

# A Practical Guide to Crew Resource Management for Healthcare Teams



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By

William S. O'Keefe, Lacey L. Schmidt,  
Louis P. Halamek, Danny Castro  
and Sharon P. Pickering

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“If you want to learn how to apply the wealth of knowledge on how to deliver effective CRM training to your organization--this is the book you must have and need. [It] will provide all the practical and insightful guidance you must follow. Get it! A gem of a book written by experienced CRM scientists and practitioners.”

—Eduardo Salas, Ph.D.

Allyn R. and Gladys M. Cline Professor of Psychology, Rice University, USA

“[The book] is a wonderfully practical resource that covers the fundamentals of CRM for healthcare. Packed with clear examples, useful tips, and valuable tools, this book will be an essential tool to any individual or organization looking to improve safety and quality in healthcare delivery.”

—David Michael Musson, MD, PhD

Assistant Professor, Department of Anesthesiology, McMaster University, Canada

“If crew resource management has loomed before you like an imposing monolith, this book is your guide to conquering it. The authors’ brilliant tone lends toward a conversation between old colleagues rather than an instruction manual, making this a quintessential read for clinical leaders, new or old.”

—Dexter Buelow, RRT-NPS

Respiratory Therapy Clinical Coordinator, Texas Children’s Hospital

“[The book] delivers an invaluable guide for today’s complex and increasingly interdisciplinary healthcare systems. Bite-size lessons combined with a concise chapter framework using real-life scenarios provided by physician co-authors will foster learning for healthcare teams, trainees, and organizations, creating a team environment and culture which is adaptable across many scenarios including the intermingling of team members which undoubtedly occurs in healthcare settings.”

—Ruth L. Bush, MD, JD, MPH

Professor of Vascular Surgery, University of Houston

“[This is] required reading for any debriefing facilitator. Clear examples illustrate essential team dynamics required in the complex milieu of healthcare. Practical scenarios, tabular examples and summary boxes are perfect ‘just in time’ references.”

—Jeanine Graf, MD, Professor

Pediatric Intensive Care, Chief Medical Officer, Texas Children’s Hospital West Campus

“Read this superb, comprehensive book if you’ve experienced a near miss or serious adverse event; your hospital is considering CRM; or already has CRM but wants more from it!”

Andrew Gaffney, MD

Professor of Medicine (Emeritus), Vanderbilt University, USA

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## PREFACE

The fact that you have this practical guide demonstrates that you are aware of Crew Resource Management (CRM), and you are interested in how it can support effective team interactions and help your team in your daily care of patients.

Extensive material on CRM for healthcare has been produced by organizations, consultancies, and research institutions. These existing materials apply one of the following themes. These themes are not exhaustive but are aimed to highlight limitations that may prevent CRM from being used by healthcare practitioners today. They include:

1. **Adoption of Commercial Aviation-Style CRM into Healthcare.**  
CRM techniques and tools that are employed by airlines provide examples from aviation to illustrate their use in the cockpit (or other aviation environments such as the air traffic control tower). This approach advocates for the adoption of aviation CRM into healthcare. However, this approach often fails to account for differences between the two professions, including environmental and cultural differences. This approach provides minimum transferability of this style of CRM into healthcare, which in turn receives limited acceptance by healthcare professionals.
2. **Theoretical and Experimental Approaches.**  
These approaches provide broad recommendations to adopt CRM based on research that is typically conducted in non-healthcare domains. They often fail to provide real-life examples and limit practical methods for CRM adoption into healthcare settings.
3. **Tailored Approaches to Implementing CRM in Specific Healthcare Settings.**  
These typically present a reasonable understanding of CRM applied to specific cultural aspects and processes. However, they limit transferability of CRM principles and practices to other healthcare settings, thereby diluting its effectiveness as well as its potential benefits.

#### 4. Personal Approaches by Healthcare Professionals with Limited CRM Knowledge and/or Experience.

The authors of such material are intimately familiar with the healthcare context and have successfully implemented at least some form of CRM in practice. However, their knowledge of CRM tends to be lacking in depth, without refined understanding or applied expertise. This results in the sporadic use of CRM in some healthcare settings, rather than a fully embedded approach across all situations in healthcare.

