

also immediately introduces the reader to the importance of ethics in doing research (Chapter 2), and gives a brief overview of outcomes research (Chapter 3). Clinicians and others who are contemplating possible research projects need to be aware of ethical constraints when gathering data on human subjects. Many practitioners are not aware that proposed research involving human subjects must be reviewed by institutional review boards and that informed consent may be needed from recruited subjects. Table 3-1 provides a very helpful comparison and contrast of the differences between traditional clinical research and outcomes research. The first contrast given in the table shows the relevance and necessity of outcomes research in today's clinical climate: traditional clinical research is disease-centered, whereas outcomes research is patient- and community-centered.

Section II has chapters on the scientific method (Chapter 4), developing the study idea (Chapter 5), reviewing the literature (Chapter 6), and designing the experiment (Chapter 7). By putting the key components of the research process in a section entitled "Planning the Study," the text drives home the point that a study should be completely planned before any implementation is attempted.

Section III begins with a chapter on implementing the study (Chapter 8), which further serves to highlight the difference between the detailed and extensive planning needed and the actual performance of the study plan. This section also includes a chapter on measurement (Chapter 9), which I think could be improved in a future edition. The properties of measurement, namely accuracy (validity) and precision (reliability), are well explained, with ample applications given. However, there is only indirect material on how to estimate the accuracy and precision of measurement instruments. The discussion is also limited to physical methods of data collection, with no consideration of other measurement methods such as surveys, questionnaires, or tests, which are used in some respiratory care research. Methods of estimating accuracy and precision (as opposed to interpreting statements about accuracy) are lacking, especially for nonphysical methods of data collection.

Section IV offers a fine compilation and explanation of statistical techniques. This section opens with an overview of basic statistical concepts, including measures of descriptive statistics and concepts of inferen-

tial statistics, such as confidence intervals and hypothesis testing (Chapter 10). In Chapters 11, 12, and 13 specific statistical techniques/tests are given for nominal levels of measure, ordinal levels, and continuous, or interval, measures. By organizing statistical techniques into chapters based on levels of measurement, one of the major factors determining appropriateness of a statistical analysis is built into the chapter divisions. This may be one of the true contributions of the text. It should also be noted that characteristics of screening tests, such as false positives, sensitivity and specificity, and receiver operating characteristic curves to evaluate the efficiency of diagnostic tests, are clearly presented in Chapter 11, in the section on statistics for nominal measures. These statistical techniques are not typically found in courses on introductory classical statistics.

The last section will be particularly helpful for those who are just beginning to systematically collect observations and wish to find out how to share their results with others in a public forum such as a peer-reviewed journal or an abstract and poster session. In the "Publishing the Findings" section there is also a chapter on preparing a case report. As noted by the author, case studies represent legitimate clinical research and offer an opportunity for respiratory care practitioners to participate in research and publication when it is not feasible to perform or participate in full-scale clinical or laboratory studies. The chapter includes excellent detail on what constitutes a reportable case study and how to go about organizing and writing the case study. The identification of the elements of a patient case study, given in logical order, is not only useful for publishing a case report; it also applies to any case study in the clinical site. Included is a table that lists 12 common mistakes made by authors of case reports, which will be very helpful for prospective authors to identify what should and should not be done in preparing a case report for possible publication.

There are 6 appendices, including a glossary, a checklist for peer review of papers useful in reviewing one's own manuscript before submission, a complete model paper, a sample response to reviewers of the model paper, answers to questions in each of the chapters, and a flow chart to assist with selection of appropriate statistical techniques. The model paper is a complete manuscript presented in typed format as it would

be submitted to a journal. This will be extremely helpful to those who are not sure how to actually prepare a paper with all of its elements, such as tables and figures, for submission to a journal as a typed manuscript. The model paper would be equally useful for educational programs in which students are assigned papers for writing. Many writers make the mistake of trying to do "desktop publishing," meaning attempting to prepare the manuscript as it would look in print, with tables and figures incorporated into the text.

After reviewing this nicely done text from Robert Chatburn, I highly recommend it to practicing clinicians in respiratory care as well as other health care providers, including medical students, some of whom struggle with these concepts. This book will be especially beneficial and a unique resource for faculty and students in respiratory care programs. Respiratory therapy now has a current text on research methodology.

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Blood Collection in Healthcare. Majorie Schaub Di Lorenzo MT SH and Susan King Strasinger DA MT. Philadelphia: FA Davis. 2002. Soft cover, illustrated, 98 pages, \$19.95.

As a nurse who teaches venipuncture skills to other nurses, I looked forward to reading **Blood Collection in Healthcare** by Majorie Schaub Di Lorenzo and Susan King Strasinger. A postscript to the title states that the text is designed to be used for a short course. I think it would be best used in the classroom setting, with an experienced instructor, and not as an independent study text.

