion of innovation and change. However much they may disagree on other points, on the issue of organizational accidents the studies we consulted all underscored the importance of having both centralized and decentralized forms of decision-making as well as structural flexibility.

The profile of professional bureaucracies that we present in this report suggests that rigid organizations tend to be governed in heavy-handed, cumbersome ways. In such organizations, problems of coordination and control, the fragmentation of authority among a large number of professionals, and the significant role played by a variety of external influences render decision-making and strategy development risky activities. Organizations of this kind are well suited for standardized, unvarying production, but not for innovation. It is difficult for them to adjust to more disordered environments or to implement change. In order to optimize safety, organizations must adopt structures that foster adaptation.

A number of authors have drawn on chaos and complexity theory [60, 61] to propose a conception of hospitals as “complex adaptive systems” [62-67]. According to complexity theory, the behaviour of complex systems can be highly sensitive to and easily influenced by small, initial differences. Complex systems tend to be self-organizing: they begin in a state of randomness and evolve toward order rather than disorder. As a result, complex results can emerge from the actions of agents who are following relatively simple rules. According to this model, an organization confronted with an unstable environment should seek to make itself more complex (rather than simpler and more orderly) in its internal organization, because the probability of successful adaptation increases when internal diversity corresponds to the external diversity with which the organization is faced. An increased complexity of internal arrangements implies a greater degree of participation in decision-making on the part of an organization’s members, as well as more interconnections between organizational sub-units.
Table III: Structural adjustments to promote adaptation.

<table>
<thead>
<tr>
<th>NAT</th>
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<th>Weick</th>
<th>Quality</th>
<th>Change</th>
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<tbody>
<tr>
<td>Reduce interdependence of processes</td>
<td>Duplication of processes</td>
<td>Improvisation and tinkering</td>
<td>Appropriate economic incentives</td>
<td>Appropriate economic incentives</td>
</tr>
<tr>
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<td>Centralized decision-making</td>
<td>System of virtual roles</td>
<td>Experience: Case volume</td>
<td>Change-management strategy</td>
</tr>
<tr>
<td>Centralized decision-making as required</td>
<td>Decentralized decision-making as required</td>
<td>Attitude of wisdom</td>
<td>Quality-appreciation program: Global, decentralized</td>
<td>Knowledge-use promotion</td>
</tr>
<tr>
<td>Safety a priority: Culture of safety</td>
<td></td>
<td>Culture of information sharing and confidence</td>
<td>Empowerment: control left to professionals</td>
<td>Confidence</td>
</tr>
<tr>
<td>Involvement of professionals</td>
<td>Informal communication</td>
<td>Coordination</td>
<td>Coordination</td>
<td>Coordination</td>
</tr>
<tr>
<td>Quality / Performance appreciation</td>
<td>Team building</td>
<td>Training</td>
<td>Training</td>
<td>Integration</td>
</tr>
<tr>
<td>Structural flexibility</td>
<td></td>
<td>Commitment</td>
<td>Commitment</td>
<td>Commitment</td>
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<tr>
<td>Communication of errors and risks</td>
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<td>Involvement</td>
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</tbody>
</table>

In the hospital context, this means that all professionals (not only physician-managers) who produce services should be involved in a wide variety of decisions [63, 64, 68-71]. According to complexity theory, a higher degree of professional engagement makes more information available to an organization and increases its ability to process information and give it meaning [63, 66].

This model of the complex adaptive system also implies that the cumbersomeness of complex professional organizations can be reduced by improving the quality of the interconnections between the components of these organizations. According to complexity theory, as the number of randomly distributed connections increases, so does an organization’s capacity to incorporate variety into its behaviour; as a result, its capacity to adapt also increases [63, 65, 72].

In short, based on complexity theory, we believe that change, adaptation, and safety can be enhanced by promoting increased organizational complexity, as well as communication and engagement. These factors, in turn, foster self-organization, adaptation to environmental diversity, and learning processes [73].

From an operational viewpoint, we believe health organizations should adopt the following five principles:

- Their survival needs—safety, quality, effectiveness, normative integration, and adaptation—present complex, divergent challenges [74]. These sorts of challenges cannot be resolved through rational, linear methods, no matter how complicated or sophisticated
these methods may be. Instead, they call for paradoxical, complex solutions that incorporate a positive acceptance of disorder.