So, why is our practical guide different? This guide is written to eliminate the limitations highlighted in the above themes. We, the authors of this guide, collectively cover the theoretical expertise and the applied experience to inform healthcare professionals on how to adopt CRM in practice. The authors include: two intensive care physicians who are actively engaged in clinical practice at academic institutions; two research doctorates with broad and deep experience using scientific evidence to develop applied CRM programs for multiple industries; and one highly experienced CRM instructor who has designed and implemented CRM training for NASA astronauts and flight controllers, oil and gas drilling crews, emergency responders, and many other highly specialized teams. Collectively, we explain CRM in practical terms that are both evidence-based and directly applicable to daily healthcare practice. Given our united approach, we can provide references to real-life examples where healthcare teams have displayed good CRM and areas where they could improve. Therefore, we show concrete CRM techniques to show specific behaviors that can improve the quality of your interactions and positively impact patient safety.

This guide is unique because it combines research with professional and practical expertise in a personal, usable, and relevant format. The focus is to help you, as the professional, to embed a proactive approach to your team interactions. This is to ensure that good behaviors become natural and easy, making it less likely for situations to go wrong. This guide is not, however, intended to tell you how to perform your role. CRM training often attempts to direct the user on exact ways to do CRM. This is inappropriate. The authors recognize that how we think you perform your role and how you actually perform your role will be mismatched. There is frequently a disconnect between work-as-imagined by administrators, researchers etc. and work-as-done by practitioners, which must be understood to ensure that planned work and actual work align (Anderson, 2017). Therefore, the

contents of this guide are designed to inform you on how to do good CRM, on a behavioral level, but it is up to you to effectively adopt CRM.

Throughout this guide, evidence-based CRM practices are presented as behaviors in the context of real-life healthcare scenarios. Modifying how CRM is labelled to match healthcare-specific personnel/use is not our intent. This guide is intended to be used by all healthcare professionals, and therefore a tailored approach to the terminology is impractical. The examples will reference many working environments, and the practical approach will bridge the gap between theory and real-world practice by presenting knowledge in context that can easily be understood. This is aimed to encourage you to reflect and imagine how you would apply CRM to your daily interactions in a healthcare setting. Presenting all types of behaviors in all types of scenarios is impossible; therefore, the contents of this guide will stimulate your thoughts regarding how you act. This practical approach to learning brings alive examples of what good looks like to motivate you to model these behaviors as your way of working. This guide leads you on the path to success through demonstrating how to continually practice CRM, empowering you with skills to inspire change, thereby ensuring that your own accountability for the safe delivery of healthcare is modeled and transferable in order to guide others in your organization.

This guide is structured so that each major part begins with a healthcare scenario that describes the efforts of multidisciplinary team members to save a life. The scenario is used to represent a complex and comprehensive situation in which our selected CRM model can be presented in an advanced context. The principles and practices of the CRM model are explained in the context of the scenarios. Additional examples are provided to demonstrate the transferability of the CRM model skills; these will support your understanding of how CRM can be effective in healthcare settings. This guide has three parts. The first part discusses CRM skills. The second part of the guide discusses tools to help you apply these skills successfully. To demonstrate how tools help you apply CRM skills, you will see that each chapter demonstrates two important tools: a briefing and a debriefing. We believe that a good briefing enables CRM by discussing what is happening, what success looks like, and what threats or errors are possible and how you plan to prevent, avoid, or mitigate them. We also believe a good debriefing, using open-ended questions, will encourage you to consider tangible actions to improve CRM in your team and organization. Hence, the repetitive nature is meant to embed these beliefs, as we anticipate that you will engage in this book on an irregular and/or intermittent basis. The third section discusses

how to influence your organization to implement CRM and how to evaluate its implementation. In every chapter, we attempt to provide just enough material that you can read the chapter in 30 minutes for a high-level understanding. However, we recommend that you revisit each chapter for a deeper understanding of how to apply the skills in practice. Finally, there is a glossary. If you run across a term that you do not know or understand, check the glossary. The glossary contains terms and concepts that we believe are crucial to your understanding of CRM. If a term is in the glossary, you must understand its significance. If you understand every term in the glossary, you have made the first step in understanding CRM concepts. Conversely, if a term is not in the glossary, it is not crucial to your understanding of CRM.

