Patient Safety in the Intensive Care Unit
Joint Commission Resources Mission
The mission of Joint Commission Resources (JCR) is to continuously improve the safety and quality of care in the United States and in the international community through the provision of education and consultation services and international accreditation.

Joint Commission International Mission
A division of Joint Commission Resources, Inc.
The mission of Joint Commission International (JCI) is to improve the safety and quality of care in the international community through the provision of education, publications, consultation, and evaluation services.

Joint Commission Resources educational programs and publications support, but are separate from, the accreditation activities of the Joint Commission. Attendees at Joint Commission Resources educational programs and purchasers of Joint Commission Resources publications receive no special consideration or treatment in, or confidential information about, the accreditation process.

The inclusion of an organization name, product, or service in a Joint Commission Resources publication should not be construed as an endorsement of such organization, product, or services, nor is failure to include an organization name, product, or service to be construed as disapproval.

© 2010 by the Joint Commission on Accreditation of Healthcare Organizations

Joint Commission Resources, Inc. (JCR), a not-for-profit affiliate of the Joint Commission on Accreditation of Healthcare Organizations (Joint Commission), has been designated by the Joint Commission to publish publications and multimedia products. JCR reproduces and distributes these materials under license from the Joint Commission.

All rights reserved. No part of this publication may be reproduced in any form or by any means without written permission from the publisher.

Printed in the U.S.A. 5 4 3 2 1

Requests for permission to make copies of any part of this work should be mailed to
Permissions Editor
Department of Publications
Joint Commission Resources
One Renaissance Boulevard
Oakbrook Terrace, Illinois 60181 USA
permissions@jcrinc.com

ISBN: 978-1-59940-314-4
Library of Congress Control Number: 2009940300

For more information about Joint Commission Resources, please visit http://www.jcrinc.com.
For more information about Joint Commission International, please visit http://www.jointcommissioninternational.org.
# CONTENTS

Introduction ................................................. v
History and Background ........................................ v
Leadership’s Role in an Intensive Care Unit’s Culture of Safety .......... v
Overview of This Book ........................................ vi
Acknowledgments ............................................. vii

Chapter 1: Characteristics of the Intensive Care Unit and Improving Performance .......... 1
Types of Intensive Care Units .................................. 1
Levels of Critical Care ....................................... 4
Levels of Care and Patient Safety .............................. 5
Indicators for Admission Criteria to the Intensive Care Unit ............... 5
Improving Performance ....................................... 7
Identifying and Eliminating System Failures ........................ 8
Root Cause Analysis ......................................... 10
Failure Mode and Effects Analysis ............................ 13
Six Sigma .................................................. 15
Robust Process Improvement™ ................................ 20

Intensive Care Resources:
  Prioritization and Diagnosis Models .......................... 21
  Guidelines for Admission Criteria for Pediatric Intensive Care Units ....... 23
  Level I, II, and III Critical Care Centers ....................... 26

Chapter 2: Challenging Patient Care Issues in the Intensive Care Unit .......... 33
Leadership and Ethics Challenges ................................ 33
Challenges with Medication-Related Incidents ........................ 35
Challenges with Infection Prevention and Control ....................... 49
Challenges with Communication .................................. 54
Challenges in Patient/Family Communication ........................ 56
Challenges in the Pediatric and Neonatal Intensive Care Units ............. 57
Evidence-Based Guidelines for the Intensive Care Unit ................... 59
Staff Training and Skills ...................................... 59

Intensive Care Resources: Guidelines for Advanced Training for Physicians in Critical Care ..... 62
### CONTENTS

Chapter 3: The Intensivist-Directed Critical Care Unit and Organizational Models for Patient Safety . . .73
- Definition and Role of the Intensivist ...........................................73
- Intensivist Use and Patient Outcomes .............................................75
- The Role of the Attending Physician ..............................................75
- The Multidisciplinary Team Approach ...........................................75
- Open Units, Closed Units, and Hybrids .........................................78
- Obstacles to Using Intensivists ......................................................79
- Alternative Staffing .....................................................................83
- Intensive Care Resources: Privilege Request Form and Criteria for Privileges, Internal Medicine ...............86

