

OPERATING ROOM SKILLS

Fundamentals for the Surgical Technologist
SECOND EDITION

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Dedication

Any accomplishment has a starting point, a beginning, and this edition is dedicated to new surgical technology students and faculty who have gathered the courage and support to begin.



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Preface

This second edition of *Operating Room Skills: Fundamentals for the Surgical Technologist* continues its focus on developing essential skills needed to perform safely and competently in the operating room environment and as an integral team member. The unique format follows the role of the surgical technologist in conjunction with the movement of the patient through the surgical experience. Beginning with the very first chapter, students are immersed in active learning strategies and integrate best practices, core curriculum requirements, and recommendations from program graduates and instructors. With repetition, learners develop accurate skill performance and an awareness of the organization to the work of the surgical technologist. In the risk-free laboratory setting, role-playing, face-to-face communication, small group scenarios, simulations, teamwork, and problem solving are encouraged as precise performance and critical thinking are developed.

Skill competence is evaluated and verified by using the competency assessments found in each chapter. The Competency Assessment forms in this second edition have been updated and allow students and educators multiple opportunities for skill enrichment and testing. When learning a new career, the enormity of information can be overwhelming. In this second edition, new strategies present a manageable amount of information. Emphasis is placed on learning the most frequently used general and specialty surgical instruments in Chapters 7 and 19, and the most frequently managed medications on the back table are highlighted in Chapter 9. Keeping the patient and other team members safe continues to be paramount in this edition and a new Chapter 8 focuses on preventing retained surgical items. Intraoperative sterile technique in Chapter 21 prompts the learner to prepare for planned events, such as isolation technique, and to correct unplanned breaches in sterile technique. A short progress report, new for each chapter, provides a “to do” list before skills are tested. Students enter the clinical site with fundamental concepts, and a new Chapter 26 provides direction for preclinical requirements, clinical case participation, and log documentation for accredited programs.

I am proud to offer a new edition of this lab manual where immersion, integration, repetition, and dedication to excellence continue to be the cornerstones for success. Enjoy learning and prepare to enter the fascinating operating room environment.

STUDENT SUPPLEMENTS

To access the material on student resources that accompany this book, visit www.pearsonhighered.com/healthprofessionsresources. Click on view all resources and select Surgical Technology from the choice of disciplines. Find this book and you will find the complimentary study materials. Website showcases surgical technology skill videos, operating room concepts and skills from selected chapters.

INSTRUCTOR SUPPLEMENTS

To access supplementary materials online from Pearson's Instructor Resource Center (IRC), instructors will need to use their IRC login credentials. If they don't have IRC login credentials they will need to request an instructor access code. Go to www.pearsonhighered.com/irc to register for an instructor access code. Within 48 hours of registering, you will receive a confirming e-mail including an instructor access code. Once you have received your code, locate your book in the online catalog and click on the Instructor Resources button on the left side of the catalog product page. Select a supplement, and a login page will appear. Once you have logged in, you can access instructor material for all Pearson textbooks. If you have any difficulties accessing the site or downloading a supplement, please contact Customer Service at <http://support.pearson.com/getsupport>. This book has the following instructor's resources.

- PowerPoint lecture slides. The instructor should have access to the skills videos, too.

New to This Edition

1. An Introduction to the chapter skills and roles provides a quick reference for instructors and students.

INTRODUCTION

In each chapter of *Operating Room Skills: Fundamentals for the Surgical Technologist*, students and faculty discover the essential concepts and skills in the surgical technology career. They view the affiliated skill videos, engage in dialog related to the discussion questions and diagrams, and practice with authentic instruments and supplies in the lab setting. Refer to the Pearson student resource website. The competency assessment, at the end of each chapter, gauges the student's progress and provides opportunities for coaching, mentoring, and enrichment.

