FAST FACTS FOR THE ER NURSE

Emergency Room Orientation in a Nutshell

Jennifer R. Buettner, RN, CEN

SPRINGER PUBLISHING COMPANY

New York
Jennifer R. Buettner, RN, CEN, is currently a full-time Registered Nurse at Jasper Memorial Hospital’s emergency room in Monticello, GA. She has nine years of ER experience and three years of experience precepting new graduate nurses and new employees in the ER. She is Certified in Emergency Nursing (CEN), ACLS, PALS, TNCC, and as a Nurse Preceptor (Rockdale Medical Center/2005) and is a member of the Emergency Nurses’ Association. Jennifer won the Faculty Award for the graduate who “has achieved excellence in both the academic and clinical settings and who best exemplifies the total integration of program philosophy to professional performance” (3/1999). She has developed an ER Orientation Packet and Education Course for a local hospital. Her book derives from her inability to find an orientation manual that was sized and priced reasonably enough for hospital ERs to purchase in sufficient quantities to provide to all preceptors and new ER nurses.
To emergency nurses everywhere. May God bless your hands as you touch so many patients’ lives.
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Preface

This is a book designed for real emergency room nurses by a real emergency room nurse. This quick reference is intended to aid your day-to-day emergency room orientation process with your preceptor. This book will help guide you through the most common illnesses seen in the emergency department. This book does not cover basic anatomy and physiology, advanced cardiovascular life support, pediatric advanced life support, or the trauma nurse core course. The information in this book is compiled from basic emergency room knowledge and the sources used are believed to be reliable. There are several points to take into consideration in referencing this book. First, all listed interventions that go beyond the Scope of Nursing Practice should be followed as ordered by the Emergency Room (ER) Provider. Secondly, the term Provider in this book could be a physician (MD or DO), a nurse practitioner (NP), or a physician assistant (PA), who is qualified to provide such ER patient care. In most cases, interventions that go beyond the usual Scope of Nursing Practice have been introduced using “Anticipate an order to:” followed by a list of possible Provider orders. As always, it is the responsibility
of the nurse to check any noted medication dosages or treatments to ensure that all are current, recommended, and accepted practice. After reading this book, you will become the jack of all illnesses, master of none. So, put on your running shoes, keep a stash of chocolates, and when all else fails, practice unreasonable happiness. One thing is for sure; just when you think you have seen it all, your next patient will come in.

Each chapter includes a brief introduction; an outline of materials, equipment, and drugs with which you should become familiar; a list of diagnoses that includes definitions, causes, signs and symptoms, and interventions; and a feature entitled “Fast facts in a nutshell” that provides quick summaries of important points or questions and answers for your review. The end of the book includes appendices, including a list of abbreviations, Common Lab Values, and frequently used ER medications, that should become second nature to all emergency room personnel.

There are two ways to use this book. You can review the book cover to cover, or you can use the skills check-off sheets in Appendix E and review the appropriate chapters.

Jennifer R. Buettner, RN, CEN
I could not do what I do without the support of my family, but the base of my emergency nursing foundation was built by my first preceptor, Linda Whitt, RN. Thank you for sharing your wealth of knowledge and setting a prime example of a truly caring and compassionate nurse. I can’t forget my second preceptor, Walter McCracken, RN, whose pearls of wisdom can be found in no book. I would also like to thank all my co-workers, who have inspired and molded me into the nurse I am today.

I would like to acknowledge the work of the following individuals for reviewing the manuscript for accuracy: Heather Hall, MD, Nichole Lunsford, RN, Cyndi Griffith, RN, Laura Phillips, RN, and Teresa M. Campo, DNP, RN, NP-C.

Last, but not least, I would like to thank the nurse and friend who inspired me to write this book, Nichole Lunsford, RN. Above all, my faith has sustained me through all my endeavors; I would like to thank God for all of His gifts and blessings.
Chapter 1

Tips on Surviving ER Nursing

INTRODUCTION

Even if you love working in the emergency room, it can be tough at times. The emergency room is particularly stressful because you care for a broad spectrum of patients in a fast-paced, critical environment. So, not only do you need to be extremely knowledgeable, you also need to be organized, calm, and fast on your feet. Everyone knows that the nurses are the very heart of the emergency room. Your patients rely on you. But to take care of others, you first need to take care of yourself physically, mentally, and spiritually.

This chapter includes a checklist of stress symptoms and a list of simple methods for coping with those pressures.