Chapter 4: Patient Safety and the Multidisciplinary Approach to Care .................................................93
- The Composition of the Intensive Care Unit Team ............................93
- Other Members of the Multidisciplinary Team ...................................96
- Medical Team Training ..................................................................97
- Medical Emergency Teams .............................................................98
- Professional Shortages and Other Barriers ......................................99
- Team Support Solutions ...............................................................99
- Measuring Nurse-to-Patient Ratios ..............................................100
- Intensive Care Resources: Zero Defects in the Intensive Care Unit ....104

Chapter 5: Patient Safety and Telemedicine in the Intensive Care Unit .....................................................107
- Telemedicine Today .......................................................................107
- Benefits of Intensive Care Unit Telemedicine ..................................108
- Disadvantages of Telemedicine ......................................................109
- Future of Telemedicine ..................................................................112
- Conclusion ....................................................................................112

Chapter 6: Patient Safety Success Stories in the Intensive Care Unit ............................................................117
- Safety, Surveys, and Success ............................................................117
- Johns Hopkins Hospital: Comprehensive Unit-Based Safety Program .....................................................117
- Missouri Baptist Medical Center: Implementing Care Bundles ..........120
- Porter Valparaiso Hospital Campus: Transforming the Intensive Care Unit .............................................122
- Thailand’s Ministry of Public Health: Reducing Ventilator-Associated Pneumonia Project ..........................125
- Severance Hospital: Preventing Unplanned Extubation of Tubing or Central Lines ..................................128

Index .........................................................................................133
Intensive care, also known as critical care, refers to the level of medical treatment provided to patients with acute life-threatening illnesses or injuries. These patients frequently have sustained or are at risk of suffering the failure of one or more vital systems, functions, or organs. As a result, these patients require intensive care and monitoring to support them while they recover from the underlying disease or injury. This care may be necessary over a period of hours, days, or weeks. Although intensive care may be provided at the scene of an accident; in an ambulance or medivac helicopter; in a hospital trauma center or emergency room; or in the operating room, it is most often provided in specialized intensive care units within a health care organization.

History and Background
The intensive care unit came into existence during the second half of the twentieth century. During World War II, isolated rooms in the hospital (known at the time as "shock wards") were set up as a place in which to resuscitate and care for injured soldiers before and after surgery. Following the war, a nurse shortage necessitated that postoperative patients be placed together in recovery rooms to ensure that they would receive the appropriate care and attention.

Using the recovery room as a model, hospitals began establishing intensive care units in the 1950s. Throughout the decade, the development of life-support technology and the realization that patients who required monitoring by trained specialists could be efficiently and effectively cared for if grouped and located together spawned the growth of intensive care units.

The advent of life-support techniques, such as mechanical ventilation; prolonged endotracheal intubation; continuous electrocardiogram monitoring, bedside intravascular catheterization; analysis of respiratory gases in arterial and venous blood, closed-chest cardiac massage and defibrillation, and modern anesthesia, have contributed to the development of the intensive care unit and improved patient outcomes. Specialized intensive care units were later developed to treat specific patient populations. For example, the use of mechanical ventilation to address the polio epidemic of the 1950s led to the establishment of respiratory intensive care units. Similarly, advances in cardiac medicine resulted in the development of specialized coronary care units.

By the late 1950s, approximately 25% of all U.S. community hospitals with more than 300 beds had an intensive care unit. By 1960, nearly every hospital had a recovery room, and by the end of that decade, most hospitals had at least one intensive care unit. In Europe, pediatric intensive care units were also being established (see Sidebar I-I, page vi, for current data on intensive care units and workers).

Leadership's Role in an Intensive Care Unit's Culture of Safety
This book's central theory is that patient safety and a culture of safety should be commonplace within the intensive care unit structure. All individuals should focus on maintaining a level of excellence in providing care, treatment, and services as a part of their daily performance, as high-quality performance takes on the identity of being personally responsible for a patient's outcome. Leaders demonstrate this commitment to high-quality performance by taking the appropriate actions toward developing teamwork structures, opening doors to discussions and communication, and encouraging internal and external reporting of concerns. The focus then turns toward systems and processes—not toward the individual providing care.