Chapter 1 introduces the use of approved scrub attire and other standardized practices that uphold sterile technique—a foundational component of infection control. Preparing to enter the perioperative environment

begins at home when you bathe, wash your hair, shave or trim facial hair, perform oral hygiene, apply deodorant, and remove all jewelry and nail gels or polishes. Consistently applying the standards demonstrates your knowledge of strategies to reduce the patient's intraoperative exposure to microbes. In a designated dressing area, wash your hands and don a disposable head cover or hood (tie-on), hospital-laundered scrub attire, shoe covers, and a snap-up jacket. Infection control and prevention of surgical site infections (SSI) are imbedded in this skill. Refer to Chapter 21, "Maintain Sterile Technique," for additional information related to the commitment required of all team members to uphold sterile technique and protect the patient. Complacency is not allowed.

TEAM MEMBER ROLE CHART

Team Member	Type of Role		Timing		
	Nonsterile ¹	Sterile ²	Preop ³	Intraop ⁴	Postop ⁵
Surgical Technologist ⁶	X		X		
Assistant Circulator ⁷	X		X		
Operating Room Team ⁸	X		X		

2. List of Supplies, Directions for preparation and performance, and Learning Objectives to be used in each chapter prompt a quick start to each lab session.

SUPPLIES

- Soap, water, and paper towels
- Surgical face mask and eye protection
- Scrub brush soap packets with nail pick
- Surgical hand rub, wall-mounted

DIRECTIONS

- Prepare by viewing the instructional video (available on the Pearson Student Resource Website) and reading the skill sequence and instructions in this chapter.
- Refer to the team member role chart.
- Bring to lab the supplies needed for the skill sequence.
- Your instructor will discuss the objectives and the importance of following the skill sequence and instructions and will offer strategies for success.
- Practice performing surgical hand antisepsis with your lab partner. Encourage and critique each other.
- Practice the surgical scrub or soap and brush protocol. Your instructor will inform you to use either the timed brush method or the counted brush stroke method.
- Practice the waterless surgical rub protocol.
- Use a timer as a guide to gauge improvement in efficiency.
- At a designated time, demonstration of these skills will be evaluated and graded by your instructor using the competency assessment tool.

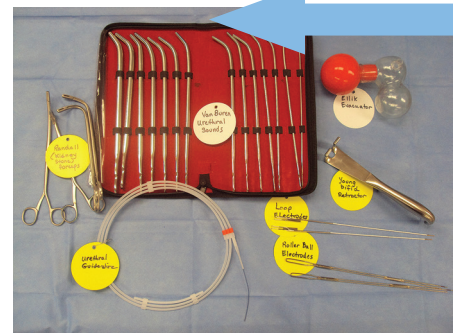
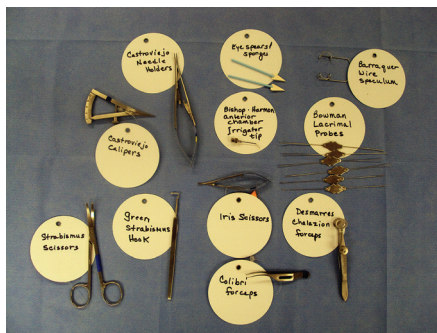
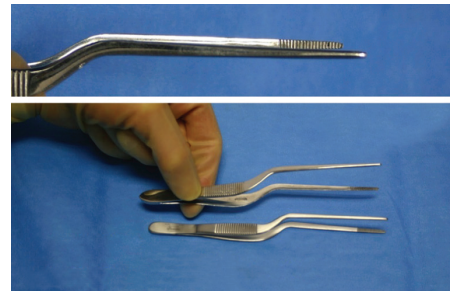
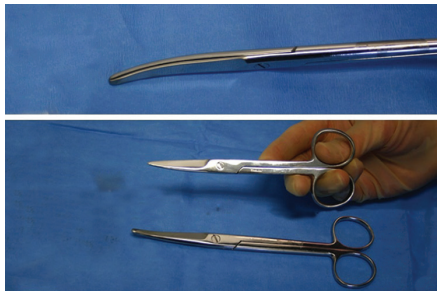
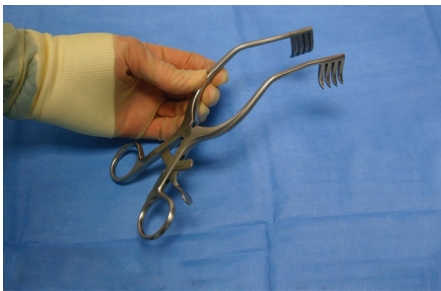
LEARNING OBJECTIVES