A consistent theme will become apparent: CRM for healthcare is focused on effective team interactions. As a healthcare professional, you will experience many challenging situations, ranging from daily resourcing issues to unprecedented times such as a pandemic. This guide is intended to not just teach you how to react in situations when things are going wrong, it is also about empowering team performance. Our purpose is to expand how you think, how you act, and how your team interacts in all daily activities so that best practice simply becomes the way that you work together to prevent, avoid, and mitigate potential errors before they have the potential to result in patient harm.

As a professional adopting CRM, you have a multitude of factors that impact your performance. While many factors are seemingly out of your control, remember that adopting CRM as your way of working is directly within your control. This will significantly benefit your daily activities to provide optimum care, contribute to the adoption of CRM across healthcare, and save lives.

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# CHAPTER 1

## MAKING THE CASE FOR CRM IN HEALTHCARE

### Chapter Briefing<sup>1</sup>

I want to call a quick STAR (Stop-Think-Act-Review): that means get off your email, stop your side conversations, and turn off the television.<sup>2</sup> Here is what we will do in this chapter: we will discuss what Crew Resource Management (CRM) is and how it applies to healthcare. We will be successful if you can explain:

- what CRM is (Section 1.1);
- why CRM is essential to healthcare (Section 1.2); and
- how our CRM model works in healthcare (Section 1.3).

The primary threat that you might experience is the introduction of a large number of concepts and terms, some of which you may have never encountered, and some of which you may think about in a different sense. We will therefore explicitly define and differentiate each term and concept. We also realize how busy you are. We will make sure that the chapter is short enough to be read in approximately thirty minutes. Finally, we provide Summary Boxes. The Summary Boxes serve two functions. First, they emphasize the take-home points in each section, and you can use them to check your understanding of those take-home points. Second, you can use them to determine if you and your team are implementing those take-home points. If a Summary Box does not make sense to you or you do not understand one or more take-home points, then review the related material before continuing to the next section.

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<sup>1</sup> You will see this chapter briefing format for every chapter. We believe that it is important to emphasize that a good briefing builds mental models by discussing what is happening, what success looks like, what threats or errors are possible, and, how you plan to prevent, avoid, or mitigate them.

<sup>2</sup> For information on STAR, see Chapters 11-15.

Did I miss anything? Any concerns? Any questions? (Pause) No? Then, let's get started.

## **List of Abbreviations**

CRM                      Crew Resource Management

This chapter will provide an overview of what Crew Resource Management (CRM) is (Section 1.1), why CRM is essential in daily healthcare practice (Section 1.2), and how our CRM model fits with the reality of delivering consistently safe healthcare (Section 1.3).

## **1.1 What is CRM?**

The Federal Aviation Administration (FAA) considers CRM as a team that uses all human, hardware, and software resources to be safe and effective (FAA 2004). This definition encompasses a broad approach in order to exclude nothing, and this is difficult to understand and adopt in practice. Many complex definitions aim to explain CRM. Our simple and concise viewpoint places emphasis on the team aspect of CRM. In our perspective, CRM is a way of managing and optimizing team interactions to improve performance and positively impact safety. In our CRM model, the core skills are your interpersonal skills: Exchanging Information, Communicating, Leading and Following, and Mutually Supporting. These core skills will be explained later in this chapter and in much more detail in subsequent chapters.

Our concept of CRM describes behaviors. When these CRM core skills are represented as behaviors, they complement your technical skills and enable you to combine the technical skills of your team to improve your overall team performance, thereby producing safe and effective patient care. Behaviors will be described simply as good and bad, whereby good behaviors are those that enable effective team interactions, and bad behaviors inhibit them.

Our model has four core skills, or four collections of behaviors, that you can learn to adopt and use in your daily activities:

1. **Exchanging Information:** Exchanging Information is about determining what information to exchange to whom and when. Everyone within a team will need information from another team



member at some point. No single team member can have access to all the information he or she needs at all times. The purpose of Exchanging Information is to fill gaps in individuals' situation awareness<sup>3</sup> (i.e., what you think is happening) and mental models (i.e., why, and how you think it is happening). Exchanging Information is concerned with the transfer of elements of situation awareness and mental models between team members. The products of Exchanging Information are every team member has the situation awareness and mental models required to fulfil their responsibilities.