During this part of your orientation, you will learn:

1. How to recognize the symptoms of stress on the job.
2. Basic techniques you can use on the job to alleviate that stress.
SYMPTOMS OF STRESS

It is true that ER nurses are sometimes referred to as “adrenaline junkies.” However, one can not function on adrenaline alone. Severe stress and anxiety on the job is harmful to you and your patients. So learn to recognize the signs and symptoms: severe muscle tension, fatigue, irritability, flight or fight response, tachycardia, tachypnea, weakness, sweating, feeling helpless, angry, tearful, urinary urgency, diarrhea, dry mouth, insomnia, difficulty in problem solving, feeling overwhelmed, and decreased appetite.

Fast facts in a nutshell

To take care of others, you first need to take care of yourself.

TECHNIQUES FOR RELIEVING STRESS

1. Take a moment, close your eyes and take some deep cleansing breaths. Breathe in through your nose as you count to five. Then exhale slowly through your mouth as you count to five, and that’s it. Breathing exercises increase oxygen to your brain and are a fast, simple way to relieve stress anytime, anywhere.

2. Stay hydrated. Keep a water bottle with you at work. Staying hydrated is an easy way to stay healthy.
3. Focus on the positives. When you have a complaint, spend your energy finding a solution rather than complaining. You need all the energy you can get, so use it to resolve stressful problems.

4. Leave your work at work, and your home life at home. Divide and conquer your stressors.

5. Listen to upbeat energizing music on the way to work so that the melody will repeat itself in your head all day. “Whistle while you work.” Singing or humming is a good way to relieve stress.

6. Keep a stash of dark chocolates: they are actually a source of energy and antioxidants. Dark chocolate not only boosts your immune system, it seems to make people happy. It works well on any grumpy coworkers too, so don’t forget to share.

7. Introduce yourself to patients when you enter a room. Keeping the patient informed of who you are and what you are going to be doing relieves their stress.

8. Wear a well-made and comfortable pair of shoes. Eight to 12 hours of painful swollen feet will only add to your stress.

9. Recognize that it is perfectly normal to feel anxious during a code (e.g., cardiac/pulmonary arrest). Only time and training will help you cope with the anxiety felt when performing advanced cardiovascular life supportive treatments.

10. Do not think or act as if you know it all. Medicine is constantly changing. No matter how much emergency room experience you have, you can still learn something new every day.
11. Keep the following in your pocket every day: trauma shears, hemostats, tape, pen, calculator (with list of emergency room intravenous drips and doses taped to back) and this book. Being prepared will reduce stress and anxiety.

12. Invest in a good pair of support hose and do leg exercises. Most nurses develop varicose veins. It is hard to take good care of your patients when your legs ache and have poor circulation.

13. Ask or look up any medications about which you are unsure. There are numerous medication routes and doses to memorize. Looking them up or asking will help you learn them and keep your patients safe and free of medication errors.

14. Keep your uniforms clean, to save you the hassle from having to buy new scrubs frequently. Wash out betadine or benzoic stains on your scrubs with rubbing alcohol. Pour hydrogen peroxide on any blood spots on your uniform, and let foam for a minute. Then wash with soap and water.

15. Have a sense of humor even if it seems unreasonable. You won’t survive without one. Laughter is often the best medicine.

17. Avoid gossip. If you don’t have anything nice to say, don’t say anything at all. We are all on the same team. We need to build each other up, not tear each other down.

18. Increase your emergency room knowledge. Join the Emergency Nurses Association, sign up for emergency room-related courses, and study from a CEN review book. Increasing your knowledge base is key for better patient care.
19. Maintain liability insurance on yourself. It is inexpensive and almost everyone that works in the emergency room, at some point, gets sued. Liability insurance is a simple way to protect yourself.

20. Document, Document, Document! How was the patient when he/she came in? Stable? Pink? Warm? Dry? Any distress? Chart on your nonurgent patient at least every hour; on a critical patient, every 5 to 10 minutes. Chart when you assumed care of the patient. Document how they were when they left the emergency room (e.g., ambulatory, stable, no acute distress) and reassess ABCs.

Fast facts in a nutshell

- Maintain liability insurance on yourself.
- Document, Document, Document!

Fast facts in a nutshell: summary

Emergency nursing is not for everyone. It can be indescribably hard at times. But if you practice these simple stress-relieving techniques you will be able to survive whatever the emergency room throws at you. If you can make it through the tough times, you’ll survive long enough to find out just how rewarding emergency room nursing can be. After all, that is why you chose this profession.
Chapter 2

Acid-Base Imbalances

INTRODUCTION

The body requires a delicate balance of acids and bases to maintain natural homeostasis. Many life-threatening illnesses affect the acid-base balance. Therefore, recognizing any acid-base imbalance is crucial to saving someone’s life. As a nurse in the emergency room, you will come across acid-base imbalances daily. Many new and experienced nurses find acid-base balance difficult to understand. After reviewing this chapter and learning the three simple steps provided, you will find it much easier to remember how to interpret test results. Understanding the pathophysiology and reviewing many laboratory results are key to better understanding acid-base imbalances.