The focus should always remain on improving patient care and perfecting processes and systems to prevent adverse events rather than on placing blame or fixing problems after the fact. By creating such an environment, leaders can ensure that patients feel safe and that caregivers feel comfortable reporting errors and suggesting patient safety–related improvements.
Chapter 1, “Characteristics of the Intensive Care Unit and Improving Performance,” describes the intensive care units of today, including the types of intensive care units, the levels of care provided in these units, and the typical profile of the patients treated in these units. This chapter also includes information on using performance improvement techniques to take a proactive approach to error reduction, and to help find solutions to problem areas in the intensive care unit.

Chapter 2, “Challenging Patient Care Issues in the Intensive Care Unit,” discusses the challenges associated with providing safety in the intensive care unit, such as medication-related incidents; infection prevention and control; communication with patients, families, and friends; communication with other caregivers; and morbidity and mortality. Also addressed are some solutions to these challenges, including evidence-based guidelines and advanced training for critical care providers.

Chapter 3, “The Intensivist-Directed Critical Care Unit and Organizational Models for Patient Safety,” explains the role of the critical care specialist physician (also known as the intensivist) and how the intensivist’s responsibilities interconnect with those of the attending physician, critical care nurses, and others in the intensive care unit. This chapter also includes information about shortages of certain categories of critical care staff and strategies for overcoming these obstacles.

Chapter 4, “Patient Safety and the Multidisciplinary Approach to Care,” discusses intensive care unit multidisciplinary teams that include the unit director, intensivist, critical care nurse, intensive care unit pharmacist, and respiratory care practitioner, as well as social workers, dietitians/nutritionists, pastoral care workers, and others. It also describes benefits and challenges of forming multidisciplinary teams.

Chapter 5, “Patient Safety and Telemedicine in the
Intensive Care Unit,” addresses the pros and cons of telemedicine in the intensive care unit, including issues of confidentiality, credentialing and privileging, and liability.

Chapter 6, “Patient Safety Success Stories in the Intensive Care Unit,” provides real-world examples from organizations throughout the world that have used some of the strategies outlined in this book to successfully improve patient safety and care in the intensive care unit.

Each chapter also includes special sidebars titled “Tracking Compliance.” These sidebars discuss requirements and compliance information associated with The Joint Commission and Joint Commission International standards that organizations can use to ensure that they meet these requirements. Also available at the end of each of the first four chapters is the “Intensive Care Resources” section that provides information on models, principles, or techniques to use in the provision of care for the intensive care unit.

This book contains content and resources for readers outside of the United States (as well as readers who wish to benchmark international and domestic methods and techniques), where Joint Commission International has accredited more than 260 health care organizations in 37 countries. Accredited in 2007 by the International Society for Quality in Health Care, Joint Commission International focuses on improving the safety of patient care and helping organizations implement practical and sustainable solutions that include the intensive care unit. Readers around the world will be able to use the patient safety concepts and practical advice provided in this book in their hospitals, no matter their size or location.

Online Extras for Patient Safety in the Intensive Care Unit are available on our Web site at http://www.jcrinc.com/PSICU09/extras. The Online Extras consist of real-world examples provided by organizations around the world demonstrating successes in providing excellence in patient safety in the intensive care unit. In addition, Internet links to other helpful resources are provided to help guide enhanced care efforts in the intensive or critical care setting.

Acknowledgments
Joint Commission Resources thanks Mary Brockway, Maureen Carr, John Herringer, Helen Hoesing, Robert Katzfey, Susan McLean, Mary McNeily, Carol Mooney, Deborah Nadzam, Paul vanOstenberg, Diane Bell, and Paul Reis for reviewing this book. Joint Commission Resources also thanks writer Julie Chyna.

A special thank-you is extended to the following organizations for allowing Joint Commission Resources to feature their patient safety efforts in the intensive care unit as examples:

- Johns Hopkins Hospital, Baltimore
- Missouri Baptist Medical Center, St. Louis
- Porter Valparaiso Hospital Campus, Valparaiso, Indiana
- Severance Hospital, Seoul, South Korea
- Thailand’s Ministry of Public Health

References