2. **Communicating:** Communicating, in this sense, is all about how to exchange information. The important behaviors are delivering information clearly and concisely through protocols (i.e., the format and terminology of information to be delivered), active listening in an effort to understand, followed by confirmation of that understanding. Communicating with skill ensures that information is received and understood in time to achieve your team's goals.
3. **Leading and Following:** Each team member is both a leader and a follower at various times and situations. Leaders enable CRM by setting up psychological safety, articulating CRM expectations, and then modeling and rewarding those behaviors. Followers enable CRM by inquiring when they do not understand the leader or the situation, and then advocating and even asserting a position when they believe that safety is at risk. As an outcome of active CRM Leading and Following behaviors, followers provide the leader with all the information and knowledge required to make safe and effective decisions.
4. **Mutually Supporting:** Mutually Supporting the team is about offering and accepting physical, cognitive, psychological, and emotional support as well as providing feedback on both technical and non-technical behaviors. The outcome of your skill in Mutually Supporting others is a reduction in the impacts of Performance Shaping Factors such as stress and fatigue, thereby supporting fewer errors and reduced risk, even in complex and extreme environments.

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<sup>3</sup> Some researchers and practitioners use the term 'situational awareness'.

### Summary Box 1.1

#### Our Approach to Crew Resource Management

Our approach to Crew Resource Management is...

- a way of managing and optimizing team interactions, to improve performance, and positively impact safety;
- based on observable behaviors; and includes:
  - Exchanging Information: determining what information to exchange to whom and when.
  - Communicating: how to exchange information.
  - Leading and Following:
    - Leading is setting up psychological safety, articulating CRM expectations and then modeling and rewarding those behaviors.
    - Following is inquiring when they do not understand the leader or the situation, and then advocating and even asserting a position when they believe that safety is at risk.
  - Mutually Supporting: offering and accepting physical, cognitive, psychological, and emotional support as well as providing feedback on both technical and non-technical behaviors.

## 1.2 Why CRM?

The fact that you have this practical guide demonstrates that you are aware of CRM and interested in how it can support you and your team in your daily care of patients. As a healthcare professional, your team's top priority is to consistently deliver safe healthcare to every single patient. Every patient has the right to experience the safest care, and, in order to achieve this, you and your team endeavor to perform at your optimum in every situation. However, even with the best of intentions, things still go wrong. Harm to patients through adverse events is not only distressing for them and their family, but it also has a personal impact on healthcare professionals themselves, as explained by the second victim syndrome (Scott 2009). Adverse events create varying levels of patient harm: at the catastrophic end, figures estimate that 1 in 10,000 patients die every year as a result of a preventable medical error (de Vries 2008) and the annual number of preventable deaths cited in publications is often cited as greater than 200,000. (Austin 2019). The healthcare system is a highly dynamic, multifaceted, complex safety-critical profession. As a healthcare professional, you represent a key element within a vast network of interdependent roles

and responsibilities. You strive to ensure that things always go right in the areas that you influence. When CRM becomes standard practice, you and your team will behave in a manner that ensures that you are continually competent and responsible for achieving a safe and successful outcome.

CRM was founded in aviation and has over forty years of history of contributing to the efforts of ensuring that flying remains the safest mode of transportation. The aviation industry recognized that to reduce their accident rates, focusing on improving technical aspects alone was insufficient. Therefore, CRM was derived from the concept of team skills training to enable pilots in the cockpit to effectively manage their interactions.