- There is a paradoxical need for both centralized and decentralized forms of decision-making. Professionals and other operators must be able to make decisions, and their decision-making processes must also reflect consideration of the full array of challenges their organizations face.
- Mutual adjustment must be reinforced as a key mechanism, alongside the standardization of skills and the coordination of production processes.
- In order to become more complex, organizations must adopt minimal work formalization philosophies and practices. All organizational rules governing production must be re-examined with a view to minimizing specifications and to retaining only those that are absolutely essential.
- Experimentation using innovative structures is necessary to foster complexity.

Several new organizational structures are described in the literature [75-80]. Among these studies, the inverted structure and the “spider-web structure” envisioned by Quinn et al. [79, 80] seem particularly relevant in the context of health-organization governance. According to all these authors, new, knowledge-based organizational structures (including professional organizations) will in the future be far more loosely structured. They will be highly decentralized and will locate responsibility at the level at which client interaction occurs. They will also be largely horizontal structures, with few hierarchical levels, and will promote action and rapid, flexible adjustment, so that production can be personalized and tailored to clients’ needs.

Like traditional professional organizations (including program-based ones), inverted structures emphasize autonomy. The organizational hierarchy supports the operating core and is arranged into “nodes” of highly specialized and autonomous professionals or teams. If necessary, coordination is effected informally through mutual adjustment. These kinds of structures are appropriate in situations (such as those found in hospitals) where direct service to clients is an organization’s predominant activity and where a worker who interacts directly with a client is also the person who holds the greatest amount of information concerning the client’s problems and their potential solution. In an inverted structure, managers facilitate production, resolve problems, eliminate obstacles, and collect and analyze information. In situations in which professionals themselves manage production, attentive recruitment, promotion of organizational values, and fair but stringent performance assessment are the most important tools in helping to ensure success.

When the need for coordination increases (e.g., when a compromise between autonomy and cooperation is sought, as in health organizations), an inverted structure can transform itself into a spider-web structure. This change is achieved through the juxtaposition of a project-based structure and an inverted structure. In a spider-web structure, professionals or teams come together collaboratively to solve specific problems and then return to their autonomous mode of functioning. The strength of these constantly evolving, web-like structures is that they preserve participants’ autonomy, while also providing a large number of interconnections (which, depending on the number of nodes, can grow exponentially) dedicated to solving problems
whose complexity requires the knowledge of numerous specialists. This approach also fosters organizational learning.

In addition to reconciling the requirements of autonomy and cooperation, organizations must also structure themselves to master other paradoxes [77]. They must build both hierarchies and networks; aim for both vertical accountability and horizontal integration; centralize their vision and strategies while decentralizing their operations; and, finally, learn to both standardize and customize.

Nadler et al [76] have described the architecture of organizations in the twenty-first century:

- They will exist as part of networks of suppliers, competitors, and clients who will cooperate in order to survive in an increasingly competitive market.
- Organizational boundaries will be indistinct and shifting as a result of numerous, diverse alliances.
- Organizations will be broken down into teams at every level.
- These teams will be far more autonomous than in the past.
- As a result, standards and values will be the principal mechanisms of coordination.
- Organizational designs will be fluid and transitory.
- Emphasis will be placed on organizational learning, and the ability to adapt quickly will be a key characteristic of successful organizations.

In short, governance of professional organizations in the twenty-first century requires organizational designs that make it possible to address a range of paradoxes. These organizational forms will vary and constantly evolve.

In our view, the holographic organizational principles proposed by Morgan [78] accurately sum up the structural characteristics one would expect to find in these organizations. A holographic organization is not only the sum of its parts; it exists in each of its parts. The qualities of the whole are found in each constituent part; consequently, a holographic organization is capable of organizing and continually regenerating itself.

A holographic organization possesses five structuring principles.

- The parts incorporate the whole. This is possible because:
  - vision, values, and culture are the DNA of a holographic organization and help an individual to understand and integrate the mission and challenges of the organization and to act accordingly;
  - information-sharing that is accessible from multiple points enables every individual to become an active participant in an evolving organizational memory and intelligence system;
  - the spider-web approach enables an organization to grow while also remaining small; and team members’ roles are diversified.
- The system must allow for a certain amount of redundancy; without redundancy, systems become static.
- Internal complexity must match the complexity of the environment. All parts of an organization must integrate the critical dimensions of the environment with which they interact.
- The three preceding principles endow organizations with the capacity to evolve. However, organizations must also be free to evolve. Accordingly, management must resist the temptation to exert technocratic control and should specify or standardize only the most critical variables.
- Organizations must learn to learn. They must have the capacity to learn new standards and rules of learning in order to transform themselves in a manner that keeps pace with the transformations taking place in their environments.

