KOZIER AND ERB'S
Fundamentals of Nursing
VOLUME ONE
Cover art
Robert Stuurman is a Noongar from Western Australia who does Aboriginal art as a result of meeting his birth mother in 1994. He is from the Stolen Generations.

The cover of this book is adapted from one of his paintings called The Learning Experience. It was done through a selection of natural pigments crushed from ochre rock.

The painting shows two U-shaped icons facing each other within a concentric circle. The one on the left represents the student and the one on the right is the teacher. Both come from a background of life experience, learning and enquiry. When dialogue occurs the knowledge systems begin to flow like a river. (Dry river beds become raging rivers—our land can also tell a story.)

Concentric circles represent age-old and timeless truths (learning truths), where people can grow strong through knowledge and understanding.

Arrow-like markings represent footsteps and a willingness to come together in a mutual understanding of teaching and learning.

Robert Stuurman, artist
KOZIER AND ERB'S
Fundamentals of Nursing

VOLUME ONE
Second Australian Edition

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AUDREY BERMAN received her Bachelor of Science Nursing from the University of California, San Francisco, and later returned to that campus to obtain her Master of Science Nursing in physiological nursing and her PhD in nursing. Her dissertation was entitled *Sailing a course through chemotherapy: The experience of women with breast cancer*. She worked in oncology at Samuel Merritt Hospital prior to beginning her teaching career in the diploma program at Samuel Merritt Hospital School of Nursing in 1976. As a faculty member, she participated in the transition of that program into a baccalaureate degree and in the development of the master of science in nursing program. Over the years, she has taught a variety of medical–surgical nursing courses in the prelicense programs. She currently serves as the Dean of Nursing at Samuel Merritt College (an affiliate of Sutter Health).

Dr. Berman has travelled extensively, visiting nursing and health care institutions in Germany, Israel, Spain, Korea, Botswana, Australia, Japan and Brazil. She serves on the board of directors for the Bay Area Tumor Institute. She is a member of the American Nurses Association and Sigma Theta Tau and is a site visitor for the Commission on Collegiate Nursing Education. She has twice participated as an NCLEX-RN® item writer for the National Council of State Boards of Nursing. She has presented locally, nationally and internationally on topics related to nursing education, breast cancer and technology in health care.

Dr. Berman authored the scripts for more than 35 nursing skills videotapes in the 1990s. She has been a co-author of *Kozier and Erb’s Fundamentals of Nursing* since the sixth edition and, with Shirlee Snyder, co-author of the fifth and sixth editions of *Skills in Clinical Nursing*.

Audrey Berman dedicates this edition to Bo-Gunnar Edvard Dahlström without whom it would not have been possible. There are few people on earth who can simultaneously challenge and support me—even with all my sharp edges—and he is one. I am grateful for his intellect and English skills, which exceed my own. He loves three nurses unconditionally: his sister, his daughter and me.

SHIRLEE J. SNYDER graduated from Columbia Hospital School of Nursing in Milwaukee, Wisconsin, and subsequently received a Bachelor of Science in Nursing from University of Wisconsin–Milwaukee. Because of an interest in cardiac nursing and teaching, she earned a Master of Science in Nursing with a minor in cardiovascular clinical specialist and teaching from the University of Alabama in Birmingham. A move to California resulted in her becoming a faculty member at Samuel Merritt Hospital School of Nursing in Oakland, California. Shirlee was fortunate to be involved in the phasing out of the diploma and ADN programs and development of a baccalaureate intercollegiate nursing program. She held numerous positions during her 15-year tenure at Samuel Merritt College, including curriculum coordinator, assistant director—instruction, dean of instruction and associate dean of the Intercollegiate Nursing Program. She is an associate professor alumnus at Samuel Merritt College. Her interest and experiences in nursing education resulted in Shirlee obtaining a doctorate of education focused on curriculum and instruction from the University of San Francisco.

Dr. Snyder moved to Portland, Oregon, on 1990 and taught in the ADN program at Portland Community College for eight years. During this teaching experience she became interested in computer-assisted instruction (CAI) and initiated web-based assessment testing for student learning. She presented locally and nationally on topics related to using multimedia in the classroom and promoting ethnic and minority student success.