CRM began as part of a collaboration between NASA and the airlines. CRM has evolved through five generations of research, operational validity, and continued refinement. As a result, research continues to inform the application of CRM. Throughout decades, CRM has been adapted for use in multiple safety critical environments including defense, rail, maritime, and many others. In each of these environments, CRM has been shown to demonstrate positive impacts on safety with associated benefits to team performance, efficiency, cost reductions, and job satisfaction. The use of CRM in healthcare is not new; CRM has been adopted from aviation and applied in healthcare for several decades. Typically, aviation terminology is often adopted and packaged for healthcare without acknowledging the fundamental differences between aviation and healthcare, such as organizational factors and culture. Therefore, aviation-style CRM cannot, and should not, be directly adopted in healthcare. Healthcare has unique organizational structures, cultures, goals, and contexts. Healthcare is delivered in many environments ranging from clinics, ambulances, hospitals, and so forth, and many roles function within these varied environments. That said, healthcare can certainly benefit from CRM. What CRM can offer healthcare professionals in all roles is its relevance for each and every daily team interaction in all work settings. CRM skills, however, currently receive varied attention in healthcare and are not valued the same as mandatory technical skills. Other industries such as aviation have made CRM training a mandatory and integrated part of their overall training needs. Even with the increasing awareness and acceptance of the importance of team skills, CRM training is often considered as an add-on course that only captures a snapshot of the breadth of skills required for a team to continually deliver safe care in practice. Waiting to learn about CRM as required on the job, or after a critical event, will be too late; lessons can be learned at this stage, but only after significant impacts and potential

losses, which could include loss of life. A major incentive to adopt CRM is to avoid creating a problem in the first place. If a problem does occur, and you and your team are practiced in CRM, you will be equipped with not only the knowledge, but also the applied skills, to manage the situation in a successful and safe manner. Preparedness is key, and the best way to be prepared is to practice CRM in all situations. Working through CRM must become a habit that is a fully embedded natural part of your normal practices.

CRM may offer a multitude of benefits relevant to healthcare. Benefits include, but are not limited to, the following:

- Efficient team interactions, with less time required to orient all team members.
- Adaptive team interactions with clearer and more accurate communication, even through extreme and evolving circumstances.
- Reduction in the frequency of partial information, increasing the quality of communication, individual performance, and team performance.
- Effective conflict resolution.
- Reduction in both potential and actual error rates.
- Fewer risks and liability.
- Reduced operating costs due to a high performing workplace.
- Increased personal satisfaction and job satisfaction.
- Improved safety by limiting the psychological impacts of causing harm.
- Established resilience.

CRM must be adopted at the individual, team, and organizational levels to be effective. Teams are comprised of individuals with a common goal, and teams operate within broader complex organizational structures. Many factors influence individual behaviors, and a breakdown in team performance can dramatically impact the outcome of a situation. Research has demonstrated that CRM training in healthcare has positive impacts on reducing the number of adverse events and errors while improving training participants' knowledge and performance behaviors (O'Connor, O'Dea, & Keogh 2013). For example, O'Connor and colleagues (2013) completed a meta-analysis on CRM training in healthcare and found that all of the included fourteen studies resulted in significant reductions both in the number of errors as well as the time needed to complete clinical tasks. CRM training may be considered costly; however, given the reported reductions

in adverse events and their related costs, economic benefits have been demonstrated (Moffatt-Bruce, Hefner, Mekhjian 2017).

### Summary Box 1.2

#### Why CRM is Important to Healthcare

- You and your team will behave in a manner that ensures that you are continually competent, and responsible for, achieving a safe and successful outcome.
- Adopting CRM in your daily practice will avoid creating a problem in the first place.
- If a problem does occur, you and your team will be equipped with the knowledge and skills to manage the situation in a successful and safe manner.

## **1.3 How our CRM Model Fits with the Reality of Delivering Consistently Safe Healthcare**

The CRM model that we present for adoption in healthcare are modified versions of the TeamSTEPPS and Team Dimensional Training CRM models (Smith-Jentsch 1998). These models were selected for their ease of understanding, transferability to healthcare settings, and the overall benefits to healthcare.

What characteristics of our CRM model make it effective in healthcare?

- Our CRM model is evidence-based and/or grounded in science: there must be evidence that the skills improve safety. Further, the basis of the CRM model presented in this guide is well researched, validated, and used by many national organizations, including the U.S. Navy, NASA, Agency for Healthcare Research and Quality (AHRQ), and several regionally-based firefighting and healthcare organizations.
- Our CRM model is valid: a valid CRM model in healthcare must specify behaviors and best practices used in that profession. Skills must be articulated to match the actual tasks, culture, and terminology of the profession in which they are used.
- Our CRM model has a high level of usability: the specific core skills must be easy to recall and apply. The CRM model must be

able to be employed by team members without constant reference to documentation.