The learner will demonstrate the following skills with 100 percent accuracy each time performing the surgical hand scrub:

1. Present intact skin on hands, forearms, and cuticles. Fingernails will be natural, short, and polish-free.
2. Present hands and arms, free of rings, watches, and bracelets.
3. Perform a basic hand wash, or prewash.
4. Perform surgical hand antisepsis using the hand scrub—counted brush-stroke method or timed method.
5. Perform surgical hand antisepsis using a waterless, surgical hand rub.
6. State the appropriate corrective action due to a contamination error.



3. Jump into the ST role by learning a few of the most frequently used surgical instruments, suture, and dressing supplies in Chapters 7, 19, 20, and 22. Learn how to name, prepare, and handle these. Images and tables enhance the essential concepts and equipment.



4. Updated Competency Assessments in all chapters are designed for role immersion, integration, repetition, and a dedication to excellence.

COMPETENCY ASSESSMENT

STUDENT'S NAME: _____

CHAPTER 1 DON SCRUB ATTIRE

PERFORMANCE RATING:

- 5 Independent: Safe. Confident, anticipates, and uses critical thinking.
- 4 Above Average: Safe. Recognizes breaks in technique and self-corrects (0–1 errors).
- 3 Competent: Safe. Recognizes breaks in sterile technique and self-corrects (2–3 errors). A rating of “3” or higher in each skill is required to pass.
- 2 Remedial: Unsafe. Makes critical errors and is unable to implement cues consistently.
- 1 Dependent: Unsafe. Makes critical errors. Requires multiple evaluator interventions.

Perform independent, redundant scoring with two instructors.

Critical errors: communication, sterile technique, sharps, medications, counts, and instruments.

PERFORMANCE CRITERIA	Date:	Date:
	Score	Score
1. Demonstrate professionalism. Communicates accurately, completely, and understandably, and shows initiative, self-direction, responsibility, accountability, and teamwork.	1 2 3 4 5	1 2 3 4 5
2. Demonstrate home preparation: personal care, natural nails, and no jewelry, aftershave, or perfume. Dermal implants not allowed.	1 2 3 4 5	1 2 3 4 5
3. Enter locker room; wash hands; gather attire	1 2 3 4 5	1 2 3 4 5
4. Secure personal effects. Leave cell phone and valuables in a locker.	1 2 3 4 5	1 2 3 4 5
5. Don OR cap so that ears, scalp/hair, and any facial hair are covered. Assess for stray hair and correct. Wear hood to cover a hijab, and per hospital/clinical site policies.	1 2 3 4 5	1 2 3 4 5
6. Don hospital-laundered scrub attire. Tuck in the top and draw strings.	1 2 3 4 5	1 2 3 4 5
7. Don dedicated OR shoes and use shoe covers per policy.	1 2 3 4 5	1 2 3 4 5
8. Don and snap jacket for nonsterile role per policy.	1 2 3 4 5	1 2 3 4 5
9. Wear and secure ID badge to the front of the scrub top.	1 2 3 4 5	1 2 3 4 5
10. State two conditions for donning fresh OR attire.	1 2 3 4 5	1 2 3 4 5
Optional: Total points can inform grading by percentages or letters.		