Another career opportunity in 1998 led her to the Community College of Southern Nevada in Las Vegas, Nevada, where Dr. Snyder was the nursing program director with responsibilities for the associate degree and practical nursing programs for five years. During this time she became involved in co-authoring the fifth edition of *Skills in Clinical Nursing* with Audrey Berman.

In 2003, Dr. Snyder returned to baccalaureate nursing education. She embraced the opportunity to be one...
of the nursing faculty teaching the first nursing class in the baccalaureate nursing program at the first state college in Nevada, which opened in 2002. She is currently the Associate Dean of the School of Nursing at Nevada State College in Henderson, Nevada.

Dr Snyder enjoyed travelling to the Philippines (Manila and Cebu) in 2009 to present all-day seminars to approximately 5000 nursing students and 200 nursing faculty. She is an advisory board member for the Clinical Simulation Center of Las Vegas, a member of the American Nurses Association Sigma Theta Tau, Nevada Organization of Nurse leaders, and Nevada Nursing Education and Practice Alliance, which is a statewide group that addresses professional nursing issues in Nevada. She has been a site visitor for the National League for Nursing Accrediting Commission and the Northwest Association of Schools and Colleges.

Dr Snyder’s experiences in nursing education and teaching keep her current in nursing and nursing education. She appreciates all she has learnt from the students she has taught and her past and present faculty colleagues.

Shirlee Snyder dedicates this edition in loving memory of her late mother, Jean Snyder, and to her husband, Terry J. Schnitter, for his unconditional love and support.

BARBARA KOZIER was educated in Vancouver, British Columbia, Canada. After obtaining a Bachelor of Arts degree from the University of British Columbia, she entered the nursing program at that institution. After four years of study she graduated with a bachelor’s degree in nursing. She obtained a position at Bella Bella, an aboriginal settlement on the northern coast of British Columbia. She then nursed with the Victorian Order of Nurses providing home care. Following a position with a large general hospital as an acute care nurse in a medical–surgical unit, she taught medical and surgical nursing, paediatric nursing, psychiatric nursing and community nursing courses at the Vancouver General Hospital School of Nursing. Ms Kozier then enrolled at the University of Washington where she studied for two years, taught part time and obtained her Master of Nursing title. Barbara is a member of three honour societies: Sigma Theta Tau (nursing), Pi Lambda Theta (education) and Delta Sigma Pi (Canadain Honor Society for University Women). Barbara was a member and a chair of many nursing and government committees. She wrote a number of texts and collaborated with Glenora Erb on four books: Techniques of Clinical Nursing, Fundamentals of Nursing, Concepts and Issues in Nursing Practice and Essentials of Nursing Practice.

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Following two years travelling in Asia, Europe, India, Australia and New Zealand, Ms Erb returned to Vancouver and taught nursing at St Paul’s Hospital School of Nursing, and later at a 2-year program at the British Columbia Institute of Technology. At this time she also co-authored textbooks on Fundamentals of Nursing, Techniques of Clinical Nursing, Concepts and Issues in Nursing Practice and Essentials of Nursing Practice.

Glen died at home on 24 December 2001 of breast cancer. Her death has meant that nursing has lost a highly skilled clinical nurse and her friends and family have lost a sensitive and giving person.
The authors listed below are the Unit coordinators for the Australian edition of *Fundamentals of Nursing*. For a complete list of contributors, see page xxvi.

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Trudy Dwyer completed a hospital-based nursing program at the Rockhampton Hospital, Queensland, where she developed a passion for critical care nursing and travel. Working her way around Australia for many years, she returned to Rockhampton and CQUniversity. For the past 20 years she has been an active member of the Australian College of Critical Care Nurses (ACCCN) and was the foundation president of the Central Queensland sub-branch of the ACCCN.

Trudy is currently Associate Professor in the School of Nursing and Midwifery at CQUniversity. Her research interests include resuscitation, clinical education and population health. She has written numerous publications including peer-reviewed journals, books and book chapters, and is the co-author of the highly successful *Student Nurse: Clinical Survival Guide*.