During this part of your orientation, locate and become familiar with:

1. Arterial blood gas procedures and results.
2. Diabetic ketoacidosis protocols.
3. Intubation equipment.

PATHOPHYSIOLOGY

Acid-base balance is controlled by two organ systems.

Respiratory System

You breathe in oxygen (O_2) and breathe out carbon dioxide (CO_2). In the bloodstream CO_2 mixes with H_2O (water) to make (H_2CO_3) carbonic acid.

Renal System

H_2CO_3 dissociates into a base (HCO_3^-) and an acid (H^+) that are excreted by the kidneys.

Recognizing an Imbalance

An easy way to remember if your patient has a respiratory or metabolic imbalance shown in Table 2.1 is this simple mnemonic.
*Mnemonic for pH/bicarbonate directions in acidosis versus alkalosis, remember ROME*
*Respiratory is Opposite, Metabolic is Equal*
TABLE 2.1  Determining Acid-Base Imbalances

<table>
<thead>
<tr>
<th>Acid-Base Imbalance</th>
<th>pH</th>
<th>PaCO₂</th>
<th>HCO₃⁻</th>
</tr>
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<tbody>
<tr>
<td>Respiratory Acidosis</td>
<td>↓</td>
<td>↑</td>
<td>Normal</td>
</tr>
<tr>
<td>Respiratory Alkalosis</td>
<td>↑</td>
<td>↓</td>
<td>Normal</td>
</tr>
<tr>
<td>Metabolic Acidosis</td>
<td>↓</td>
<td>Normal</td>
<td>↓</td>
</tr>
<tr>
<td>Metabolic Alkalosis</td>
<td>↑</td>
<td>Normal</td>
<td>↑</td>
</tr>
</tbody>
</table>

Normal pH = 7.35–7.45, Normal PaCO₂ = 35–45, Normal HCO₃⁻ = 22–26

The arrows in Table 2.1 for respiratory pH and PaCO₂ are in opposite directions from each other, and the arrows for metabolic pH and bicarbonate are equal or in the same direction.

**Fast facts in a nutshell**

1. Acid-base balance is controlled by the respiratory and renal systems.

**DIAGNOSES**

Every acid-base imbalance is described using three words, such as: Uncompensated Respiratory Acidosis. To determine which imbalance your patient has, follow these three simple steps. Table 2.1 provides a visual guide of these steps.
1. Look at the pH. If it is normal (7.35–7.45) it is compensated. If it is out of range it is uncompensated.
3. Look at PaCO₂ and HCO₃⁻. Abnormal PaCO₂ = respiratory. Abnormal HCO₃⁻ = metabolic. If both are abnormal it is both respiratory and metabolic.

Respiratory Acidosis

In respiratory acidosis, pH is less than 7.35 because of inadequate ventilations. Poor ventilation causes one to retain CO₂. Poor ventilations also lead to poor oxygenation. That means oxygen cannot get in, and CO₂ cannot get out. CO₂ builds up, mixes with H₂O, resulting in carbonic acid (H₂CO₃). Bicarbonate (HCO₃⁻) is normal. This patient is at risk for hypoxia.

1. Causes: upper airway obstruction; pulmonary edema; hypoventilation; head trauma; chest trauma; pneumonia; chronic obstructive pulmonary disease (COPD); narcotic overdose; and muscle weakness.
2. Signs and symptoms: tachycardia; headache; confusion; weakness; coma; cyanosis; bradypnea; paralysis; respiratory arrest.
3. Interventions: administer oxygen; nebulized breathing treatments; treat underlying condition; prepare for intubation; provide mechanical ventilation; measure pulse oxygen; monitor cardiac rhythm; and obtain an intravenous access.
Fast facts in a nutshell

**Question:** What supplies are needed to intubate a patient?

**Answer:** High flow oxygen, suction, ambu bag, appropriate size endotracheal tube, 10-ml syringe of air, stylett, appropriate blades (Miller/Abbott) with working handle, CO₂ detector, tape or endotracheal tube securing device, and stethoscope to check placement.

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**Respiratory Alkalosis**

In respiratory alkalosis, pH is greater than 7.45. When a person hyperventilates, he/she blows off all of his/her CO₂. There is no CO₂ left to mix with H₂O to make carbonic acid (H₂CO₃). No acid = alkalosis. HCO₃⁻ is normal.

1. **Causes:** hyperventilation; pain; anxiety; pulmonary embolus; hypoxia; high altitude; drug toxicity (early salicylate adult overdose); third trimester pregnancy; and fever.
2. **Signs and symptoms:** tetany or seizures from hypocalcemia; tingling of extremities; dizziness; altered mental status;
anxiety; paresthesias; palpitations; tachycardia; and hyperventilation.