- Our CRM model is focused on team interactions: Exchanging Information refers to the team interactions when a team member needs to determine what information to pass to whom and when. Communicating involves the team determining how they will interact to exchange that information. Leading and Following pertain specifically to sustaining efforts to obtain all the information that the leaders need to make good decisions. Mutually Supporting concerns how team members interact to proactively prevent or mitigate errors.
- The core skills in our CRM model are discernible by observable behaviors: a team member can provide feedback utilizing actual acts or verbal examples of behaviors. This prevents ambiguous feedback based on subjective impressions or personal conclusions.

By contrast, any CRM model for healthcare cannot be any of the following...

- a process: defining a sequence of steps (e.g., first develop situation awareness, then communicate situation awareness, then ...). Rather, all CRM skills must be done continuously and must be fully integrated with technical skills for all tasks. All core team skills, both technical and CRM, must therefore be integrated and performed simultaneously for a functional and effective team.
- a tool: the CRM model we will present contains tools such as Stop-Think-Act-Review (STAR), briefings, and debriefings, among others. Tools are critical in doing good CRM, but tools themselves are not CRM skills.
- individual skills that do not require interaction with another individual (e.g., time management and personal stress management): CRM is about fluid and dynamic interactions between team members. If a skill can be performed alone, then this is not CRM.
- unobservable characteristics (e.g., attitudes): if no categorized observable behavior occurs, it is not CRM. While an appropriate attitude is critical to the success of doing good CRM, it is only one of the motivating reasons to practice the good behaviors that comprise CRM skills.
- pre-existing conditions: any condition that exists before a team interaction is a pre-existing condition. Examples include whether

an organization's CRM training is strong or weak, or whether CRM is or is not embedded into policies and procedures. The team needs to be aware that a pre-existing condition might enable CRM or disable CRM. They can take advantage of an enabler--and work through a disabler--using core CRM skills.

- another skill or competency that may be enabled by CRM (e.g., adaptability, decision-making, or mission-planning). By nature, all competencies are interrelated, but the main reason for adopting the core skills is to provide you and your team with the fundamental team skills to enable you to be adaptable, make appropriate decisions, and plan accordingly, even when members of a team are unfamiliar with each other.

### Summary Box 1.3

How our CRM Model Fits with the Reality of Delivering Consistently Safe Healthcare

Our CRM model...

- is evidence-based and/or grounded in science.
- specifies behaviors and best practices valid for healthcare.
- focuses on team skills usable by healthcare teams.
- focuses on observable behaviors applicable to healthcare teams.

Let us start looking at each skill in more detail, starting with examining how Exchanging Information helps teams have the situation awareness they need to be safe and effective.

## Chapter Debriefing

I want to call a quick STAR (Stop-Think-Act-Review): get off your email, stop your side conversations, and turn off the television.<sup>4</sup> Let's see if you can expand upon these statements:

Our version of Crew Resource Management (CRM) is:

- a way of managing and optimizing team interactions, to improve performance, and positively impact safety.
- based on observable behaviors.

---

<sup>4</sup> See Chapters 11-15 for information on STAR.

- includes
  - Exchanging Information: determining what information to exchange with whom and when.
  - Communicating: how to exchange information.
  - Leading and Following:
    - Leading is setting up psychological safety, articulating CRM expectations and then modeling and rewarding those behaviors.
    - Following is inquiring when they do not understand the leader or the situation, and then advocating and even asserting a position when they believe that safety is at risk.
  - Mutually Supporting: offering and accepting physical, cognitive, psychological, and emotional support as well as providing feedback on both technical and non-technical behaviors.

CRM is important to healthcare because:

- you and your team will behave in a way that ensures that you are continually competent and responsible for achieving a safe and successful outcome.
- adopting CRM will avoid creating a problem in the first place.
- in the event that a problem does occur, you and your team will be equipped with the knowledge and skills to manage the situation in a successful and safe manner.

Our model:

- is evidence-based and/or grounded in science.
- specifies behaviors and best practices valid for healthcare.
- focuses on team skills usable by healthcare teams.
- focuses on observable behaviors applicable to healthcare teams.