4.2. **Promoting Safety**

As Table IV illustrates, the reinforcement of safety as a value is an essential tool for analyzing safety in the context of health organizations. This is one of the important messages conveyed by the HROT, research by Weick [12] on sensitization, and the literature on quality. We have already discussed safety as a fundamental organizational value; these works highlight the importance of reinforcing this perception.

<table>
<thead>
<tr>
<th>NAT</th>
<th>HROT</th>
<th>Weick</th>
<th>Quality</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce interdependence of processes</td>
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<td>Improvisation and tinkering</td>
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</tr>
<tr>
<td>Centralized decision-making as required</td>
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<td>Attitude of wisdom</td>
<td>Quality-appreciation program: Global, decentralized</td>
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</tr>
<tr>
<td>Safety a priority: Culture of safety</td>
<td>Culture of information sharing and confidence</td>
<td>Empowerment: control left to professionals</td>
<td>Confidence</td>
<td></td>
</tr>
<tr>
<td>Involvement of professionals</td>
<td>Informal communication</td>
<td>Coordination</td>
<td>Organicity, structure</td>
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</tr>
<tr>
<td>Quality / Performance appreciation</td>
<td>Team building</td>
<td>Training</td>
<td>Integration</td>
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<td>Structural flexibility</td>
<td>Communication</td>
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<td>Complexity</td>
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<tr>
<td>Communication of errors and risks</td>
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<td>Collective learning</td>
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</table>

| Involvement |

Short of making safety a priority (the objective of the HROT, but an illusory goal according to the NAT), safety should, at the very least, be publicized as an organizational value. However,
simply stating a value is clearly not enough: it must also be demonstrated through the actions of an organization’s board of directors, managers, professionals, and other operators. It must also figure explicitly in an organization’s strategies and communications. Accordingly, reinforcing safety as a value requires (derived from Brocka & Brocka [81]):

- a concrete demonstration of key players’ commitment to this value;
- an unwavering commitment demonstrated through an organization’s actions;
- internal and external communication; and
- adoption of a long-term vision of organizational safety.

4.3. REINFORCING A CLIMATE OF CONFIDENCE

Like quality, change, and the awareness needed to prevent disintegration (see Table V), safety requires confidence; i.e., the establishment of a positive general attitude toward collaboration. Confidence is necessary so that various members of an organization can express their views [82] in a way that fosters learning and adaptation and that provides the organization with a broad range of insights into its actions and the environment. As discussed earlier, these outcomes enable organizations to adopt more complex structures.

Confidence cannot be wished into existence; it is discovered and observed retrospectively (Sabel, 1991). However, confidence is produced by structures and contexts that can be manipulated (Perrow, 1992). Thus, several characteristics of complex structures described earlier – such as increased engagement and commitment, information sharing, and a balanced distribution of organizational rewards – can promote confidence.

Table V: A climate of confidence.

<table>
<thead>
<tr>
<th>NAT</th>
<th>HROT</th>
<th>Weick</th>
<th>Quality</th>
<th>Change</th>
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<tbody>
<tr>
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<td>Improvisation and tinkering</td>
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<tr>
<td>Communication of errors and risks</td>
<td>Communication</td>
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</table>
Confidence is a necessary condition for the free expression of individual views, but it is insufficient on its own. It must be accompanied by appropriate mechanisms and social supports that encourage people to express themselves without constraint, secure in the knowledge they will be heard. The free expression of ideas strikes us as particularly important when an organization is attempting to get “back on track” in situations where the slide from an accident to catastrophe has already begun (Weick, 1993).

4.4. REINFORCING PROFESSIONAL ENGAGEMENT

In the wide-ranging literature we reviewed, there was general agreement on the importance of involvement and engagement by professionals and others (see Table VI). As discussed earlier, professional engagement is, in all circumstances, an essential characteristic of professional organizations.

Two key tools help promote professional engagement:

- Adopting complex structures in order to encourage decentralization, broader participation, small-team work, and the reduction of technocratic constraints and organizational rules.
- Accepting the fact that engagement can take many forms. Managers, in particular, must accept that various forms of commitment exist. No form is, in principal, better than any other. What matters is the “fit” between strategic directions, professional commitment, and organizational structures (Miller & Friesen, 1984; Champagne et al., 1998).