3. **Interventions:** encourage slow deep breathing; correct underlying condition; provide fluids intravenously; and correct hyperventilation with nonrebreather mask *without* oxygen.
   - Hyperventilation treatment: put oxygen nonrebreather mask over the patient’s face and leave turned off. (It works like a paper bag.)

**Notes:**

______________________________________________________________________________________

______________________________________________________________________________________

**Metabolic Acidosis**

In metabolic acidosis, pH is less than 7.35 due to a decrease in (bicarbonate) \( \text{HCO}_3^- \) or increase in \( \text{H}^+ \) ion. \( \text{PaCO}_2 \) is normal.

1. **Causes:** diabetic ketoacidosis; renal disease; starvation; shock or sepsis; and loss of bicarbonate in severe diarrhea.
2. **Signs and symptoms:** altered mental state; hypotension; abdominal pain; nausea, vomiting, and diarrhea; Kussmaul respirations; hyperventilation as a compensatory mechanism; hyperkalemia; flushed, warm skin; bradycardia; and muscle weakness.
3. **Interventions:** provide fluids intravenously (lactated Ringer’s); treatment may include intravenous sodium bicarbon-
Diabetic Ketoacidosis (DKA)

Diabetic ketoacidosis is a state of metabolic acidosis that is the result of elevated blood sugar (greater than 300). When the blood sugar is this high, the body does not have sufficient insulin to break down sugar for energy. To compensate, the body breaks down fat, thereby releasing toxic ketone acids.

1. **Causes**: uncontrolled blood sugar in diabetes mellitus.
2. **Signs and symptoms**: dry, flushed skin; serum glucose level greater than 300; nausea and vomiting; increased thirst; urinary frequency; weakness; Kussmaul breathing; ketones in urine; change in level of consciousness; and coma.
3. **Interventions**: obtain and monitor blood sugar every hour; monitor acetone level; check arterial blood gases; perform basic metabolic panel and urinalysis; monitor cardiac rhythm; administer 2 liters of oxygen by nasal cannula; administer intravenous normal saline bolus; medicate for nausea and vomiting; and give insulin (first, 5 to 10 units of regular intravenous push, and then 0.1 units per kilogram per hour by intravenous fusion on a pump). Once the patient’s blood sugar is below 250, change from intravenous to subcutaneous insulin per the provider’s order. Then also change the intravenous solution from normal saline to 5% Dextrose 0.45% normal saline (D₅½NS).
at a rate of 150 to 200 ml per hour per the provider’s order. Prepare for possible intensive care unit admission.
• Once you replace fluids be prepared for urinary frequency. Provide urinals, Foley cath, or bedpans. Collect urinalysis and monitor intake and output.

Notes:
_____________________________________________
_____________________________________________
_____________________________________________

Metabolic Alkalosis

In metabolic alkalosis, the pH is greater than 7.45 due to elevated \( \text{HCO}_3^- \) or decreased \( \text{H}^+ \). \( \text{PaCO}_2 \) is normal.

1. **Causes:** loss of stomach acid associated with vomiting; ingesting too many alkali substances (antacids, milk of magnesia, or baking soda); diuretics; hypokalemia; and Cushing’s syndrome.
2. **Signs and symptoms:** hypocalcemia (tetany, twitching, shaking, seizures); confusion; nausea, vomiting, and diarrhea; coma; decreased ST segment; bradypnea; hypokalemia (muscle weakness); and polyuria.
3. **Interventions:** anticipate orders to: prevent vomiting with antiemetics, avoid gastric suctioning, administer normal saline intravenously, perform basic metabolic panel (BMP), provide potassium supplements for hypokalemia, monitor cardiac performance and respirations.
Fast facts in a nutshell

Question: Before your patient has an arterial blood gas drawn, what test should be performed?
Answer: Allen’s Test.

Question: A 29-year-old diabetic female arrives who has dried skin, is flushed, is hot, and has Kussmaul’s respirations. What is the underlying illness?
Answer: Diabetic ketoacidosis—check her blood sugar.

Question: Your patient is diagnosed with ketoacidosis. What should initial management include?
Answer: Administering regular insulin intravenously or subcutaneously, followed by an insulin intravenous drip.

Question: How often should you check blood sugars on a patient receiving an insulin intravenous drip?
Answer: Every hour.

Notes: ________________________________________________________________
______________________________________________________________
______________________________________________________________
Although acid-base imbalances can be challenging to understand, they are critical to maintaining natural homeostasis. An emergency room nurse comes across acid-base imbalances on a daily basis. Learn the steps provided in this chapter so you will be able to accurately interpret test results.