If this was an actual debriefing, we would ask you to expand further on each of these statements. Depending on your response, we would ask open-ended follow-up questions until we were sure you understood the material and had a plan to implement one or more best practices. We might ask, “Why has CRM not been adopted by your organization?” We would not be satisfied if you said, “We have too many people who resist using CRM.” Again, we would ask open-ended follow-up questions until you might say,



“We have a problem with team members who believe that CRM is not applicable to their organization.” We would then ask, “What can you do to fix that problem on your next shift?” You might say, “I can start introducing CRM to my team in my briefing, showing them how CRM helps them be safer and more effective. I can also discuss CRM in the debriefing to show them how CRM helped us avoid an error.” We would then ask, “That helps convince your team, but what about the organization?” We would then continue to ask open-ended follow-up questions until you might say, “We need to develop a briefing to give to every member of our organization so that each team member knows what CRM is, why CRM is important to healthcare and how to apply our model.”

The following chapters will describe how our CRM model can be applied, and how you can empower your team members to adopt CRM into their daily practice.

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## **PART 1.**

# **CREW RESOURCE MANAGEMENT SKILLS**



# **PART 1A.**

## **EXCHANGING INFORMATION**

### **Briefing<sup>5</sup>**

I want to call a quick STAR (Stop-Think-Act-Review): that means, get off your email, stop your side conversations, and turn off the television.<sup>6</sup> Here is what we will do in the next six chapters: we will discuss how team members build their situation awareness and mental models, and then use the CRM skill of Exchanging Information to ensure that everyone has situation awareness and mental models despite team, organizational and environmental barriers. We will be successful if you can describe:

- what situation awareness is and how you can develop it (Chapter 2);
- how team members use the CRM skill called Exchanging Information to ensure everyone has situation awareness and mental models (Chapter 3);
- what information to exchange during handovers (Chapter 4);
- various Situation Awareness and Exchanging Information Demons (Chapter 5);
- Situation Awareness and Exchanging Information best practices (Chapter 6); and
- how a leader improves situation awareness through mental models (Chapter 7).

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<sup>5</sup> We will use the chapter briefing format throughout the book. You may feel the repeated use is redundant. However, we believe that it is important to continue to emphasize that a good briefing builds mental models by discussing what is happening, what success looks like, and what threats or errors are possible and how you plan to prevent, avoid, or mitigate them. Hence, the repetitive nature is meant to cement this belief with an understanding that you will also immerse yourself in this book on an irregular and/or intermittent basis. For more information on briefings and how this briefing embeds CRM concepts, see Section 14.2.

<sup>6</sup> For more information on STAR, see Chapters 11-15.

The primary threat that you might experience is the introduction of a large number of concepts and terms, some of which you may have never encountered, and some of which you may think about in a different sense. We will therefore explicitly define and differentiate each term and concept. We also realize how busy you are. We will make sure that the chapter is short enough to be read in approximately thirty minutes. Finally, we provide Summary Boxes. The Summary Boxes serve two functions. First, they emphasize the take-home points in each section, and you can use them to check your understanding of those take-home points. Second, you can use them to determine if you and your team are implementing those take-home points. If a Summary Box does not make sense to you or you do not understand one or more take-home points, then review the related material before continuing to the next section.

Did I miss anything? Any concerns? Any questions? (Pause) No? Then, let's get started.

Let us start with a scenario that will show good (effective) and bad (ineffective) examples of the Exchanging Information skill.<sup>7</sup> We will use this scenario as we discuss Exchanging Information further, in Chapters 2-7.

### Abbreviations

COPD	Chronic Obstructive Pulmonary Disease
CXR	Chest X-Ray
DOC	Physician
ED	Emergency Department
ICU	Intensive Care Unit
MVA	Multiple Vehicle Accident
NUR	Nurse
PEEP	Positive End-Expiratory Pressure
PIP	Peak Inspiratory Pressure

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<sup>7</sup> Here, we need to differentiate between the CRM skills of Exchanging Information and Communicating. Every team member must realize that he or she has information that other team members need, or other team members have information that he or she needs. Exchanging Information requires each team member to figure out what specific information each team member needs or has. Exchanging Information is about the what, who and when. Communicating is the process of passing information, or, about the how. Both Exchanging Information and Communicating have their own threats and errors, as well as best practices.