<table>
<thead>
<tr>
<th>Table VI: Professional engagement.</th>
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<tbody>
<tr>
<td><strong>NAT</strong></td>
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- 30 -
4.5. **ADOPTING APPROPRIATE SAFETY-MANAGEMENT STRATEGIES**

Health-organization managers must also adopt practices specifically intended to promote safety (Table VII). Three types of practices are particularly important to safety management in health organizations:

- vibrant quality-appreciation programs and appropriate, on-going practices to evaluate organizational performance;
- specific training activities; and
- explicit team-building strategies.

**Table VII: Appropriate safety-management strategies.**

<table>
<thead>
<tr>
<th>NAT</th>
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<td>Knowledge-use promotion</td>
</tr>
<tr>
<td>Safety a priority: Culture of safety</td>
<td>Culture of information sharing and confidence</td>
<td>Empowerment: control left to professionals</td>
<td>Coordination left to professionals</td>
<td>Commitment</td>
</tr>
<tr>
<td>Involvement of professionals</td>
<td>Informal communication</td>
<td>Coordination</td>
<td>Organicity, structure</td>
<td>Complexity</td>
</tr>
<tr>
<td>Quality / Performance appreciation</td>
<td>Team building</td>
<td>Training</td>
<td>Integration</td>
<td>Commitment</td>
</tr>
<tr>
<td>Structural flexibility</td>
<td>Communication</td>
<td></td>
<td>Collective learning</td>
<td>Commitment</td>
</tr>
<tr>
<td>Communication of errors and risks</td>
<td></td>
<td></td>
<td>Involvement</td>
<td></td>
</tr>
</tbody>
</table>

As we have seen, small teams are a characteristic of complex organizations. As we discussed earlier, the capacity for teamwork is necessary to enable constructive and informed interaction (an essential component of complex organizations) as well as personal expression.
4.6. **Collective Leadership for Organizational Learning**

Adaptation and, we believe, safety, are direct results of an organization’s capacity to learn. Organizations learn through collective action and by utilizing the sum of knowledge available within the community (Cohen & Levinthal, 1990; Fiol, 1994, 1996; Huber, 1991; Nonaka 1994). Learning is everyone’s concern and directors are among those who have a key role to play as agents of change (Demers, 1999). A director’s role is to facilitate learning by appealing to the initiative of all concerned. Leadership is collective, with the various individuals sharing roles in a differentiated but complementary fashion. As a result, learning, change, and adaptation depend on complex processes that are difficult to control, which suggests that the people in question must be able to play different roles at different times.

Learning, adaptation, and safety all require collective leadership. In turn, collective leadership is facilitated by adopting complex structures, strengthening professional engagement, and establishing a climate of confidence.

The various factors to be considered when examining the issue of safety in health organizations are illustrated in Figure 8.

*Figure 8: Conceptual framework for the analysis of safety in health organizations*
CONCLUSION

Safety is a multifaceted concept. In the first section of this report, we stressed that safety could be understood objectively or subjectively, that it was important to reflect on the nature of the concept and its relationships with related concepts such as accidents, that the question of why we seek safety should not be overlooked, and ultimately that we need to consider what methods are the most appropriate for studying the concept.

Our position is that safety is much more than the absence of accidents, and that therefore the management of safety extends far beyond management of risks and accidents. Nevertheless, managing risks and accidents is an important component of safety management. In the second section of our report, we have attempted to present a comprehensive system of risk and accident management that includes both the internal and external environments of the organization, as well as preventive measures and potential responses to accidents. The aim of this system is also to bring into perspective each of the more recent theories for approaching patient safety in organizations.

In the third section, we returned to our fundamental hypothesis, which is that safety is much more than the absence of accidents. The risk and accident management system thus constitutes one of several elements that must be addressed to ensure safety in organizations. We suggest that safety is both an underlying organizational value and an organizational need. To see it as more than the absence of accidents, we need to consider the specific characteristics of the organizations within which it is to be implanted. In health organizations, which are knowledge-based professional organizations, we believe that safety must be considered in tandem with quality and organizational change. In fact, on one hand, safety is a fundamental aspect of quality, and on the other, creating and maintaining safety in organizations requires the capacity to adapt.

Finally, in the fourth section, we suggested that, given the common elements that emerged from our analysis of the organizational determinants of accidents, quality and change, and from our conceptualizations of safety and of the specific characteristics of health organizations, safety in health organizations depends not only on an effective risk and accident management system but also on the adoption of structures to support adaptation, and on reinforcing the importance of safety, the climate of trust and the involvement of professionals.
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2. Office Québécois de la langue française, *Le grand dictionnaire terminologique.*


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