The authors provide some excellent tools for teaching a venipuncture course or class. Some of the teaching tools made available include a Microsoft PowerPoint presentation (which I did not review), information on obtaining teaching videos from product vendors, detailed lecture outlines, unit quizzes, and a comprehensive exam with the answers included. Some of the unit exercises include detailed, step-by-step guides that could be used as a skills or competency check-off evaluation. The inside front and back covers of this paperback text have a Vacutainer blood draw tube guide that includes color pictures of laboratory tube tops, additives, and general laboratory informa-

tion. Part of the tube guide is reserved for comments by the reader, to note information specific to his or her individual institution. The book cover could be removed and used as an additional learning aid.

The book's sections are referred to as units. Each unit begins with a list of learning objectives, which are specific and task-oriented. The information contained within each unit met the objectives. The list of topics in this 6-unit textbook is comprehensive and logically organized. It begins with an extensive review of venipuncture equipment and proceeds to instruction of the steps in routine venipuncture, from the completion of the laboratory requisition form to the timely delivery of the blood sample to the laboratory. Remaining units review potential complications and how to avoid them, details of special laboratory tests, and how to perform dermal punctures.

Blood Collection in Healthcare, though small (98 pages) is complete in its coverage of topics related to phlebotomy. There is variability in the degree of coverage and detail individual topics receive. The unit on blood collection and venipuncture equipment is very thorough. It includes a diagram of the intrinsic and extrinsic clotting pathways, the purpose of various anticoagulants, and uses and additives found in color-coded blood collection tubes. The authors do an excellent job of describing the various blood collection tubes and how to use the supplies and equipment when performing a blood draw. A later unit provides succinct descriptions of the types of central line catheters, but it lacked information on performing the actual blood draw. The information provided did meet the unit's objective, which was to discuss the various types of central venous line catheters and the requirements for drawing blood (tube order and amount of waste). The authors, perhaps acknowledging the diversity of institutional policies, instruct the reader to, "Follow specific institutional protocol for obtaining blood" from a central line.

Though instruction on skin preparation for arterial blood gas sampling is provided, the actual steps in drawing arterial blood samples were beyond the scope of the book. The authors noted, "only specifically trained personnel must perform arterial punctures."

Throughout the book emphasis is placed on clinician safety and obtaining an undiluted blood sample. The book includes pictures and information on needle safety devices and describes other safety equipment used during a blood draw. Instruction on correctly obtaining timed specimens, laboratory tests that require unusual handling procedures, and avoiding sample contamination are discussed in several places in the book.

My bias as a nurse probably relates to my only dissatisfaction with the book. The student phlebotomist is told to avoid, if possible, the extremity that has an intravenous fluid infusing. If there are no other options, the authors recommend stopping the intravenous infusion for 2–5 min (depending on whether the line is peripheral or central) before drawing the blood sample. I appreciate and acknowledge the need to obtain an uncontaminated blood sample, but as a nurse I would want to be notified before my patient's intravenous infusion was stopped, because stopping the infusion could disrupt critical medication delivery or cause a loss of intravenous access. I'd also want to double-check that the infusion was restarted and running correctly once the blood draw was completed. I doubt the authors intended that instruction to be carried out independently of other services, but communication cannot be assumed, so the book should have stated that it is necessary to consult with the patient's nurse or physician prior to stopping an intravenous infusion, to avoid any possible misconception.

Learning the correct tube, minimum volume of blood required, and specific handling instructions for the variety of laboratory tests available can be a time-consuming process. Nothing is worse than completing

a difficult draw and either not filling the correct laboratory tube or not having the required blood volume—common problems when learning. The appendices include lists of laboratory tests, with specific requirements, such as the color of the collection tube, minimum amount of blood required, special instructions such as "place on ice" or "protect from light," and clinical correlation of laboratory tests to body systems. One appendix has information relating to care of peripheral, central, and arterial lines, including procedural information such as when to change intravenous tubing, flush protocols, dressing changes, total parental nutrition tubing changes, the use of intravenous fat filters, and secondary tubing changes. I have to admit I did not see the relevance of the information in this appendix to blood drawing. The guidelines given are somewhat institution-specific and may be beyond the scope of practice for the novice phlebotomist.

Throughout the book the authors inserted notations to highlight important points and offer insights about phlebotomy. I found these technical tips useful and looked forward to reading them. I noticed no typographical mistakes. There were a few instances of terms being used incorrectly; for instance, one passage refers to donning clean gloves in the patient's presence to reassure the patient that "sterility" (versus "cleanliness") is being maintained. Throughout the book, the pictures of equipment and techniques are informative and useful. The book is relatively inexpensive for a textbook (\$19.95), and wears well; my copy looks almost new after being carried for several months in my briefcase. I liked the book best for the many teaching tools it provided, and I will probably be using some of them in my next class.

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