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Majella Hales has a long history in the tertiary nursing education sector. She now spends her time developing print and multimedia educational resources. Originally hospital trained, she completed a post-registration Bachelor of Nursing, Master’s of Applied Science (Research), and a Graduate Certificate in Higher Education. Majella is passionate about developing resources to assist teaching and learning especially in relation to complex content. She has extensive experience in emergency and intensive care and is still clinically active undertaking regular agency critical care shifts. Majella’s international experience includes presentations in Japan, Brazil and America. She has also been a member of teams providing critical care and education assistance to Solomon Islands, Fiji and Brazil.

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Nichole has extensive clinical experience, having worked in both large city and rural and remote locations, as well as overseas. Her main area of clinical expertise is emergency and trauma nursing with a special interest in midwifery.

Nichole has held an academic role with the School of Nursing, Midwifery and Nutrition, James Cook University, since 2000. Since that time Nichole has been involved in the development and teaching of both nursing and midwifery curricula. Nichole is a reviewer for *The Australian Journal of Rural and Remote Health*, a past panel member for the Queensland Nursing Council’s Midwifery Review Panel and a member of a number of local and state nursing and midwifery committees/organisations. Nichole is undertaking her PhD to investigate the triage and management of pregnant women in emergency departments.
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Lorna Moxham is a three-year specialist hospital trained psychiatric nurse and also a general trained registered nurse. Lorna actively contributes to the nursing profession at state, national and international levels as well as to the broader community in numerous ways. Lorna has served on numerous ministerial committees as a member and chair and has held several leadership and governance roles both within the tertiary education sector and in industry. These currently include Chair of the CQUniversity HREC, Chair of the Rockhampton and District Health Community Council (HCC), Director: Mercy Health and Aged Care Central Queensland and member of the QLD Mental Health Review Tribunal. As the current chair of the Mental Health Peer Review Panel and a member of the education committee, Lorna’s involvement in nurse regulation and licensure via the Queensland Nursing Council enables her to actively contribute to ongoing professional integrity and development. Passionate about nursing, its past, present and future, Lorna has an extensive publication record and has led and been an investigator in many research projects. Lorna, who is a fellow of the Australian College of Mental Health Nurses and also a Fellow of the College of Nursing, believes this Australian text will contribute in a positive way to the future of nursing—a profession she has dedicated her life to.

TANYA PARK, RN, EM, EMHN, BNSC, GRAD DIP MHN, MMID, GRAD CERT ED (TT), PHD CANDIDATE

Tanya Park is a registered nurse, an endorsed mental health nurse, an endorsed midwife and a credentialed mental health nurse. Her nursing experience includes private and public settings (in rural, remote and urban centres) including crisis, community and emergency mental health services. She joined the School of Nursing, Midwifery & Nutrition at James Cook University in 2005 and has had the opportunity to teach both undergraduate and postgraduate students. She is currently undertaking her PhD to investigate the ‘Prevention of weight gain with second generation antipsychotics: a nurse-led intervention’. She is a member of the Australian College of Mental Health Nurses, vice-president and member of the Management Committee for the Mental Illness Fellowship North Queensland, Secretary for the North Queensland Sub-Branch of the Australian College of Mental Health Nurses and reviewer for the *International Journal of Mental Health Nursing*.

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Barbara Parker has worked extensively in the clinical environment, specifically in the areas of anaesthetics and recovery and orthopaedic and urology surgical nursing. She has published in the area of obesity and diabetes and has expertise in gastrointestinal and nutritional physiology as well as expertise in programs in obesity, impaired glucose tolerance and diabetes in both pharmacological and lifestyle interventions. Dr Parker is a Program Director in the School of Nursing and Midwifery and teaches within the undergraduate nursing program at the University of South Australia.

KERRY REID-SEARL, RN, RM BHSC (NSG), MCLIN EDU, PHD, MRCNA, FCN

Kerry Reid-Searl is an Associate Professor at CQUniversity. She first completed her nursing qualifications in Tasmania. Since then she has gained experience in Queensland as a remote area nurse, a generalist nurse and a midwife and in more recent
years she has worked in the clinical area of paediatrics. Kerry has over 20 years’ experience in undergraduate nursing education. She holds a Bachelor of Health Science degree, a Masters in Clinical Education and a PhD. Kerry has a strong interest in clinical education and simulation, wound care and medication safety. She is also the pioneer in an innovative simulation technique termed MASK ED (KRS Simulation) which involves the educator teaching using realistic and wearable silicone props.