ADDITIONAL COMMENTS _____

DATE: _____ PERFORMANCE EVALUATION AND RECOMMENDATIONS

- ☐ PASS: Satisfactory Performance. Scores 3–5 on all performance criteria.
 - ☐ Demonstrates professionalism: Shows professional communication, initiative, self-direction, and accountability.
 - ☐ Exhibits critical thinking: Consistently displays comprehension and command of essential concepts.
 - ☐ Skill performance: Exhibits no critical errors, self-corrects, performs all criteria safely and accurately in a reasonable time frame, and applies sterile technique, as required.
- ☐ FAIL: Unsatisfactory Performance. Scores 1–2 on any performance criterion.
 - ☐ Critical criteria not met. These may include sterile technique, safety, PPE, timing, or communication.
 - ☐ Professionalism not demonstrated.
 - ☐ Critical thinking skills not demonstrated.
 - ☐ Skill performance unsafe or not demonstrated.
- ☐ REMEDIATION:
 - ☐ Schedule lab practice. Date: _____
 - ☐ Reevaluate by instructor. Date: _____
- ☐ DISMISS from lab or clinicals today.
- ☐ Program director notified. Date: _____

SIGNATURES

Date _____ Evaluator _____ Student _____

Date _____ Evaluator _____ Student _____

Visit www.pearsonhighered.com/healthprofessionsresources to access the content available on the student resources website. Click on view all resources and select Surgical Technology from the choice of disciplines. Find this book and you can access the online content.

5. Before testing, students receive an editable progress report, and a “To Do” list.

☒ **Progress**

Date: _____

☐ Apply sterile technique consistently
☐ Apply protocols—counts, medications, sharps, specimen care
☐ Demonstrate chapter skills
☐ Ready to test
☐ Plan for improvement: _____



6. Chapter 9 prepares students to manage medications and solutions, and features a student-inspired guide compiled from their clinical site experiences in surgery centers, and in university and community hospitals.

Diagram 9.1 Medications Frequently Managed by the Surgical Technologist

Medication	Dosage	Classification	Indication	Route	ST Considerations	Side Effects	Treatment for Overdose/ Reactions
Lidocaine 0.5–1%	Maximum dose = 300 mg/hour 1% = 10 mg/mL	Anesthetic	Pain	SQ by Surgeon	*Follow medication protocol	Swelling, tingling, confusion, seizures, respiratory or cardiac arrest	Lipid Emulsion 20% (ILE) Given by ACP
Lidocaine 1% with epinephrine 1:100,000 or 1:200,000	Maximum dose = 500 mg/hour Lidocaine strength may vary.	Anesthetic Epinephrine is an adrenergic	Longer acting pain control Hemostatic	SQ by Surgeon	*Read Red label for epinephrine Contraindicated in use for nose, toes, penis, and fingers	Vasoconstriction Nerve damage, limb ischemia	Warm compresses, nitroglycerine cream
Heparin flush	10–100 units/mL Follow preference card	Anticoagulant Antithrombotic	Prevents clotting by inhibiting activation of factors and prothrombin	IV flush by surgeon	*Validate labels for number of units carefully. Seek maximum dosage allowed from surgeon or ACP, or preference card	Bleeding Hemorrhage	Protamine sulfate 1% Given by slow IV push by ACP Evaluate blood coagulation studies

*Follow the medication protocol for all medications, all of the time.

- Validate there are no patient allergies to the medication.
- Validate maximum dosage allowed.
- Know the indications, contraindications, and side effects.
- Validate the name, strength, dosage, and expiration date with the circulator.
- For high alert medications—those at risk for misidentification, misuse, and patient injury—perform independent, redundant verification per hospital/clinical site policy.
- Receive the medication.
- Label the medication basin/syringe.
- Handle sharps safely and use one-handed scoop if recapping.
- State the name, strength, and dose as you pass the medication to the surgeon with each pass.
- Account for the dosage used.



7. Chapter 26, “Transition to the Clinical Setting,” uses interactive strategies to prepare students for their student role in the clinical site, and for documentation options of their participation. Faculty and students use this opportunity to be alerted to the challenges and opportunities imbedded in the operating room experience for student surgical technologists.

TABLE 26.1 Analyze Surgical Procedures and Document Student ST Roles

Surgical Procedure	Definition	Specialty	Skills	ST Student Role		
				1st	2nd	Observe
Laparoscopic Cholecystectomy	Endoscopic removal of gall bladder	General	Verify and set up sterile supplies, prepare local, count, pass instruments, maintain sterile technique	☐		
Breast Biopsy	Diagnostic, breast tissue excision	General	Hold retractors		☐	
Thyroidectomy						
Colon resection with colostomy						
Pancreaticoduodenectomy						
Cervical cerclage						
D and C						
Hysteroscopy						
Hysterectomy—TAH						
LAVH			Hold endoscope		☐	



8. Chapter 25, dealing with minimally invasive concepts, guides students to build on basic setup skills when converting to an open procedure in an emergency and as recommended by program advisory committee members.



9. Enhanced Chapter 21, “Maintain Sterile Technique,” focuses on intraoperative skills such as “Isolation” technique and scenarios useful in critical thinking when an error occurs.



Introduction

Operating Room Skills: Fundamentals for the Surgical Technologist is organized to support the role of the student functioning in the nonsterile and sterile team member roles including observation, first scrub, second scrub, and assistant circulator. Refer to Chapters 1 and 26 for role definitions. Strategies are used which promote entry into the OR with confidence.

Key features include:

- Learning objectives
- Lab supply lists
- Student surgical technologist roles
- Active learning strategies
- Step-by-step guidance
- Customization options for regional variations
- Color illustrations, tables, and charts
- Internet references for anatomy, surgical procedures, prepping, draping, and more.
- Frequently used General and Specialty Instruments
- Frequently managed medications and solutions on the back table
- Frequently used absorbable and nonabsorbable suture
- Frequently used postoperative dressings by specialty
- Individual and team skills
- Progress check for a "to do" list
- Competency assessments for lab and clinical performance
- Transition to the clinical setting
- Preclinical requirements
- Document clinical case participation

Operating Room Skills: Fundamentals for the Surgical Technologist presents operating room concepts and skills in a sequential real-time format. The lab manual is patient-centered and student-focused, and supports the development of precise performance and critical thinking demanded by stakeholders. Safe patient care incorporates recommendations and best practices from professional and government organizations, industry, and practicing OR personnel. Educators and students use this lab manual and its companion website. Later, these same tools are useful during preparation for the national certification examination in surgical technology.

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Surgical Technology Classes, 1997–2018

Video and image actors, 2006–2018

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Nancy Dankanich is the Surgical Technology Program Manager at Frederick Community College in Frederick, Maryland. During the 22 years in this position, she has facilitated the development of the program by implementing national standards, negotiating contracts with numerous clinical sites, and overseeing growth in the number of qualified program applicants. She has taught in healthcare for over 30 years—surgical technology theory, laboratory, and clinical—and in the registered nurse and practical nurse programs. Additional teaching responsibilities include online documentation training for nurses, electronic medication administration record-training for nurses, and American Heart Association CPR. Service to the college includes participation on numerous college-wide committees: alternative credit for promotion, scholarship, emergency preparedness, international education, academic master planning, and academic program review. As the recipient of several innovation and summer grants from the college, she has networked with colleagues to develop and implement strategies promoting student success. The author has collaborated on the development of surgical instrument training modules, online CST preparation examinations, and interactive on-campus surgical technology skill sessions.

Broad interests and experience in acute care, intensive care, operating room, pediatrics, home health, and long-term care complement the author's teaching experience. She holds a bachelor's degree with high honors in nursing from the University of Maryland, Baltimore, Maryland, and a master's degree, summa cum laude, from Hood College, Frederick, Maryland. She holds a certification from CCI in operating room nursing-CNOR. Professional memberships are held in Phi Kappa Phi, Sigma Theta Tau, AST, and AORN. Volunteer activities include Maryland Responds Disaster Nurse Volunteer program, and participation in Stephen's Ministry through her local church congregation. Dedication to lifelong learning is evidenced by attendance at national conferences, completion of several peer reviews for medical publications, the accumulation of continuing education hours in medical, surgical, and educational topics, and the establishment of the Joseph and Margaret Droll Memorial Student Scholarship fund through the Frederick Community College Foundation, Inc.

Personal accomplishments include rim to rim hiking of the Grand Canyon in Utah, raising abandoned kittens, celebrating 40 years of marriage this year, honoring three adult children who have wonderful jobs, good educations, and compassionate spouses, and finding delight in my new role as a grandma.