Kerry has co-authored two clinical nursing student survival guides and many peer-reviewed journal publications. She has been the recipient of several teaching and learning awards including the 2007 CQU Vice-Chancellor’s Award for Teacher of the Year, a Vice-Chancellor’s Award for Excellence in Learning and Teaching in 2010, a Faculty Teaching Excellence Award in 2007 and 2010, an Australian Teaching and Learning Council Citation for Outstanding Contributions to Student Learning in 2008 and she was named the Pearson Australia and ANTS Nursing Educator of the Year in 2009.

David Stanley began his nursing career in the days when nurses wore huge belt buckles and funny hats. He ‘trained’ as a registered nurse and midwife in South Australia and worked through his formative career in a number of hospitals and clinical environments in Australia. In 1993 he completed a Bachelor of Nursing at Flinders University, Adelaide (for which he was awarded the University Medal) and after a number of years of volunteer work in Africa he moved to the United Kingdom and worked as the Coordinator of Children’s Services and as a nurse practitioner. He completed a Master’s of Health Science degree at Birmingham University. For a short time he worked in Central Australia for Remote Health Services, before returning to the United Kingdom to complete his nursing doctorate, researching in the area of clinical leadership. He retains a research interest in clinical leadership and is currently teaching postgraduate nursing at the University of Western Australia, in Perth.
Contemporary nursing in Australia and internationally is challenging, complex, dynamic and very rewarding. Many of our clients are older and sicker than they were a decade ago, often with complex health and psychosocial needs. This means that nurses today must be clinically competent, flexible and knowledgeable. They must have a broad and deep understanding of physiology, pathophysiology, pharmacology, epidemiology, therapeutics, culture, ethics and law, as well as a commitment to evidence-based practice.

Today’s nurses have many roles and functions—clinician, educator, manager, researcher, to name just a few. They must be highly skilled with the ability to problem solve and they must possess sophisticated critical thinking skills. They must be lifelong learners and confident in the use of information and communication technology. Nurses must be able to communicate effectively, with their clients, with each other and with other members of the health care team. Above all, they must care for their patients in ways that signify respect, acceptance, empathy, connectedness, cultural sensitivity and genuine concern.

This second Australian edition of Kozier and Erb’s Fundamentals of Nursing has once again undergone a rigorous review and writing process. Contemporary changes in the regulation of nursing are reflected in the chapters and two new chapters on rural nursing and mental health have been added. In addition, the second Australian edition of Fundamentals of Nursing is focused on three core philosophies:

1. Person-centred care
2. Critical thinking and clinical reasoning
3. Cultural safety.

These three philosophies provide the foundation for this revision, and are interwoven in a meaningful way through each chapter and each example. The following pages outline the definitions of these three philosophies as they apply to the second Australian edition of Kozier and Erb’s Fundamentals of Nursing.

ACKNOWLEDGMENTS

We extend a sincere thank you to the talented team involved in the second Australian edition of this book: the contributors who provided content and very helpful feedback; the nursing students, for their questioning minds and motivation; and the nursing academics, who provided many valuable suggestions for this edition.

We also thank Trish Burton from Victoria University, for mapping each of the learning outcomes and examples in the text to their relevant ANMC Domain and Competency Standards, thereby linking the core concepts to contemporary Australian nursing practice.

Finally, we thank the editorial and production team at Pearson, including Mandy Sheppard, Acquisitions Editor; Michael Stone, Manager—Product Development; Katie Millar, Senior Project Editor; Jodie Streckeisen, Copyright and Pictures Editor; Barbara Honor, Production Controller; and Jane Tyrrell, our copy editor. Many of the new photos in the second edition were photographed by Nichole Harvey and Tanya Park and the team at James Cook University, so we thank them for their additional contributions to the text.

Tracy Levett-Jones, Trudy Dwyer, Majella Hales, Nichole Harvey, Yoni Luxford, Lorna Moxham, Tanya Park, Barbara Parker, Kerry Reid-Searl and David Stanley


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Chapter 54 Fluid, Electrolyte and Acid-Base Balance
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